APPENDIX G

SPECIAL STATUS SPECIES LISTS AND COORDINATION

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 131216094648

Database Last Updated: September 18, 2011

Quad Lists

Listed Species

Invertebrates

Branchinecta lynchi
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Elaphrus viridis
delta green ground beetle (T)

Lepidurus packardi
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)

Rana draytonii
California red-legged frog (T)

Reptiles

Thamnophis gigas
giant garter snake (T)

Birds

Rallus longirostris obsoletus

Acipenser medirostris
green sturgeon (T) (NMFS)

Eucyclogobius newberryi
tidewater goby (E)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus kisutch
coho salmon - central CA coast (E) (NMFS)
Critical habitat, coho salmon - central CA coast (X) (NMFS)

Oncorhynchus mykiss
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

Masticophis lateralis euryxanthus
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Thamnophis gigas
giant garter snake (T)

Birds

Charadrius alexandrinus nivosus
western snowy plover (T)

Erysimum capitatum ssp. angustatum
Contra Costa wallflower (E)
Critical Habitat, Contra Costa wallflower (X)

Hesperolinon congestum
Marin dwarf-flax (=western flax) (T)

Holocarpha macradenia
Critical habitat, Santa Cruz tarplant (X)
Santa Cruz tarplant (T)

Lasthenia conjugens
Contra Costa goldfields (E)
Critical habitat, Contra Costa goldfields (X)

Neostapfia colusana
Colusa grass (T)

Oenothera deltoides ssp. howellii
Antioch Dunes evening-primrose (E)
Critical habitat, Antioch Dunes evening-primrose (X)

Pentachaeta bellidiflora
white-rayed pentachaeta (E)

Sidalcea keckii
Keck's checker-mallow (=checkerbloom) (E)

Streptanthus niger
Tiburon jewelflower (E)

Suaeda californica
California sea blite (E)

Trifolium amoenum
showy Indian clover (E)

Proposed Species

Plants

Cordylanthus mollis ssp. mollis
Critical habitat, soft bird's-beak (PX)

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

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  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

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If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 131024033918

Database Last Updated: September 18, 2011

No quad species lists requested.

County Lists

Contra Costa County

Listed Species

Invertebrates

Apodemia mormo langei
Lange's metalmark butterfly (E)

Branchinecta conservatio
Conservancy fairy shrimp (E)

Branchinecta longiantenna
Critical habitat, longhorn fairy shrimp (X)
longhorn fairy shrimp (E)

Branchinecta lynchi
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Elaphrus viridis
delta green ground beetle (T)

Lepidurus packardi
vernal pool tadpole shrimp (E)

Speyeria callippe callippe
callippe silverspot butterfly (E)

Syncaris pacifica
California freshwater shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Eucyclogobius newberryi
tidewater goby (E)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus kisutch
coho salmon - central CA coast (E) (NMFS)
Critical habitat, coho salmon - central CA coast (X) (NMFS)

Oncorhynchus mykiss
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

Masticophis lateralis euryxanthus
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Thamnophis gigas
giant garter snake (T)

Birds

Charadrius alexandrinus nivosus
western snowy plover (T)

Pelecanus occidentalis californicus
California brown pelican (E)

Rallus longirostris obsoletus
California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Strix occidentalis caurina
northern spotted owl (T)

Mammals

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Amsinckia grandiflora
large-flowered fiddleneck (E)

Arctostaphylos pallida
pallid manzanita (=Alameda or Oakland Hills manzanita) (T)

Calochortus tiburonensis
Tiburon mariposa lily (T)

Castilleja affinis ssp. neglecta
Tiburon paintbrush (E)

Chorizanthe robusta var. robusta
robust spineflower (E)

Clarkia franciscana
Presidio clarkia (E)

Cordylanthus mollis ssp. mollis
soft bird's-beak (E)

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Erysimum capitatum ssp. angustatum
Contra Costa wallflower (E)
Critical Habitat, Contra Costa wallflower (X)

Hesperolinon congestum
Marin dwarf-flax (=western flax) (T)

Holocarpha macradenia
Critical habitat, Santa Cruz tarplant (X)
Santa Cruz tarplant (T)

Lasthenia conjugens
Contra Costa goldfields (E)
Critical habitat, Contra Costa goldfields (X)

Neostapfia colusana
Colusa grass (T)

Oenothera deltoides ssp. howellii
Antioch Dunes evening-primrose (E)
Critical habitat, Antioch Dunes evening-primrose (X)

Pentachaeta bellidiflora
white-rayed pentachaeta (E)

Sidalcea keckii
Keck's checker-mallow (=checkerbloom) (E)

Streptanthus niger
Tiburon jewelflower (E)

Suaeda californica
California sea blite (E)

Trifolium amoenum
showy Indian clover (E)

Proposed Species

Plants

Cordylanthus mollis ssp. mollis
Critical habitat, soft bird's-beak (PX)

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

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habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be January 22, 2014.

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 131024034255

Database Last Updated: September 18, 2011

No quad species lists requested.

County Lists

Sacramento County

Listed Species

Invertebrates

Apodemia mormo langei
Lange's metalmark butterfly (E)

Branchinecta conservatio
Conservancy fairy shrimp (E)

Branchinecta lynchi
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
Critical habitat, valley elderberry longhorn beetle (X)
valley elderberry longhorn beetle (T)

Elaphrus viridis
delta green ground beetle (T)

Lepidurus packardi
Critical habitat, vernal pool tadpole shrimp (X)
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus mykiss

Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
California red-legged frog (T)

Reptiles

Thamnophis gigas
giant garter snake (T)

Birds

Charadrius alexandrinus nivosus
western snowy plover (T)

Rallus longirostris obsoletus
California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Vireo bellii pusillus
Least Bell's vireo (E)

Mammals

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Sylvilagus bachmani riparius
riparian brush rabbit (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Arctostaphylos myrtifolia
Ione manzanita (T)

Calystegia stebbinsii
Stebbins's morning-glory (E)

Castilleja campestris ssp. succulenta
Critical habitat, succulent (=fleshy) owl's-clover (X)
succulent (=fleshy) owl's-clover (T)

Ceanothus roderickii
Pine Hill ceanothus (E)

Cordylanthus mollis ssp. mollis
soft bird's-beak (E)

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Eriogonum apricum var. apricum
Ione buckwheat (E)

Eriogonum apricum var. prostratum
Irish Hill buckwheat (E)

Erysimum capitatum ssp. angustatum
Contra Costa wallflower (E)
Critical Habitat, Contra Costa wallflower (X)

Fremontodendron californicum ssp. decumbens
Pine Hill flannelbush (E)

Galium californicum ssp. sierrae
El Dorado bedstraw (E)

Lasthenia conjugens
Contra Costa goldfields (E)

Neostapfia colusana
Colusa grass (T)

Oenothera deltoides ssp. howellii
Antioch Dunes evening-primrose (E)
Critical habitat, Antioch Dunes evening-primrose (X)

Orcuttia tenuis
Critical habitat, slender Orcutt grass (X)
slender Orcutt grass (T)

Orcuttia viscida
Critical habitat, Sacramento Orcutt grass (X)
Sacramento Orcutt grass (E)

Senecio layneae
Layne's butterweed (=ragwort) (T)

Sidalcea keckii
Keck's checker-mallow (=checkerbloom) (E)

Candidate Species

Birds

Coccyzus americanus occidentalis
Western yellow-billed cuckoo (C)

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Updates

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U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 130807123204

Database Last Updated: September 18, 2011

Quad Lists

Listed Species

Invertebrates

Branchinecta lynchi

vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus

valley elderberry longhorn beetle (T)

Lepidurus packardi

vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris

green sturgeon (T) (NMFS)

Hypomesus transpacificus

Critical habitat, delta smelt (X)

delta smelt (T)

Oncorhynchus mykiss

Central Valley steelhead (T) (NMFS)

Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha

Central Valley spring-run chinook salmon (T) (NMFS)

Critical Habitat, Central Valley spring-run chinook (X) (NMFS)

winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)

Rana draytonii

California red-legged frog (T)

Reptiles

Thamnophis gigas

giant garter snake (T)

Quads Containing Listed, Proposed or Candidate Species:

THORNTON (479B)

County Lists

San Joaquin County

Listed Species

Invertebrates

Branchinecta conservatio
Conservancy fairy shrimp (E)
Critical habitat, Conservancy fairy shrimp (X)

Branchinecta longiantenna
longhorn fairy shrimp (E)

Branchinecta lynchi
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Elaphrus viridis
delta green ground beetle (T)

Lepidurus packardi
Critical habitat, vernal pool tadpole shrimp (X)
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

Masticophis lateralis euryxanthus
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Thamnophis gigas
giant garter snake (T)

Birds

Rallus longirostris obsoletus
California clapper rail (E)

Vireo bellii pusillus
Least Bell's vireo (E)

Mammals

Neotoma fuscipes riparia
riparian (San Joaquin Valley) woodrat (E)

Sylvilagus bachmani riparius
riparian brush rabbit (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Amsinckia grandiflora
Critical habitat, large-flowered fiddleneck (X)
large-flowered fiddleneck (E)

Arctostaphylos myrtifolia
Ione manzanita (T)

Castilleja campestris ssp. succulenta
Critical habitat, succulent (=fleshy) owl's-clover (X)
succulent (=fleshy) owl's-clover (T)

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Lasthenia conjugens
Critical habitat, Contra Costa goldfields (X)

Orcuttia viscida
Critical habitat, Sacramento Orcutt grass (X)
Sacramento Orcutt grass (E)

Tuctoria greenei
Greene's tuctoria (=Orcutt grass) (E)

Candidate Species

Birds

Coccyzus americanus occidentalis
Western yellow-billed cuckoo (C)

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out

what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be November 05, 2013.

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad is (Antioch North (3812117) or Jersey Island (3812116) or Bouldin Island (3812115))

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Ambystoma californiense California tiger salamander	G2G3 S2S3	Threatened Threatened	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	50 50	1094 S:1	0	0	0	0	1	0	1	0	0	0	1
Anniella pulchra pulchra silvery legless lizard	G3G4T3T4Q S3	None None	CDFW_SSC-Species of Special Concern USFS_S-Sensitive	10 80	91 S:5	0	1	0	0	0	4	4	1	5	0	0
Anthicus antiochensis Antioch Dunes anthicid beetle	G1 S1	None None		20 20	6 S:1	0	0	0	0	1	0	1	0	0	1	0
Apodemia mormo langei Lange's metalmark butterfly	G5T1 S1	Endangered None	XERCES_CI-Critically Imperiled	10 10	1 S:1	0	0	0	0	0	1	0	1	1	0	0
Archoplites interruptus Sacramento perch	G2G3 S1	None None	AFS_TH-Threatened CDFW_SSC-Species of Special Concern	5 5	5 S:1	0	0	0	0	0	1	1	0	1	0	0
Ardea herodias great blue heron	G5 S4	None None	CDF_S-Sensitive IUCN_LC-Least Concern	10 10	132 S:2	0	1	0	0	0	1	2	0	2	0	0
Astragalus tener var. tener alkali milk-vetch	G2T2 S2	None None	Rare Plant Rank - 1B.2	10 10	65 S:1	0	1	0	0	0	0	0	1	1	0	0
Athene cunicularia burrowing owl	G4 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	1 200	1850 S:9	0	6	1	0	1	1	1	8	8	1	0
Atriplex joaquinana San Joaquin spearscale	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	5 5	109 S:1	0	0	1	0	0	0	1	0	1	0	0
Blepharizonia plumosa big tarplant	G2 S2	None None	Rare Plant Rank - 1B.1		48 S:3	0	0	0	0	1	2	3	0	2	1	0
Branchinecta conservatio Conservancy fairy shrimp	G1 S1	Endangered None	IUCN_EN-Endangered	10 10	35 S:1	0	0	0	0	0	1	0	1	1	0	0
Branchinecta lynchi vernal pool fairy shrimp	G3 S2S3	Threatened None	IUCN_VU-Vulnerable	1 1	611 S:1	0	0	0	1	0	0	0	1	1	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Brasenia schreberi watershield	G5 S2	None None	Rare Plant Rank - 2B.3	15 15	33 S:1	0	0	0	0	1	0	1	0	0	0	1
Buteo swainsoni Swainson's hawk	G5 S2	None Threatened	ABC_WLBCC-Watch List of Birds of Conservation Concern BLM_S-Sensitive IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	-10 10	2394 S:17	1	1	0	0	0	15	1	16	17	0	0
California macrophylla round-leaved filaree	G2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive		155 S:1	0	0	0	0	1	0	1	0	0	1	0
Carex comosa bristly sedge	G5 S2	None None	Rare Plant Rank - 2B.1	-21 -21	29 S:1	0	0	1	0	0	0	1	0	1	0	0
Chloropyron molle ssp. molle soft salty bird's-beak	G2T1 S1	Endangered Rare	Rare Plant Rank - 1B.2	10 10	27 S:1	0	0	0	0	1	0	1	0	0	1	0
Cicuta maculata var. bolanderi Bolander's water-hemlock	G5T3T4 S2	None None	Rare Plant Rank - 2B.1	1 1	17 S:3	0	0	0	0	0	3	3	0	3	0	0
Coastal and Valley Freshwater Marsh Coastal and Valley Freshwater Marsh	G3 S2.1	None None		5 5	60 S:4	0	0	0	0	0	4	4	0	4	0	0
Coastal Brackish Marsh Coastal Brackish Marsh	G2 S2.1	None None			30 S:2	0	0	0	0	0	2	2	0	2	0	0
Coelus gracilis San Joaquin dune beetle	G1 S1	None None	BLM_S-Sensitive IUCN_VU-Vulnerable	10 10	11 S:1	0	0	0	0	1	0	1	0	0	0	1
Cryptantha hooveri Hoover's cryptantha	GH SH	None None	Rare Plant Rank - 1A	30 30	3 S:1	0	0	0	0	1	0	1	0	0	1	0
Downingia pusilla dwarf downingia	GU S2	None None	Rare Plant Rank - 2B.2	20 30	127 S:2	0	2	0	0	0	0	1	1	2	0	0
Efferia antiochi Antioch efferian robberfly	G1G3 S1S3	None None		20 20	4 S:1	0	0	0	0	0	1	0	1	1	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Elanus leucurus white-tailed kite	G5 S3	None None	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern	25 25	158 S:1	0	1	0	0	0	0	1	0	1	0	0
Emys marmorata western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	-10 27	1137 S:19	0	9	2	3	0	5	4	15	19	0	0
Eriogonum nudum var. psychicola Antioch Dunes buckwheat	G5T1 S1	None None	Rare Plant Rank - 1B.1	17 17	1 S:1	0	0	0	0	0	1	0	1	1	0	0
Eriogonum truncatum Mt. Diablo buckwheat	G2 S2	None None	Rare Plant Rank - 1B.1		6 S:1	0	0	0	0	0	1	1	0	0	1	0
Erysimum capitatum var. angustatum Contra Costa wallflower	G5T1 S1	Endangered Endangered	Rare Plant Rank - 1B.1	10 20	4 S:4	0	0	3	0	0	1	1	3	4	0	0
Eschscholzia rhombipetala diamond-petaled California poppy	G1 S1	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive	30 30	10 S:1	0	0	0	0	1	0	1	0	0	1	0
Eucerceris ruficeps redheaded sphecid wasp	G1G3 S1S2	None None		30 30	3 S:1	0	0	0	0	0	1	1	0	1	0	0
Fritillaria liliacea fragrant fritillary	G2 S2	None None	Rare Plant Rank - 1B.2 USFS_S-Sensitive	25 25	69 S:1	0	1	0	0	0	0	1	0	1	0	0
Geothlypis trichas sinuosa saltmarsh common yellowthroat	G5T2 S2	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	5 7	111 S:4	0	4	0	0	0	0	0	4	4	0	0
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	G5T2 S2	None None	Rare Plant Rank - 1B.2	0 7	173 S:30	0	22	5	2	0	1	10	20	30	0	0
Hygrotus curvipes curved-foot hygrotus diving beetle	G1 S1	None None		25 25	21 S:1	0	0	0	0	0	1	1	0	1	0	0
Hypomesus transpacificus Delta smelt	G1 S1	Threatened Endangered	AFS_TH-Threatened IUCN_EN-Endangered	0 5	27 S:9	0	1	0	0	0	8	0	9	9	0	0
Idiostatus middlekauffi Middlekauff's shieldback katydid	G1G2 S1	None None	IUCN_CR-Critically Endangered	20 20	1 S:1	0	0	0	0	0	1	1	0	1	0	0

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Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Lasiurus blossevillii western red bat	G5 S3?	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	15 20	119 S:2	0	0	0	0	0	2	0	2	2	0	0
Lasiurus cinereus hoary bat	G5 S4?	None None	IUCN_LC-Least Concern WBWG_M-Medium Priority	20 20	235 S:1	0	0	0	0	0	1	0	1	1	0	0
Lasthenia conjugens Contra Costa goldfields	G1 S1	Endangered None	Rare Plant Rank - 1B.1	50 50	33 S:1	0	0	0	0	1	0	1	0	0	0	1
Laterallus jamaicensis coturniculus California black rail	G4T1 S1	None Threatened	ABC_WLBCC-Watch List of Birds of Conservation Concern BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_NT-Near Threatened USFWS_BCC-Birds of Conservation Concern	0 10	241 S:10	1	2	0	1	0	6	5	5	10	0	0
Lathyrus jepsonii var. jepsonii Delta tule pea	G5T2 S2.2	None None	Rare Plant Rank - 1B.2	0 10	130 S:30	0	3	10	2	0	15	8	22	30	0	0
Lepidurus packardi vernal pool tadpole shrimp	G3 S2S3	Endangered None	IUCN_EN-Endangered	0 0	274 S:1	1	0	0	0	0	0	0	1	1	0	0
Lilaeopsis masonii Mason's lilaeopsis	G2 S2	None Rare	Rare Plant Rank - 1B.1	-10 10	196 S:85	3	38	16	5	0	23	35	50	85	0	0
Limosella australis Delta mudwort	G4G5 S2	None None	Rare Plant Rank - 2B.1	0 17	58 S:35	4	17	10	1	0	3	16	19	35	0	0
Linderiella occidentalis California linderiella	G3 S2S3	None None	IUCN_NT-Near Threatened	1 1	384 S:1	0	0	0	1	0	0	0	1	1	0	0
Melospiza melodia song sparrow ("Modesto" population)	G5 S3?	None None	CDFW_SSC-Species of Special Concern	0 30	92 S:18	0	0	0	0	0	18	2	16	18	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Melospiza melodia maxillaris Suisun song sparrow	G5T2 S2	None None	CDFW_SSC-Species of Special Concern USFWS_BCC-Birds of Conservation Concern	5 18	36 S:6	0	4	0	0	0	2	1	5	6	0	0
Metapogon hurdi Hurd's metapogon robberfly	G1G3 S1S3	None None		15 15	3 S:1	0	0	0	0	1	0	1	0	0	1	0
Myrmosula pacifica Antioch multilid wasp	GH SH	None None		20 20	3 S:1	0	0	0	0	0	1	1	0	1	0	0
Oenothera deltoides ssp. howellii Antioch Dunes evening-primrose	G5T1 S1	Endangered Endangered	Rare Plant Rank - 1B.1	5 50	10 S:8	0	0	4	1	1	2	2	6	7	1	0
Perdita scitula antiochensis Antioch andrenid bee	G1T1 S1	None None		18 20	2 S:2	0	0	0	0	1	1	2	0	1	0	1
Phalacrocorax auritus double-crested cormorant	G5 S3	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	-10 -10	37 S:1	0	0	0	0	0	1	1	0	1	0	0
Philanthus nasalis Antioch specid wasp	G1 S1	None None		20 20	4 S:1	0	0	0	0	1	0	1	0	0	0	1
Plagiobothrys hystriculus bearded popcornflower	G2 S2	None None	Rare Plant Rank - 1B.1		14 S:1	0	0	0	0	0	1	1	0	1	0	0
Potamogeton zosteriformis eel-grass pondweed	G5 S2.2?	None None	Rare Plant Rank - 2B.2		9 S:1	0	0	0	0	0	1	1	0	1	0	0
Reithrodontomys raviventris salt-marsh harvest mouse	G1G2 S1S2	Endangered Endangered	CDFW_FP-Fully Protected IUCN_EN-Endangered	0 4	137 S:7	0	3	0	3	0	1	1	6	7	0	0
Riparia riparia bank swallow	G5 S2S3	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern	5 5	296 S:1	0	0	0	0	0	1	0	1	1	0	0
Scutellaria galericulata marsh skullcap	G5 S2	None None	Rare Plant Rank - 2B.2	0 10	31 S:2	0	0	0	0	0	2	1	1	2	0	0
Scutellaria lateriflora side-flowering skullcap	G5 S1	None None	Rare Plant Rank - 2B.2		12 S:1	0	0	0	0	0	1	1	0	1	0	0
Sidalcea keckii Keck's checkerbloom	G1 S1	Endangered None	Rare Plant Rank - 1B.1		16 S:1	0	0	0	0	0	1	1	0	1	0	0

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California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Sphecodogastra antiochensis	G1	None	XERCES_CI-Critically Imperiled	25	1	0	0	0	0	0	1	1	0	1	0	0
Antioch Dunes halcitid bee	S1	None		25	S:1											
Spirinchus thaleichthys	G5	Candidate	CDFW_SSC-Species of Special Concern	0	45	0	0	0	0	0	5	0	5	5	0	0
longfin smelt	S1	Threatened		0	S:5											
Stabilized Interior Dunes	G1	None		20	2	0	0	0	0	0	1	1	0	1	0	0
Stabilized Interior Dunes	S1.1	None		20	S:1											
Symphyotrichum lentum	G2	None	Rare Plant Rank - 1B.2	0	172	2	13	25	9	0	20	17	52	69	0	0
Suisun Marsh aster	S2	None		10	S:69											
Thamnophis gigas	G2G3	Threatened	IUCN_VU-Vulnerable	-9	268	0	0	2	1	0	2	1	4	5	0	0
giant garter snake	S2S3	Threatened		25	S:5											

Special-Status Plant Species

Common and Scientific Name	Legal Status[a] Federal/ State/CNPS	Geographic Distribution	Habitat Requirements	Likelihood of Occurrence
Ferris's milk-vetch *Astragalus tener* var. *ferrisiae*	–/–/1B.1	Historical range included the Central Valley from Butte to Alameda County but currently only occurs in Butte, Glenn, Colusa, and Yolo Counties	Seasonally wet areas in meadows and seeps, subalkaline flats in valley and foothill grassland; 2–75 meters	Unlikely. Not known to Occur.
Alkali milk-vetch *Astragalus tener* var. *tener*	–/–/1B.2	Southern Sacramento Valley, northern San Joaquin Valley, eastern San Francisco Bay	Playas, on adobe clay in valley and foothill grassland, vernal pools on alkali soils; 1–60 meters	Very Low. Not known to Occur.
Heartscale *Atriplex cordulata*	–/–/1B.2	Western Central Valley and valleys of adjacent foothills	Saline or alkaline soils in chenopod scrub, meadows and seeps, sandy areas in valley and foothill grassland; 1–375 meters	Unlikely. Not known to occur.
Brittlescale *Atriplex depressa*	–/–/1B.2	Western and eastern Central Valley and adjacent foothills on west side of Central Valley	Alkaline or clay soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools; 1–320 meters	Low. Not known to occur.
San Joaquin spearscale *Atriplex joaquiniana*	–/–/1B.2	Western edge of the Central Valley from Glenn to Tulare Counties	Alkaline soils in chenopod scrub, meadows and seeps, playas, valley and foothill grassland; 1–835 meters	May occur.
Vernal pool smallscale *Atriplex persistens*	–/–/1B.2	Central Valley from Glenn to Tulare Counties	Alkaline vernal pools; 10–115 meters	Unlikely. Not known to occur.
Big tarplant *Blepharizonia plumosa*	–/–/1B.1	San Francisco Bay area with occurrences in Alameda, Contra Costa, San Joaquin*, Stanislaus, and Solano Counties	Valley and foothill grassland; 30–505 meters	Low. Not known to occur.
Round-leaved filaree *California macrophylla* (formerly *Erodium macrophyllum*)	–/–/1B.1	Scattered occurrences in the Central Valley, southern North Coast Ranges, San Francisco Bay area, South Coast Ranges, Channel Islands, Transverse Ranges, and Peninsular Ranges	Clay soils in cismontane woodland, valley and foothill grassland; 15–1,200 meters	Unlikely. Not known to occur.
Bristly sedge *Carex comosa*	–/–/2.1	Inner North Coast Ranges, High Cascade Range, Central Valley, northern Central Coast, San Francisco Bay, San Bernadino mountains, Modoc Plateau	Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland; below 625 meters	May occur.

Common and Scientific Name	Legal Status[a] Federal/ State/CNPS	Geographic Distribution	Habitat Requirements	Likelihood of Occurrence
Brown fox sedge *Carex vulpinoidea*	–/–/2.2	Scattered locations in the southeast Klamath Range, northern High Cascade Range, and northern Sacramento Valley; Arizona, Oregon	Freshwater marshes and swamps, riparian woodland; 25–1,200 meters	Low. Not known to occur.
Pappose tarplant *Centromadia parryi* ssp. *parryi*	–/–/1B.2	Southern North Coast Ranges, southern Sacramento Valley, northern and central Western California	Coastal prairie, chaparral, meadows and seeps, coastal salt marshes and swamps, vernally mesic valley and foothill grassland, often in alkaline soils; 2–420 meters	Unlikely. Not known to occur.
Bolander's water-hemlock *Cicuta maculata* var. *bolanderi*	–/–/2.1	Contra Costa, Los Angeles*, Marin, Sacramento, Santa Barbara*, San Luis Obispo*, Solano Counties; also Arizona, New Mexico, Washington.	Marshes and swamps, coastal, fresh or brackish water; 0–656 feet.	Low. 17 total occurences
Hispid bird's-beak *Cordylanthus mollis* ssp. *hispidus*	–/–/1B.1	Central and southern Central Valley with occurrences in Alameda, Fresno, Kern, Merced, Placer, and Solano Counties	Alkaline soils in meadows and seeps, playas, valley and foothill grassland; 1–155 meters	Unlikely. Not known to occur.
Soft bird's-beak *Cordylanthus mollis* ssp. *mollis*	E/R/1B.2	Northern Central Coast with occurrences in Contra Coasta, Marin*, Napa, Sacramento*, Solano, and Sonoma* Counties	Coastal salt marshes and swamps; below 3 meters	May occur.
Palmate-bracted bird's-beak *Cordylanthus palmatus*	E/E/1B.1	Livermore Valley and scattered locations in the Central Valley from Colusa to Fresno Counties	Alkaline grassland, alkali meadow, chenopod scrub; 5–155 meters	Low. Not known to occur
Hoover's cryptantha *Cryptantha hooveri*	–/–/1A	Known historically from Alameda, Contra Costa, Madera, Merced, San Joaquin, and Stanislaus Counties	Inland dunes, sandy soils in valley and foothill grassland; 9–150 meters	Unlikely. Not known to occur.
Dwarf downingia *Downingia pusilla*	–/–/2.2	Inner North Coast Ranges, southern Sacramento Valley, northern and central San Joaquin Valley	Mesic areas in valley and foothill grassland, vernal pools; 1–445 meters	Unlikely. Not known to occur.
Mt. Diablo buckwheat *Eriogonum truncatum*	–/–/1B.1	Historically known from northeastern San Francisco Bay in Alameda and Contra Costa Counties. Presumed extinct until recent rediscovery on Mt. Diablo. Also historically known from deltaic Sacramento Valley.	Sandy soils in chaparral, coastal scrub, valley and foothill grassland; 3–350 meters	Unlikely. Not known to occur.
Contra Costa wallflower *Erysimum capitatum* var. *angustatum*	E/E/1B.1	Known only from Contra Costa County	Inland dunes; 3–20 meters	Low. Not known to occur.

Common and Scientific Name	Legal Status[a] Federal/ State/CNPS	Geographic Distribution	Habitat Requirements	Likelihood of Occurrence
Diamond-petaled California poppy *Eschscholzia rhombipetala*	–/–/1B.1	Inner North and South Coast Ranges, eastern San Francisco Bay, eastern Outer South Coast Ranges	Alkaline or clay soils in valley and foothill grassland; below 975 meters	Unlikely. Not known to occur.
Stinkbells *Fritillaria agrestis*	–/–/4.2	Outer North Coast Ranges, Sierra Nevada foothills, Central Valley, Central Western California	Clay, sometimes serpentine soils in chaparral, cismontane woodland, pinyon-juniper woodland, valley and foothill grassland; 10–1,555 meters	Unlikely. Not known to occur.
Fragrant fritillary *Fritillaria liliacea*	–/–/1B.2	Central Western California with occurrences in Alameda, Contra Costa, Monterey, Marin, San Benito, Santa Clara, San Francisco, San Mateo, Solano, and Sonoma Counties	Coastal prairie, coastal scrub, valley and foothill grassland, cismontane woodland, often on serpentine; 3–410 meters	Unlikely. Not known to occur.
Boggs Lake hedge hyssop *Gratiola heterosepala*	–/E/1B.2	Inner North Coast Ranges, central Sierra Nevada foothills, Sacramento Valley, Modoc Plateau	Clay soils in marshes and swamps along lake margins and vernal pools; 10–2,375 meters	Unlikely. Not known to occur.
Diablo helianthella *Helianthella castanea*	–/–/1B.2	San Francisco Bay area in Alameda, Contra Costa, Marin*, San Francisco*, and San Mateo Counties	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland; 60–1,300 meters	Unlikely. Not known to occur.
Brewer's western flax *Hesperolinon breweri*	–/–/1B.2	Southern North Inner Coast Range, northeast San Francisco Bay region, especially Mt. Diablo: Contra Costa, Napa, and Solano Counties	Chaparral, cismontane woodland, valley and foothill grassland usually on soils derived from serpentinite; 30–900 meters	Unlikely. Not known to occur.
Rose-mallow *Hibiscus lasiocarpus*	–/–/2.2	Central and southern Sacramento Valley, deltaic Central Valley, and elsewhere in the U.S.	Freshwater marshes and swamps; below 120 meters	Likely to occur, CNDDB records lists occurrences on and in the vicinity of Franks Tract
Carquinez goldenbush *Isocoma arguta*	–/–/1B.1	Deltaic Sacramento Valley in the Suisun Slough	Alkaline valley and foothill grassland; 1–20 meters	Low. Not known to occur.
Northern California black walnut *Juglans hindsii*	–/–/1B.1	Last two native stands in Napa and Contra Costa Counties; historically widespread through southern Inner North Coast Ranges, southern Sacramento Valley, northern San Joaquin Valley, San Francisco Bay	Riparian scrub and riparian woodland; below 440 meters	Low. Not known to occur.

Common and Scientific Name	Legal Status[a] Federal/ State/CNPS	Geographic Distribution	Habitat Requirements	Likelihood of Occurrence
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	–/–/1B.2	Eastern Sacramento Valley, northeastern San Joaquin Valley with occurrences in Butte, Calaveras, Placer, Sacramento, and Yuba Counties	Mesic areas in valley and foothill grassland, vernal pool margins; 30–229 meters	Very Low. Not known to occur.
Contra Costa goldfields *Lasthenia conjugens*	E/–/1B.1	North Coast, southern Sacramento Valley, San Francisco Bay, South Coast	Mesic areas in cismontane woodland, alkaline playas, valley and foothill grassland, vernal pools; below 470 meters	Unlikely. Not known to occur.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	–/–/1B.2	Central Valley, San Francisco Bay	Freshwater and brackish marshes and swamps; below 4 meters	Known to occur at Franks Tract from CNDDB records
Colusa layia *Layia septentrionalis*	–/–/1B.2	Inner North Coast Range: Colusa, Glenn, Lake, Mendocino, Napa, Sonoma, Sutter, Tehama, and Yolo Counties	Sandy or serpentine soils in valley and foothill grassland, chaparral, and cismontane woodland; 100–1,095 meters	Unlikely. Not known to occur.
Legenere *Legenere limosa*	–/–/1B.1	Sacramento Valley, North Coast Ranges, northern San Joaquin Valley and Santa Cruz mountains	Vernal pools; 1–880 meters	Unlikely. Not known to occur.
Heckard's pepper-grass *Lepidium latipes* var. *heckardii*	–/–/1B.2	Southern Sacramento Valley	Alkaline flats in valley and foothill grassland; 2–200 meters	Low. Not known to occur.
Mason's lilaeopsis *Lilaeopsis masonii*	–/R/1B.1	Southern Sacramento Valley, northeastern San Francisco Bay	Riparian scrub, brackish or freshwater marshes and swamps; below 10 meters	Known to occur at Franks Tract, Big Break, and Sherman Island from CNDDB records, locally common in the Suisun Bay
Delta mudwort *Limosella subulata*	–/–/2.1	Deltaic Central Valley with occurrences in Contra Costa, Sacramento, San Joaquin, and Solano Counties; Oregon	Marshes and swamps; below 3 meters	Known to occur at Big Break and Sherman Island from CNDDB records

Common and Scientific Name	Legal Status[a] Federal/ State/CNPS	Geographic Distribution	Habitat Requirements	Likelihood of Occurrence
Showy madia *Madia radiata*		Scattered populations in the interior foothills of the South Coast Ranges: Contra Costa*, Fresno, Kings*, Kern, Monterey*, Santa Barbara*, San Benito, San Joaquin*, San Luis Obispo, and Stanislaus Counties	Cismontane woodland, valley and foothill grassland, slopes; 25–900 meters	Unlikely. Not known to occur.
Veiny monardella *Monardella douglasii* ssp. *venosa*	–/–/1B.1	Occurrences in the northern and central Sierra Nevada foothills; also historically known from the Sacramento Valley	Heavy clay soils in cismontane woodland, valley and foothill grassland; 60–410 meters	Low. Not known to occur.
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	–/–/1B.1	Inner North Coast Ranges, western Sacramento Valley	Mesic areas in cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools; 5–1,740 meters	Unlikely. Not known to occur.
Pincushion navarretia *Navarretia myersii* ssp. *myersii*	–/–/1B.1	Central Sierra Nevada foothills, central Great Valley	Vernal pools, often acidic; 20–330 meters	Unlikely. Not known to occur.
Colusa grass *Neostapfia colusana*	T/E/1B.1	Central Valley with scattered occurrences from Colusa to Merced Counties	Adobe soils of vernal pools; 5–200 meters	Unlikely. Not known to occur.
Antioch Dunes evening primrose *Oenothera deltoides* ssp. *howellii*	E/E/1B.1	Known from three native occurrences in northeastern San Francisco Bay	Inland dunes; below 30 meters	May occur, CNDDB lists occurrence adjacent to Big Break (East Bay Regional Park) land
San Joaquin Valley Orcutt grass *Orcuttia inaequalis*	T/E/1B.1	Scattered locations along east edge of the San Joaquin Valley and adjacent foothills, from Stanislaus County to Tulare County	Vernal pools; 10–755 meters	Unlikely. Not known to occur.
Slender Orcutt grass *Orcuttia tenuis*	T/E/1B.1	Inner North Coast Ranges, Cascade Range foothills, Sacramento County	Vernal pools; 35–1,760 meters	Unlikely. Not known to occur.
Sacramento Orcutt grass *Orcuttia viscida*	E/E/1B.2	Known only from Sacramento County	Vernal pools; 30–100 meters	Unlikely. Not known to occur.
Bearded popcorn-flower *Plagiobothrys hystriculus*	–/–/1B.1	Presumed extinct until recent rediscovery in the Montezuma Hills	Often vernal swales in mesic valley and foothill grassland, vernal pool margins; below 274 meters	Unlikely. Not known to occur.

Common and Scientific Name	Legal Status[a] Federal/ State/CNPS	Geographic Distribution	Habitat Requirements	Likelihood of Occurrence
Eel-grass pondweed *Potamogeton zosteriformis*	–/–/2.2	Southern Inner North Coast Ranges, Central Valley, Modoc Plateau; Idaho, Oregon, Utah, Washington	Assorted freshwater marshes and swamps; below 1,860 meters	May occur. CNDDB lists occurrence in the vicinity of Webb Tract
Hartweg's golden sunburst *Pseudobahia bahiifolia*	E/E/1B.1	Central Sierra Nevada foothills, eastern San Joaquin Valley	Clay soils in cismontane woodland, valley and foothill grassland; 15–150 meters	Low. Not known to occur.
Sanford's arrowhead *Sagittaria sanfordii*	–/–/1B.2	Scattered locations in Central Valley and Coast Ranges from Del North to Fresno Counties	Freshwater marshes, sloughs, canals, and other slow-moving water habitats; below 2,132 feet	Low. Not known to occur.
Marsh skullcap *Scutellaria galericulata*	–/–/2.2	Northern High Sierra Nevada, Modoc Plateau; Oregon	Lower montane coniferous forest, mesic meadows and seeps, marshes and swamps; below 2,100 meters	Likely to occur, CNDDB lists occurrence for Old River between Quinby Island and Franks Tract
Side-flowering skullcap *Scutellaria lateriflora*	–/–/2.2	Northern San Joaquin Valley, east of Sierra Nevada; New Mexico, Oregon	Mesic meadows and seeps, marshes and swamps; below 500 meters	May occur.
Chaparral ragwort *Senecio aphanactis*	–/–/2.2	Scattered locations in central western and southwestern California, from Alameda County to San Diego County	Cismontane woodland, coastal scrub, chaparral, sometimes on alkaline soils; 15–800 meters	Unlikely. Not known to occur.
San Francisco campion *Silene verecunda* ssp. *verecunda*	–/–/1B.2	Northern Central Coast, San Francisco Bay area: San Francisco, San Mateo, Santa Cruz, and Sutter Counties	Sandy soils in coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and foothill grassland; 30–645 meters	Unlikely. Not known to occur.
Suisun Marsh aster *Symphyotrichum lentum* (formerly *Aster lentus*)	–/–/1B.2	Sacramento Valley, Central Coast, San Francisco Bay	Brackish and freshwater marshes and swamps; below 3 meters	Known to occur at Franks Tract, Big Break, and Sherman Island from CNDDB records
Wright's trichocoronis *Trichocoronis wrightii* var. *wrightii*	–/–/2.1	Scattered locations in the Central Valley and Southern Coast; Texas	On alkaline soils in floodplains, meadows and seeps, marshes and swamps, riparian forest, vernal pools; 5–435 meters	Low. Not known to occur.

Common and Scientific Name	Legal Status[a] Federal/ State/CNPS	Geographic Distribution	Habitat Requirements	Likelihood of Occurrence
Showy rancheria clover *Trifolium amoenum*	E/–/1B.1	Coast Range foothills in the San Francisco Bay region, currently known from only two recent occurrences in Marin County	Valley and foothill grassland, coastal bluff scrub, sometimes on serpentinite soils; 5–415 meters	Unlikely. Not known to occur.
Crampton's tuctoria *Tuctoria mucronata*	E/E/1B.1	Southwestern Sacramento Valley, Solano and Yolo Counties	Mesic areas in valley and foothill grassland, vernal pools; 5–10 meters	Unlikely. Not known to occur.

Special-Status Wildlife Species

Common and Scientific Name	Legal Status[a] Federal/ State	Habitat Association and Distribution in California	Likelihood of Occurrence in Project area	Addressed in EIS
Invertebrates				
Lange's metalmark butterfly *Apodemia mormo langei*	E/-	Stabilized dunes along the San Joaquin River; host plant is naked buckwheat. Currently found only at the Antioch Dunes in Contra Costa County.	None. No suitable habitat present.	No
Conservancy fairy shrimp *Branchinecta conservation*	E/-	Large, deep, vernal pools in annual grasslands. Currently, scattered populations from Butte to Ventura counties.	None. No suitable habitat present.	No
Vernal pool fairy shrimp *Branchinecta lynchi*	T/-	Common in vernal pools. Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County.	None. No suitable habitat present.	No
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/-	Elderberry shrubs typically in riparian and oak savanna habitats throughout the Central Valley of California.	High. Elderberry shrubs are not present at Big Break, Franks and Little Franks Tract, however, suitable habitat is present near proposed dredged material source sites.	Yes
Delta green ground beetle *Elaphrus viridis*	T/-	Grassland-playa pool matrix; edges of pools, trails, roads, ditches, and surrounding grasslands. Currently known only from the greater Jepson Prairie area of Solano County.	Low. Limited suitable habitat.	No
Vernal pool tadpole shrimp *Lepidurus packardi*	E/-	Vernal pools and swales. Central Valley of California from Shasta County to Tulare County	None. No suitable habitat present.	No
Amphibians				
California tiger salamander *Ambystoma californiense*	T/T	Relatively shallow, slow moving water in streams, ponds, ditches. Primarily in drainages of the central Coast Ranges.	Low. Limited suitable habitat. Closest known populations are south of Antioch in Diablo foothills.	No

Common and Scientific Name	Legal Status[a] Federal/ State	Habitat Association and Distribution in California	Likelihood of Occurrence in Project area	Addressed in EIS
California red-legged frog *Rana draytonii*	T/SSC	Foothill small ponds, lakes and vernal pools in annual grasslands, and oak woodlands. From Sonoma County and the Colusa-Yolo County line, south to Tulare County. In the Coast Range, it occurs from Santa Cruz County south to Santa Barbara County, California.	None. Considered extirpated from the valley floor (U.S. Fish and Wildlife Service 2002).	No
Reptiles				
Western pond turtle *Antinemys marmorata*	-/SSC	Forages in ponds, marshes, slow-moving streams, sloughs, and irrigation/drainage ditches; nests in nearby uplands with low, sparse vegetation. Range spans across California west of the Sierra-Cascade crest, below 5,000 feet in elevation.	High. Suitable habitat present. 19 recorded occurrences in the general vicinity.	Yes
Giant garter snake *Thamnophis gigas*	T/T	Streams, sloughs, ponds, and irrigation/drainage ditches; also requires upland refugia not subject to flooding during its inactive season. Range spans across California west of the Sierra-Cascade crest, below 5,000 feet in elevation.	High. Suitable habitat present. Five occurrences in the general vicinity; one occurrence adjacent to Little Franks Tract.	Yes
Birds				
Burrowing owl *Athene cunicularia*	BCC/SSC (nesting)	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation; subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Moderate. Suitable foraging habitat, limited nesting habitat. 11 CNDDB occurrences in the vicinity of the project area primarily north of Sherman island near Collinsville and Toland landing.	Yes
Tricolored black bird *Agelaius tricolor*	BCC/SSC (nesting)	Highly colonial species, most numerous in central valley and vicinity; largely endemic to California; requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	High. Likely to occur in project area for foraging, not known to nest on site.	Yes
Swainson's hawk *Buteo swansoni*	BCC/T (nesting)	Agricultural areas, riparian areas, and oak savannas. Once found throughout lowland CA, now restricted to portions of the Central Valley.	Low. Limited suitable habitat (large trees) for nesting. Nearby agricultural areas provide foraging habitat	Yes

Common and Scientific Name	Legal Status[a] Federal/ State	Habitat Association and Distribution in California	Likelihood of Occurrence in Project area	Addressed in EIS
White-tailed kite *Elanus leucurus*	-/FP (nesting)	Forages in open grasslands, meadows, farmlands and emergent wetlands. Nests in dense oak, willow, or other tree stands. Resident in low elevation areas west of Sierras throughout CA; rarely found away from agricultural areas.	Low. No occurrence records and limited riparian habitat in project area for nesting. May forage in the area as it has been observed at Dutch Slough where suitable nesting habitat is available.	No
Salt marsh common yellowthroat *Geothlypis trichas sinuosa*	BCC/SSC	Freshwater marshes in summer and salt or brackish marshes in fall and winter; requires tall grasses, tules, and willow thickets for nesting and cover. Found only in SF Bay Area.	Unlikely. No occurrence records for project area. Species occurs in Suisun Marsh northwest of the project area.	No
California black rail *Laterallus jamaicensis coturniculus*	BCC/T, FP	Fresh, brackish or tidal marshes with emergent vegetation; needs water depth of about 1 inch that does not fluctuate during the year and dense vegetation for nesting habitat. Permanent resident in the SF Bay/Delta region and in isolated areas of the Sierra foothills and S CA. Winter resident in central and southern coastal areas.	Moderate. Occurrence record in Big Break and records from other areas nearby.	Yes
Suisun song sparrow *Melospiza melodia maxillaris*	BCC/SSC	Resident of brackish-water marshes surrounding Suisun Bay; inhabits cattails, tules and other sedges, and *Salicornia*; also known to frequent tangles bordering Sloughs. Restricted to western edge of Delta between the cities of Vallejo and Pittsburg near Suisun Bay.	Unlikely. Saline emergent wetlands is not present.	No
Double-crested cormorant *Phalacrocorax auritus*	-/WL (nesting)	Inland lakes, in fresh, salt, and estuarine waters. Coastal areas of North America, and inland breeding. In Ca, primarily coastal areas, NE part of state, and Central Valley.	Unlikely. May roost or forage in vicinity of project site but no known nesting occurrence records for project area.	No

Common and Scientific Name	Legal Status[a] Federal/ State	Habitat Association and Distribution in California	Likelihood of Occurrence in Project area	Addressed in EIS
Yellow breasted chat *Icteria virens*	BCC/SSC (nesting)	Uses several habitats, especially riparian thickets and brush. Formerly bred throughout CA except in higher mountains and coastal islands. Now, an uncommon summer resident and migrant in coastal CA and in Sierra Nevada foothills.	Low. No CNDDB occurrence records for project area but has been observed in other areas of the Delta. May be an occasional visitor.	No
California clapper rail *Railus longirostris obsoletus*	E/E, FP	Restricted to salt marshes and tidal sloughs. Salt and brackish marshes of SF Bay to Suisun.	Unlikely. No habitat at or near project site.	No
California least tern *Sternula antillarum browni*	E/E, FP	Nests on beaches, mudflats; forages on adjacent surf line, estuaries, or the open ocean. Nests on beaches along SF Bay and along S CA coast.	Unlikely. No CNDDB occurrence records for project area. No suitable habitat for nesting.	No
Mammals				
Western red bat *Lasiurus blossevillii*	-/SSC	Roosts in trees or shrubs in forests and woodlands from sea level up through mixed conifer forests. Common in riparian areas. Feeds over grasslands, shrub lands, open woodlands and forests, and croplands. Locally common from Shasta County to Mexican border, west of Sierra crest and deserts. Winter range includes western lowlands and coastal regions south of SF Bay.		
Salt marsh harvest mouse *Reithrodontomys raviventris*	E/E, FP	Saline emergent wetlands only; requires pickleweed. Marshes around San Francisco, San Pablo, and Suisun bays.		
San Joaquin kit fox *Vulpes macrotis mutica*	E/T	Favors grasslands and scrub habitats with fine textured soils. Mainly in San Joaquin Valley, but also in interior valleys, plus areas of Contra Costa County		

[a] Status explanations:

Federal
E = Listed as endangered under the federal ESA
T = Listed as threatened under the federal ESA

State
E = Listed as endangered under the CESA
T = Listed as threatened under CESA

BBC= Birds of Conservation Concern

SSC = State Species of Special Concern

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA, 95814-2922

Environmental Resources Branch

APR 0 2 2014

Ms. Jennifer M. Norris, Field Supervisor
U.S. Fish and Wildlife Service
2800 Cottage Way, #W-2605
Sacramento, California 95825-1846

Dear Ms. Norris:

This letter is to request initiation of formal consultation under Section 7 of the Endangered Species Act (16 U.S.C. 1536[c]) for the Sacramento-San Joaquin Rivers Delta Islands and Levees Feasibility Study. The U.S. Army Corps of Engineers (Corps) determination is that the proposed action may affect, and is likely to adversely affect, the delta smelt (*Hypomesus transpacificus*), and may affect, but would not result in the destruction or adverse modification of, designated critical habitat for delta smelt. We also request your concurrence with our determination that the proposed action is not likely to adversely affect the giant garter snake (*Thamnophis gigas)*.

Enclosed is our biological assessment with our analysis of potential effects on listed threatened or endangered species and on designated critical habitat, within the project's area of effect (action area).

Proposed Action: The Corps and the Central Valley Flood Protection Board propose to restore about 89.5 acres of tidal marsh habitat using dredged material in the west central portion of the Sacramento-San Joaquin Delta (Delta). Dredged material would be transported and placed to restore areas of emergent marsh habitat at Big Break and Little Frank's Tract in the west central California Delta. The work involves placing a total of 1,112,000 cubic yards of dredged material into open water habitat to restore a total of 89.5 acres of tidal marsh habitat. The restoration work would be conducted over five years as part of the yearly Operation & Maintenance (O&M) dredging of the ship channel. Previously stockpiled dredged material obtained from the McCormick, Bradford, Scour, and Decker dredged material storage sites would also be placed in conjunction with the O&M placement.

The proposed action is intended to complement other planning efforts in the Delta, including the Delta Vision Strategic Plan, the Dutch Slough Tidal Marsh Restoration Project, the CALFED Ecosystem Restoration Plan, and the Bay Delta Conservation Plan, to restore tidal marsh and improve the ecological health of the Bay-Delta Ecosystem. The beneficial use of dredged material as a means to reverse subsidence of flooded islands and restore tidal marsh habitat may if found successful be used more extensively in the future.

Biological Assessment: The enclosed biological assessment indicates that the proposed restoration action will in the long-term beneficially affect habitat conditions for the delta smelt and other listed aquatic species. However, short-term construction activities may adversely affect this species. Delta smelt may be subject to disturbance or displacement caused by construction activities that increase noise, turbidity, and suspended sediment. Delta smelt may not be readily able to move away from areas that are directly affected by construction activities (i.e., placement of dredged material). Incidental take of delta smelt may occur from direct mortality or injury during a construction activity, or by the impairment of essential behavior patterns (i.e., feeding, escape from predators). In addition, physiological impairment could be caused by toxic substances (i.e., gasoline, lubricants, oil) entering the water. Construction-related effects on delta smelt rearing and migration will be minimized by restricting in-water construction activities to the August 1 through October 31 work window, thereby avoiding the seasons when spawning and migration are most likely to occur.

The giant garter snake is unlikely to be affected by the project because the areas of open water proposed for restoration are unlikely to provide suitable aquatic habitat and there are few documented sightings of the snake in the action area. Supporting aquatic habitat (i.e. drainage ditches, ponds, and irrigation canals) has a greater potential to occur near the existing dredge material sites and along the pipeline transport route. As part of a pre-construction evaluation, an on-site assessment will be made to confirm the presence or absence of giant garter snake supporting habitat within a project area. To avoid impacts to identified suitable habitat, project construction activities will be sited to maintain a buffer of at least 200 feet from suitable aquatic features.

The Corps requests a response on whether sufficient information has been provided to initiate formal consultation on the delta smelt. The Corps also requests concurrence with our "not likely to adversely affect" determination for the giant garter snake be provided within 30 days. If you have any questions or require additional information, please contact Brad Johnson, Environmental Manager, Environmental Resources Branch, by phone at (916) 557-7812, or by e-mail at Bradley.C.Johnson@usace.army.mil. Thank you for your attention to this matter.

Sincerely,

Alicia E. Kirchner
Chief, Planning Division

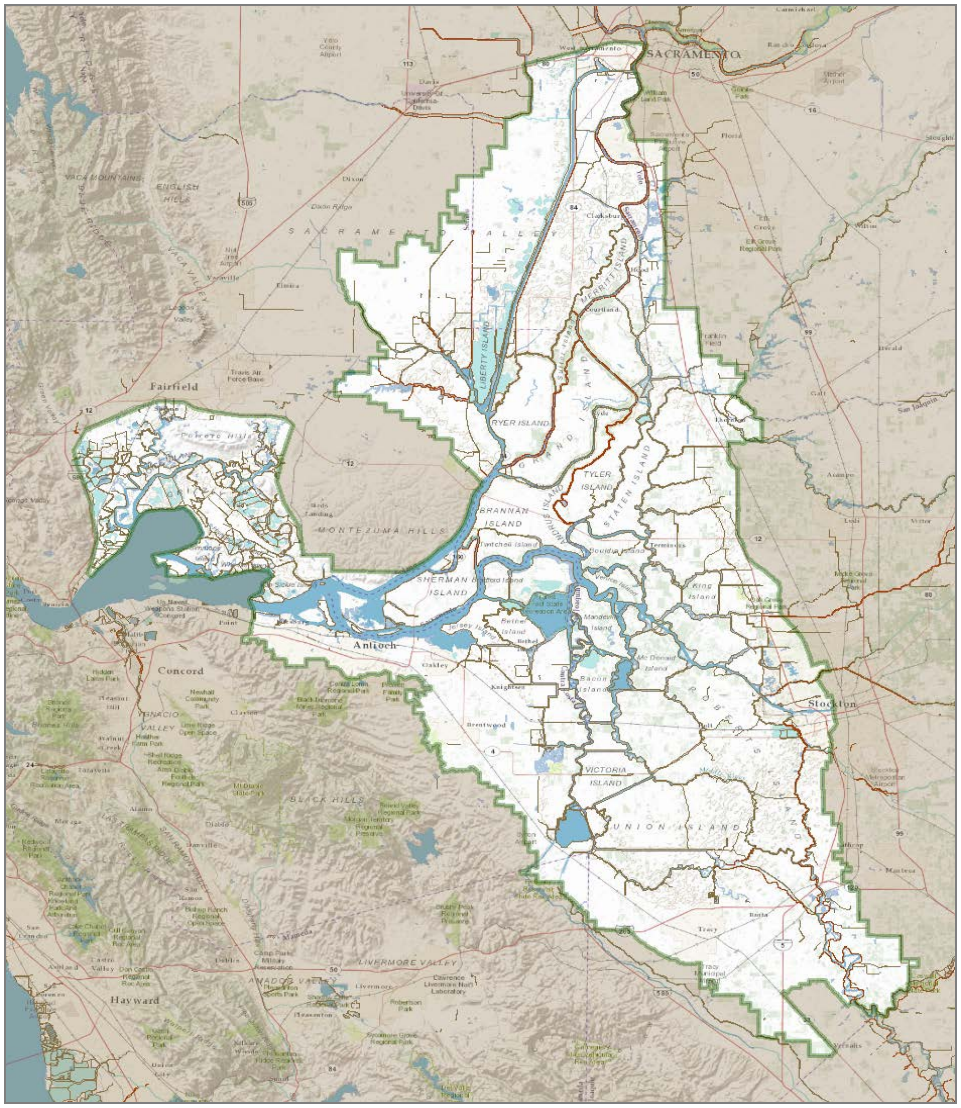
Enclosure:
Biological Assessment, Sacramento – San Joaquin Rivers Delta Islands and Levees, California, Feasibility Study

cc: (with enclosure)
Ms. Kim Turner, U.S. Fish and Wildlife Service, Bay-Delta Fish and Wildlife Office, 650 Capitol Mall, Suite 8-300, Sacramento, California 95814

cc: (w/o enclosure)
Brian Hansen, U.S. Fish and Wildlife Service, Bay-Delta Fish and Wildlife Office 650 Capitol Mall, Suite 8-300, Sacramento, California 95814
Mr. Ted Frink, Department of Water Resources, Environmental Restoration and Enhancement, 901 P Street, P.O. Box 942836, Sacramento, California 94236
Mr. Michael Hendrick, NMFS, Sacramento Area Office, 650 Capitol Mall, Suite 8-300, Sacramento, California 95814
Mr. David Mraz, Department of Water Resources, Delta Levees and Environmental Branch, 1416 Ninth Street, Room 1623, Sacramento, California 95814

Biological Assessment

Sacramento – San Joaquin Rivers Delta Islands and Levees, California, Feasibility Study



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US Army Corps of Engineers ®

CENTRAL VALLEY FLOOD PROTECTION BOARD
PUBLIC SAFETY
AND FLOOD MANAGEMENT
STATE OF CALIFORNIA

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1.0 INTRODUCTION

The Corps of Engineers, Sacramento District (Corps), and the Central Valley Flood Protection Board propose to restore 89.5 acres of emergent marsh habitat using dredged material in the west central portion of the Sacramento-San Joaquin Delta (Delta). Dredged material would be transported and placed to restore areas of emergent marsh habitat at Big Break and Little Frank's Tract in the west central California Delta.

The purpose of this Biological Assessment (BA) is to analyze the potential effects from the proposed project on listed threatened or endangered species and on designated critical habitat, within the project's area of effect (action area). The outcome of this BA and consultation with the U.S. Fish and Wildlife Service (USFWS) will determine the need for formal consultation or whether a determination of "not likely to adversely affect" is appropriate for listed species that may be affected.

This BA indicates that the proposed action "may affect" the Federally-listed threatened Delta smelt (*Hypomesus transpacificus*) and the giant garter snake (*Thamnophis gigas)* and therefore requires consultation with the USFWS, pursuant to Section 7(a)(2) of the federal Endangered Species Act (ESA) (16 U.S.C. 1536 (c)). Section 7 consultation is required to ensure that the proposed project and alternatives are not likely to jeopardize the continued existence of any federally listed species or result in the adverse modification of designated critical habitat.

1.1 Project Overview

1.1.1 Location of Project Area

The project area is located approximately 2 miles west of the city of Antioch in the west central portion of the Delta (Figures 1 and 2). The area's approximate boundaries are the San Joaquin River and Threemile Slough on the north, Sacramento River and Sherman Lake on the west, south edge of Big Break and Dutch Slough on the south, and east edge of Frank's Tract and Fisherman's Cut on the east.

1.1.2 Project Purpose

The proposed action is proposed under the Sacramento – San Joaquin Rivers Delta Islands and Levees Feasibility Study (DILFS). The study also evaluated measures to reduce risk of major flood damage in the Delta but no Federal interest was found in flood risk management. Congressional authorization would be sought for construction of the project.

DILFS is analyzing the feasibility of restoring intertidal habitat by subsidence reversal in the flooded areas of the Delta. Big Break and Little Frank's Tracts are currently flooded islands that were historically tidal marsh before levees were constructed and reclaimed for agriculture and then became submerged when their levees failed.

The remaining ecosystems in the Delta no longer maintain the functions and richness that historically defined the pre-channelized system. The measures of ecological health continue to decline without preventive or restorative actions.

Before land reclamation for agriculture and flood control activities around the turn of the 20th century, the Delta supported a complex network of rivers and sloughs with in-channel islands and vast expanses of tidal marsh. Much of the vegetation of the Delta (approximately 380,000 acres; 1,538 square kilometers) was dominated by tidal marshes (Atwater 1980; Institute 1998). By 1930, island reclamation was complete, and by 1980, only about 16,000 acres (65 square kilometers) of marshes remained (Atwater 1980; The Bay Institute 1998). Today, these areas of former tidal marshes consist primarily of channelized waterways surrounding highly productive row-cropped agricultural islands that are protected from flooding by over 1,300 miles (2,093 kilometers) of levees.

Freshwater tidal marsh constitutes the primary target vegetation type and habitat for the proposed project. Other planning efforts in the Delta are also underway, including the Delta Vision Strategic Plan, the CALFED Ecosystem Restoration Plan, and the Bay Delta Conservation Plan, to restore tidal marsh and improve the ecological health of the Bay-Delta Ecosystem. The proposed Dutch Slough Tidal Restoration Project, adjacent to and east of Big Break, will restore tidal wetlands and other habitats on 1,166 acres of land owned by DWR in eastern Contra Costa County near Oakley. The former dairy lands were slated for residential development, but were instead purchased by the State so that declining natural habitats of the Delta could be restored to the site. Restoration at Big Break and Little Frank's Tracts and Dutch Slough would in combination create a large continuous block of restored habitat which would be important for dispersal of plant and wildlife populations and those species requiring large habitat blocks.

1.1.3 Proposed Action

The proposed project consists of 89.5 acres of tidal marsh restoration at Big Break (80.3 acres) and Little Frank's Tract (9.7 acres) (Figure 2). To restore the habitat, approximately 1.1 million cubic yards of fill material would be placed via direct placement of dredged material from yearly Operations and Maintenance (O&M) dredging from the San Francisco to Stockton Deep Water Ship Channel over a period of five years and via pumping of previously dredged material from existing dredged material placement sites. A detailed description of the proposed action is in Section 2.

Final Alternatives

The DILFS evaluated a range of measures and alternatives to restore ecosystem values. Below is a brief summary of the final alternatives. Alternative 3 below represents the tentatively selected plan and the Corps' proposed action addressed in detail in this BA.

> *Alternative 1 - No Action*. Alternative 1 is the no action plan and assumes that the Corps would not participate in the restoration of wildlife habitat at Big Break and Little Frank's Tract.

Alternative 2 – O&M Placement. Alternative 2 consists of placing 500,000 cubic yards (cy) of material dredged from the Stockton Deep Water Ship Channel directly into open water habitat to restore about 42 acres of intertidal marsh habitat at Big Break. The restoration work would be conducted over 5 years as part of the yearly O&M dredging of the ship channel. The environmental effects of the O&M dredging and placement of material at the existing McCormick, Bradford, and Scour storage sites are evaluated in the Corps' San Francisco to Stockton Deepwater Ship Channel, Supplemental Environmental Impact Statement (EIS), scheduled for final release in early 2015. Pumping of the wet dredged material from the O&M dredging ship to the proposed placement site at Big Break is evaluated as part of DILFS.

Alternative 3 – O&M Placement/Overland Pumping. Alternative 3 includes the restoration proposed under Alternative 2 but includes additional restoration at Big Break and Little Frank's Tract (see Figures 3 and 4). The work would involve placing a total of 1,112,000 cy of dredged material into open water habitat to restore a total of 89.5 acres of intertidal marsh habitat. The restoration work would be conducted over 5 years as part of the yearly O&M dredging of the ship channel. Previously stockpiled dredged material obtained from the McCormick, Bradford, Scour, and Decker storage sites would also be placed in conjunction with the O&M placement to increase the area of restored habitat.

The environmental effects of the O&M dredging and placement of material at the existing McCormick, Bradford, and Scour storage sites are being evaluated in the Corps' San Francisco to Stockton Deepwater Ship Channel, Supplemental EIS, which is currently being prepared for release in 2014. Removal and use of the stockpiled material are evaluated as part of DILFS.

1.2 Species Covered

The USFWS online services species list was accessed on 16 December 2013. The database query for special-status species was based on a search of the USGS 7.5' quadrangles on which the project area is located (i.e., Jersey Island [480C], Bouldin Island [480D]), Rio Vista [480B], and Antioch North [481D]. The resulting USFWS query is included in Appendix A. The California Natural Diversity Database was also queried for presence information.

The USFWS database query identified 24 listed species as potentially present in the project area. The list was reviewed; habitat preferences for each species were compared with the affected areas and project site description. This BA covers two federally-listed threatened species that could be affected by the project that are known to occur, or with suitable habitat, in or near the project area:

- delta smelt (*Hypomesus transpacificus*) and its critical habitat, and
- giant garter snake (*Thamnophis gigas)*

The following species were also included on the USFWS species list for the project area (Appendix A) but are not considered in this BA because suitable habitat is not present within the action area and/or the species is not known to occur. Anadromous listed fish species are being consulted upon separately with National Marine Fisheries Service (NOAA Fisheries).

Invertebrates

- Lange's metalmark butterfly (*Apodemia mormo langei*) (E)
- Conservancy fairy shrimp (*Branchinecta conservation*) (E)
- Vernal pool fairy shrimp (*Branchinecta lynchi*) (T)
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (T)
- Delta green ground beetle (*Elaphrus viridis*) (T)
- Vernal pool tadpole shrimp (*Lepidurus packardii*) (E)

Amphibians

- California tiger salamander (*Ambystoma californiense*) (T)
- California red-legged frog (*Rana draytonii*) (T)

Birds

- California clapper rail (*Railus longirostris obsoletus*) (E)
- California least tern (*Sternula antillarum*) (E)

Mammals

- Salt marsh harvest mouse (*Reithrodontomys raviventris*) (E)
- San Joaquin kit fox (*Vulpes macrotis mutica*) (E)

Plants

- Soft bird's beak (*Cordylanthus mollis spp. mollis*) (E)
- Contra Costa wallflower (*Erysimum capitatum ssp. angustatum*) (E)
- Contra Costa goldfields (*Lasthenia conjugens*) (E)
- Colusa grass (*Neostapfia colusana*) (T)
- Antioch Dunes evening-primrose (*Oenthera deltoids ssp. howellii*) (E)
- Keck's checker-mallow (*Sidalcea keckii*) (E)

Fish Species to be consulted on with NOAA Fisheries

- Green sturgeon (*Acipenser medirostris*) (T)
- Central Valley steelhead (*Oncorhynchus mykiss*) (T)
- Central Valley spring-run chinook salmon (*Oncorhynchus tshawytscha*) (T)
- Winter-run chinook salmon (*Oncorhynchus tshawytscha*) (E)

1.3 Definition of the Action Area

The action area refers to the area directly or indirectly affected by the proposed action. This includes the project footprint and surrounding areas where covered species could be affected

by project-related impacts such as ground disturbance, noise, changes in water quality and quantity, changes in air quality, and lighting effects.

The action area for this BA consists of the restoration work sites which include parts of Big Break, and Little Frank's Tract; existing dredged material storage sites; and linear corridors of agricultural land and waterways between the storage sites and the two flooded islands (Figure 2, 3, and 4). The project area encompasses approximately 600 acres of both land and water. Most of the project area is either agricultural land or open water although there are several developed areas on the south edge of Big Break and Bethel Island.

1.4 Critical Habitat in the Action Area

1.4.1 Designated Critical Habitat

The delta smelt is listed under both the ESA and California Endangered Species Act as a threatened species (58 FR 12854, March 5, 1993). The designated critical habitat for delta smelt encompasses the Delta and the Sacramento River upstream to the mouth of American River (RM 60).

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 Project Restoration Sites and Construction Process

Big Break

The proposed habitat restoration would restore approximately 80.3 acres of emergent marsh habitat over 5 years. The existing remnant levees would serve as the anchor point to begin filling activities. In subsequent years, the newly restored marsh complexes would serve as the anchor points for filling.

Approximately 100,000 cy of dredged material from O&M dredging is available on a yearly basis. Increment 1 (dredging sources) at Big Break would take approximately 5 years to complete. The O&M dredged material would be pumped directly into Big Break, creating about 41.9 acres of emergent marsh habitat per year. Material for Increments 2, 3, and 5 would come from dry dredged material storage sites within pumping distances (2 to 7 miles) of Big Break (see Table 1).

Little Frank's Tract

The proposed habitat restoration would restore approximately 9.15 acres of emergent marsh habitat in 1 year. The existing remnant levee would serve as the anchor point to begin filling activities. Dredged material would come from the Bradford dry storage site (see Table 2).

Table 1. Big Break Material Sources					
Increments	**Year Constructed**	**Source**	**Placement Method**	**Potential Acreage Creation**	**Volume (cubic yards)**
1	1-5	O&M	Direct Placement	41.9	500,000
2	1	McCormick	Pumping	10.4	124,000
3	2	Scour Pond	Pumping	17.6	210,000
5	3	Decker	Pumping	10.4	125,000
Total				**80.3**	**959,000**

Table 2. Little Frank's Tract Material Sources					
Increments	**Year Constructed**	**Source**	**Placement Method**	**Potential Acreage Creation**	**Volume (cubic yards)**
1	1	Bradford	Pumping	9.2	153,000

2.2 Borrow Material Sources

Two material sources identified for the project include future dredged materials from O&M activities of deep water ship channels and existing stored materials from previous O&M activities (Figure 6). Prior to placement, material from the sources (i.e., dredging or existing storage site) would be sampled and analyzed for contaminants to determine suitability of use at the proposed habitat restoration placement sites. Material test results would be compared with existing baseline samples from Big Break and Little Frank's Tract to determine suitability. Placement materials must be "cleaner," i.e., have fewer contaminants, than the existing baseline sample from the storage site.

O&M Wet Dredged Material

Dredged material would come from O&M activities in the San Joaquin River between station points 200+00 and1000+00 (see Figure 4). The Sacramento District is currently updating a BA for submittal to the USFWS for this separate action. A subsequent Biological Opinion will be issued by the USFWS, allowing the Corps to begin maintenance dredging activities in

2015. Wet material would be directly pumped to storage sites. See "Construction Process" Section - *Operations and Maintenance Dredging* below. Material chemical and granular composition analyses would be conducted in advance of placement into storage areas.

Stored Dry Dredged Material

Existing dredged materials that are stored at the dry Sherman Island McCormack pit, Sherman Island Scour Pond, Decker Island, and Bradford Island sites would provide additional material. Figure 6 shows the location of the proposed dredging and dry dredged material storage sites. Tables 1 and 2 show the incremental material sources.

Sherman Island McCormack Pit. McCormack Pit encompasses 26 acres. The site contains 50 percent dredged material sand dunes and 40 percent non-native grass vegetation (refer to Figure 7 for vegetation mapping) . The remaining area is composed of constructed wetlands from gravity drained water. Most water is drained to an agricultural ditch and then pumped off-site.

Sherman Island Scour Pond. Scour Pond has 15 acres of storage area. The site contains 20 percent dredged material sand dunes and 60 percent non-native grass vegetation. The remaining area is composed of constructed wetlands from water draining to an existing agricultural ditch. The remaining 20 percent of the site is natural wetlands (refer to Figure 8 for vegetation mapping). The USFWS has determined that the area is off-limits to disturbance. On site water is gravity drained to an existing agricultural ditch and then pumped off-site.

Bradford Island. The Bradford Island dredged material storage site encompasses 110 acres. The site contains 40 percent dredged material sand dunes, 40 percent non-native grass vegetation, and 20 percent willow stands (refer to Figure 9 for vegetation mapping). The remaining storage area is composed of drainage structures allowing water to exit the site. On-site water is gravity drained to an existing agricultural ditch and then pumped off-site. The site is frequently used for cattle grazing. Accessibility is by boat only.

Decker Island. The Decker Island dredged material storage site encompasses 334 acres. The site contains 60 percent dredged material sand dunes and 30 percent non-native grass vegetation (Figure 10). The remaining disposal area is composed of drainage structures allowing water to exit the site. Material is placed around existing on-going sand mining operations. The site is accessible only by boat.

2.3 Construction Activities

Site Preparation and Equipment Mobilization

Mobilization would begin in August of each construction year. The proposed construction period would extend from August 1 to October 31. Future Biological Opinions from the USFWS and NOAA Fisheries would define the exact in-water work period. Work hours would be 7:00 a.m. to 4:00 p.m., Monday through Thursday.

Work and support areas that contain vegetation, large rocks, snags, and uneven terrain would be cleared, grubbed, and in some cases leveled to provide a flatter working surface. Clearing, grubbing, and leveling activities would be conducted in accordance with a Site Preparation Plan normally developed either by the Corps or a designated construction contractor in advance of project construction. Corps' multi-year construction projects that are not subject to permanent construction would be regraded and revegetated, where feasible and practicable.

Following site preparation, the equipment and materials necessary for movement of dredged materials would be transported to designated staging areas and set up, assembled, parked, stored, and/or stockpiled for use. Throughout the multi-year construction period, construction equipment, materials, and supplies would be replenished, replaced, dismantled, removed, and changed, as needed, in the appropriate staging areas to support the various material pumping actions. Figures 7-9 show the proposed staging areas for each storage site.

Staging Areas and Haul Routes

The existing storage sites are previously disturbed. The staging area would be positioned in the safest, most feasible position to expedite the work. The existing storage sites have existing staging and disturbed areas that could be reused. No effects to resources are anticipated from temporary roads and staging areas. If necessary, temporary haul roads would be constructed in accordance with common construction practices. Road bases would be of compacted earth with gravel added, as needed, for stability. Road widths would vary to accommodate one-way and two-way travel by off-road trucks, scrapers, dozers, and loaders. Watering trucks and other dust controlling practices would be used, as needed, to minimize fugitive dust emissions.

Construction Site Electric Power

Temporary diesel or propane 3-phase 120/240-volt electric power generators would be provided during the multi-year construction period to run construction equipment including conveyors, water pumps slurry mixer, and pumping station. To supply the necessary electrical power, a small temporary substation-switching station would be set up in the staging area for each storage site.

Fluidization/Pumping Plant

Existing dredged materials from the storage sites would be pumped to the proposed restoration areas through 18-inch double wall, high density plastic extrusion (HDPE) pipe. A hydraulic slurry hopper at the storage site would create the fluidization process necessary to transport the dredged materials. Water necessary for the process would be siphoned from the adjacent rivers by a hydraulic pump and transferred to the slurry hopper. Photograph 1 shows a portable water pump siphoning water. A loader would place dredged materials onto a conveyer system that deposits materials into the slurry hopper (see Photograph 2).

The hopper mixes dredged materials with water, creating a 90 percent water-based slurry solution that is pumped through the HDPE piping network. In-water piping that is not anchored to the bottom would float at the surface by means of floatation devices (Photograph

3). A work boat and crew would tender the position of the floating pipe and outfall pipe during pumping operations to ensure safe and correct alignment and placement of materials.

The dredged materials would be pumped August through November over 4 years. During the first year of construction, dredged materials from the McCormack Pit site would be pumped to the Big Break restoration area. The McCormack Pit site would then serve as a permanent pump site for the subsequent years. In year 2, an additional pump would be positioned at Sherman Island Scour Pond and then moved the following year to Decker Island. Dredged material from the Bradford Island site would be pumped to Little Frank's Tract in year 1. Table 3 shows the pump station position by year and material destination. Figure 5 shows the proposed piping layout schematic.

Table 3. Pump Station Positioning by Year

Source	Destination	Year	Length to Placement Site	Volume (cubic yards)	Site Accessibility
McCormick	Big Break	1	2 miles	124,000	County roads
Bradford Island	Little Frank's	1	2 miles	153,000	Ferry, County roads
Scour Pond	Big Break	2	5 miles	210,000	County roads
Decker	Big Break	3	5 miles	125,000	River access/boat

The HDPE piping schematic would require permits and easements to place pipe sections through water courses, over levees, and across private property. Major river crossings at navigable channels would require semi-permanent submerged piping for the life of the project. Pipe segments would be anchored to the bottom to avoid effects to shipping and recreation. A specialized marine craft with a crane and underwater processing head would be required to install and secure the pipe segments on the river bottom (see Figure 10). Semi-permanent anchoring would occur at the Decker Island to Sherman Island (Sacramento River) and Sherman Island to Jersey Island (San Joaquin River) crossings. All other in-water piping would be submerged for safety by using weights. This would allow boat tender crews to easily move piping, as necessary, for safety and pumping.

Overland piping would be placed at the sides of existing roads, in existing irrigation ditches, or in disturbed areas. Crossings over private property would require easements and possible compensation for lost cropland areas.

Dry Material Placement

Turbidity Curtains and Hay Bales. The hydraulic slurry would be discharged at the restoration site at a rate of 450 cy per hour/4,000 cy per day. Placement would begin using remnant levees as an anchor/starting point. Turbidity curtains and hay bales would be used to control sediment plumes, comply with water quality requirements, and aid with settlement (see Figure 11). The tops of the hay bale line would be set at mean low tide level to allow fish with an opportunity to escape the work area. Turbidity curtains would float slightly above the bottom, allowing aquatic species to escape entrapment. Pumped materials would be placed to bring the soil depth to 4.5 feet relative to mean sea level.

High Solids Dredging Placement Option. High solids dredging is a technique that uses mechanical dredging to produce a slurry that is 50 to 80 percent solids, thus resulting in a relatively clean effluent. This technique can be used to fill geotextile containers, which can then be used to build a form for the outer ring of an island. Photograph 5 shows construction of an island using geotextile containers. High solids dredging is one of the only techniques suitable for building islands out of a highly silty material. This technique can be used when contaminants are present in the sediment. This method would be used in high-flow areas potentially subject to increased turbidity from placement, such as Increment 1 at Frank's Tract. Turbidity curtains would be used in conjunction with the geotextile containers to manage water quality.

O&M Dredging

A pipeline hydraulic suction dredge would be used for O&M dredging under the existing General Order Waste Discharge Requirement No. 05-01-116 for the Sacramento and Stockton Deep Water Ship Channels. The general order allows clamshell dredging to be used, if practicable, and if contract or project conditions change. Dredging rates vary depending on the type of material being dredged and length of downtime during repositioning of equipment and switching of crews. However, typical production rates vary from 300 to 600 cy per operational hour. The O&M dredging operations are expected to be conducted 24 hours per day, 7 days per week.

Wet material would be pumped from the dredging ship directly to the proposed restoration sites at Big Break. Materials would be pumped through a floating 18-inch double wall HDPE pipe. The piping system would be placed along the shoreline of the Stockton Deepwater Ship Channel in the San Joaquin River. The pipeline would be submerged and anchored to the bottom, when necessary, to avoid navigation hazards. A floating repeater pump station would be positioned every 3 miles to aid slurry flow. Work boats would install and maintain the floating pipeline to the Big Break restoration sites from the dredging ship. An additional work boat and crew would tender the position of the outfall slurry pipe during pumping operations to ensure correct placement of materials. Placement would occur from August 1 to October 31 over a 5-year period.

Plantings
The planting design includes planting bulrush (*Typha* sp.) over the newly restored areas. Plantings would be installed at 3 feet o.c. (average spacing) over 10 percent of the emergent marsh area. The plant material could be nursery grown or collected from nearby sources and directly planted at the site. Additionally, 25 acres of the adjacent remnant levee would be treated to remove weed species such as blackberry, pampas grass, and pepper weed. All other disturbed areas would be reseeded with native grasses, as needed, to help minimize erosion.

2.4 Maintenance and Monitoring

Plantings
New vegetative plantings would not require maintenance. Soil accretion and vegetative recruitment have historically aided plantings on restored intertidal marsh habitats. Plantings typically survive and reach desired density in 2 years. Monitoring records and reports would be required to document planting processes and progress.

Chemical monitoring:
Sediment in the proposed restoration areas will be characterized and analyzed to determine if negative impacts are expected during restoration. Following placement and settling, sediment will be sampled for compounds that require detection either through existing Total Maximum Daily Load (TMDL) amendments or the 401 permit process. A water quality monitoring plan will be prepared for dredging and placement activities.

2.5 Avoidance and Minimization Measures

The following addresses proposed conservation measures that are a part of the proposed action and are designed to minimize and avoid project-related impacts to federally listed and proposed species and their habitats.

Fish Protection Measures

The following measures would be implemented to minimize short-term impacts to special status fish species from construction:

- During construction activities, stockpiling of construction materials, portable equipment, vehicles, and supplies shall be restricted to the designated construction staging areas.
- A qualified biologist shall provide worker environmental awareness training to contractors and construction crews regarding all special status fish species known to potentially occur near the construction sites.
- A representative (onsite monitor) shall be appointed by the Corps to be the point of contact for any worker that observes a dead, injured, or entrapped special status fish. Dead or injured fish shall be photographed and the photographs provided to the Corps, NOAA Fisheries, and USFWS. If a live specimen is captured in good

condition, and a positive identification cannot be made in the field because of size or lack of other distinguishing characteristics, the fish shall be immediately returned to the river downstream of the construction site.

Giant Garter Snake

The following mitigation measures are proposed for the protection of the giant garter snake and its aquatic habitat:

- Construction activities would be kept to a minimum of 200 feet from the banks of giant garter snake aquatic habitat.

- The construction area will be surveyed for giant garter snakes 24 hours prior to construction activities by a qualified biologist. Survey of the project area would be repeated if a lapse in construction activity of two weeks or greater occurs. If a giant garter snake is encountered during construction, then activities would cease until appropriate corrective measures have been completed or it has been determined that the snake would not be harmed.

- In order to prevent harm to giant garter snake, construction activities will be prohibited within a 200-foot buffer zone around the small pond, which is situated on the southern boundary of the Scour Pond site, is appropriate. In addition, prior to commencing construction activities, the Scour Pond site shall be surveyed for giant garter snake by a qualified biologist. If a giant garter snake is encountered, then all construction activities must cease until corrective measures are taken and the site is resurveyed.

Pollution Control Measures

A pipe system will be used to move dredged material from disposal sites to the placement sites. The pipe system will be required to prevent the transported material from entering the waterways. Monitoring of the pipe will be required during all pumping activities. If it is found that material is entering the water way from the piping operation, testing will occur to determine compliance with the Basin Plan. The spoiled material would be tested to ensure that it is clear of contaminants that could affect water quality during or after placement. The pipes would be pressurized with shutoff capabilities in the event of an unexpected leak or break in the pipe.

At the placement site silt curtains, hay bales or similar methods will be used to keep the spoils material from floating out into the main waterways and away from the island raising site. The Corps is currently working the Central Valley Regional Water Quality Control Board (CVRWQCB) to obtain 401 Certification. The conditions set forth in the certification would be followed to prevent adverse affects to water quality. Water quality monitoring would occur during construction activities to ensure that the project is in compliance with 401 Certification. Similar activities currently being performed by the Corps in the Delta (dredging) have completed coordination with the CVRWQCB and obtained 401

Certification. Conditions of similar projects include monitoring to comply with the Basin Plan, reporting monitoring results, and maintaining low turbidity, pH, and dissolved oxygen levels.

Coordination with the CVRWQCB will establish construction requirements to prevent violation set forth in the Basin Plan or otherwise substantially degrade water quality to the detriment of beneficial uses. The placement of material to raise the elevation of Big Break Island will not affect salinity in the project area or downstream. No channel banks, channel beds, or levees will be altered in a way that would cause erosion.

3.0 SPECIES ACCOUNTS

3.1 Delta Smelt

Status. Delta smelt are listed as a threatened species under both the California and Federal Endangered Species Acts.

Distribution and Habitat. Delta smelt are endemic to the Sacramento–San Joaquin Delta estuary. Delta smelt inhabit the freshwater portions of the Delta and Sacramento and San Joaquin rivers and the low-salinity portions of Suisun Bay. Rearing habitat for juvenile and adult delta smelt typically is found in the estuarine waters of the lower Delta and Suisun Bay where salinity is between 2 and 7 parts per thousand (ppt), although Delta smelt tolerate 0 ppt to 19 ppt salinity. They typically occupy open shallow waters but also occur in the main channel in the region where fresh water and brackish water mix. The zone may be hydraulically conducive to their ability to maintain position and metabolic efficiency (Moyle 2002).

Delta smelt live their entire life cycle in the Sacramento–San Joaquin Delta. Delta smelt typically have a 1-year lifecycle, although a small percentage of the adults may live to year two. Adult Delta smelt migrate upstream into channels and sloughs of the eastern Delta during fall and winter in preparation for spawning. Adult delta smelt begin a spawning migration, which may encompass several months, and move into the upper Delta during December or January. Spawning occurs between January and July, with peak spawning during April through mid-May (Moyle 2002). Spawning occurs in shallow edgewaters in the upper Delta channels, including the Sacramento River above Rio Vista, Cache Slough, Lindsey Slough, and Barker Slough. Spawning also was observed in the Sacramento River up to Garcia Bend during drought conditions, possibly attributable to adults moving farther inland in response to saltwater intrusion (Wang and Brown 1993). Eggs are broadcast over the bottom, where they attach to firm sediment, woody material, and vegetation. Hatching takes approximately 9 to 13 days, and larvae begin feeding 4 to 5 days later. Newly hatched larvae contain a large oil globule that makes them semi-buoyant and allows them to stay off the bottom. Larval smelt feed on rotifers and other zooplankton. As their fins and swim bladder develop, they move higher into the water column. Larvae and juveniles gradually move downstream toward rearing habitat in the estuarine mixing zone (Wang 1986).

Population trends and abundance of delta smelt are poorly understood due to their short life span (1 year). Based on data from 21 years of monthly sampling in Suisun Marsh, delta smelt appear to be experiencing long-term declines (Matern et al. 2002). Summer tow-net and fall/mid-water trawl data show fluctuating annual abundance from 1991 through 1996, with an increasing trend in the late 1990s, followed by an overall decline in abundance since 1999 (Bryant and Souza 2004).

The decline in delta smelt abundance has been attributed to reduced Delta outflow, entrainment losses to water diversions, changes in food organisms, toxic substances, disease, competition and predation by nonnative species, and potential inbreeding with the nonnative wakasagi. Splittail have been adversely affected by loss of floodplain attributable to levees and channelization (Moyle 2002).

USFWS has prepared a recovery plan for Delta smelt that identifies criteria for evaluating the status of the Delta smelt population (USFWS 1996). These criteria include annual indices of abundance and geographic distribution in the estuary as determined through CDFW's fall mid-water trawl surveys. USFWS continues to evaluate the available scientific information regarding the status of Delta smelt and the performance of various management actions designed to improve protection, reduce mortality, and enhance habitat quality and availability within the estuary.

Potential for Occurrence in Project Area. As a result of their life history and geographic distribution, Delta smelt may occur seasonally within Little Franks and Big Break as eggs, larvae, juveniles, and adults. Juvenile and adult Delta smelt are most abundant in the central Delta in the vicinity of Franks Tract during the fall, winter, and spring (CDFW unpublished data). Larval, juvenile, and adult Delta smelt are most abundant in the western Delta and Suisun Bay in the vicinity of Big Break during spring, summer, and fall (CDFW unpublished data).

3.2 Giant Garter Snake

Status. The giant garter snake (*Thamnophis gigas*) is Federally and State-listed as threatened.

Distribution and Habitat. The giant garter snake is endemic to wetlands in the Sacramento and San Joaquin valleys (Hansen and Brode 1980). The current distribution extends from near Chico in Butte County south to the Mendota Wildlife Area in Fresno County. No occurrences of giant garter snakes are known from the northern portion of the San Joaquin Valley north to the eastern fringe of the Sacramento-San Joaquin River Delta, where the floodplain of the San Joaquin River is limited to a relatively narrow trough (Hansen and Brode 1980, 58 FR 54053). The resulting gap of approximately 60 miles separates the southern and northern populations (Hansen and Brode 1980).

Giant garter snakes are endemic to wetlands in the Sacramento and San Joaquin Valleys and inhabit marshes, sloughs, ponds, small lakes, low-gradient streams and other waterways, and agricultural wetlands such as irrigation and drainage canals and rice fields, as well as the adjacent uplands. There are four essential habitat components.

- Adequate water during the species' active season (early spring through mid-fall) to provide food and cover.
- Emergent herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season.
- Upland habitat with grassy banks and openings in waterside vegetation for basking.
- Higher-elevation uplands for cover and refuge from floodwaters during the dormant season in winter (U.S. Fish and Wildlife Service 1999).

The giant garter snake is extremely aquatic and rarely found away from water. Giant garter snakes actively forage in the water and retreat to water to escape from predators and when disturbed. The predominant prey species include crayfish, carp (*Cyprinus carpio*), mosquitofish (*Gambusia affinis*), bullfrogs, and Pacific tree frogs. Giant garter snakes are typically absent from larger rivers and other water bodies that support introduced populations of large predatory fish and from wetlands with sand, gravel, or rock substrates.

Potential for Occurrence in Project Area. There are only two isolated records of giant garter snake on the south side of the San Joaquin River in the northern aspect of the species' range. Although the historical and current distribution of giant garter snake in the Delta is poorly understood, the south bank of the San Joaquin River lies within the apparent gap between the northern and southern populations. The nearest locality record to the south lies more than 50 air miles distant in Madera County; no giant garter snakes are documented in Stanislaus County between the documented extremes of the documented extremes of the Sacramento Valley and San Joaquin Valley populations.

A giant garter snake was found on Webb Tract (adjacent to Franks Tract to the North) during April, 2002 near the ferry dock. Sherman Island (adjacent to Lower Sherman Island to the east) is identified for recovery efforts in the Draft Recovery Plan for Giant Garter Snakes (USFWS 1999). One giant garter snake was found in 1998 near Sherman and Decker Islands, but it is not known whether this snake represented a resident population in the western Delta or was washed into the Delta from high-water flows in the winter. Another garter snake was observed at the north end of the Antioch Bridge before the mid 1980s (IES 2000). Intensive trapping surveys conducted within Contra Costa County independently by Eric Hansen and by Biological, Inc. have failed to detect giant garter snake. Likewise, Swaim intensively trapped in regions northeast of Oakley in 2003 and 2005, including Marsh Creek, Big Break, and Contra Costa Canal, without success (Swaim 2004, Swaim 2005a-d).

An Environmental Assessment, dated 19 September 2003, prepared by the Corps for the proposed expansion of the Sherman Island Scour Pond dredge material placement site identified a pond on the southern boundary of the Scour Pond site, as potential aquatic habitat for the giant garter snake.

4.0 EXISTING ENVIRONMENT

4.1 Proposed Restoration Areas

The dominant vegetation types in the project area include emergent tidal marsh, riparian scrub/woodland, and submerged and floating aquatic vegetation. Big Break, Franks Tract, and Little Franks Tracts are currently characterized by vast expanses of open water habitat. Although these areas have been flooded for a number of years, these flooded islands have not accumulated enough sediment to support the reestablishment and expansion of tidal marsh vegetation. Vegetation cover type maps for each flooded island are shown in Figures 12 (Big Break), and 13 (Little Frank's Tract).

Big Break

Big Break is subject to daily tidal fluctuations and is at a sufficient distance from the Bay that the tidal waters inundating this area have minimal salinity levels. A remnant levee runs along the southern border of the open-water area. Riparian scrub vegetation dominated by arroyo willow and Himalayan blackberry grows along the upper portions of this levee, but the lower elevations of the levee support a low cover of tidal marsh vegetation. Extensive stands of perennial emergent marsh are present within the open water habitat. Different elevations have created a mosaic of emergent species in this perennial freshwater marsh with common three-square in shallowly inundated areas, cattail and tule in deeper waters, and California bulrush in the deepest waters (Vollmar 2000).

Several sunken barges within the open water area support islands of riparian scrub banded by freshwater marsh at lower elevations. Flats along the shore support large stands of arroyo willow scrub. Riparian habitats also support small stands of tree species such as Fremont cottonwood, Goodding's willow, northern California black walnut, coast live oak, prunus, and red alder. A portion of the Big Break study area supports upland habitat. This upland area is located in the southwestern corner of the study area and primarily supports alkali grassland. Alkali grassland is dominated by perennial grasses including saltgrass and creeping wildrye. Associated species are predominantly nonnative annual grasses and forbs such as perennial pepperweed, wild oats, ripgut brome, telegraph weed, and spring vetch.

Other upland habitats present at this location include nonnative tree stands and disturbed or developed areas. The scattered stands of nonnative trees are dominated by black locust, tree of heaven, and white poplar. Isolated individual trees are predominantly nonnative species such as eucalyptus, tamarisk and prunus. Disturbed/ developed areas are dominated by nonnative and invasive plant species or support buildings and/or paved roads. Infestations of egeria and water hyacinth are present within the extensive open water habitat of Big Break.

Little Franks Tracts

The two dominant vegetation types occurring at Little Frank's Tract are emergent marsh and riparian scrub. Tule and broadleaved cattail are the dominant species in the emergent marsh, which occurs on the lower portions of remnant levees and in-channel islands. Associated

species in this vegetation type include sedges, rushes, smartweeds, and Delta mudwort. Riparian scrub is predominantly found along the higher elevations of remnant levees and in-channel islands. The dominant shrub/tree species in this area include willow and red alder, but scattered Fremont cottonwood may be present. The understory is extensively infested with Himalayan blackberry and nonnative thistles that create impenetrable thickets along the remnant levees. Native herbaceous wetland species in the understory include water horehound, Suisun Marsh aster, Delta tule pea, and California loosestrife. Although there was no description in the general plan, a small upland area was evident on the aerial photograph in the southern portion of the study area. The majority of this flooded island is open water, which supports infestations of egeria and water hyacinth (Center for Design Research et al. 1988).

4.2 Dredged Material Source Sites

Dredged material would be transported from existing dredged material O&M placement sites currently used by the Sacramento Deep Water Ship Channel (DWSC) and Stockton DWSC (Figures 4 and 6). The project would confine areas of dredged material removal to only those usable portions of the sites that do not support sensitive habitats. Impacts to sensitive habitats would be minimized and/or avoided. The existing habitat conditions at these sites are described below and shown in Figures 7-10.

Sherman Island Site. This site has three distinctive areas: (1) the northern portion is the Rio Viento RV Park and dominated by unvegetated paved surfaces with an upland field of non-native grasslands and valley and foothill grasslands on the eastern side; (2) the middle portion is bermed on all sides and dominated by non-native grasslands with pockets of riparian scrub and riparian woodland; and, (3) the southern portion is characterized by an emergent wetland bounded by berms and dominated by non-native grassland on all sides. Water on the site may pond within areas excavated in the uplands, and as such, the areas are not considered jurisdictional waters of the United States. Additional seasonal wetlands in the form of a drainage ditch and a small area in the northeastern portion of the site contain cattails, tules (Scirpus spp.), and willows. The site is surrounded by fields currently used for grazing. The usable portion of the site is located in the middle area of the site. It is mainly composed of irrigated agriculture with a small area of non-native grassland and bermed on all sides with willow scrub-shrub on the northern side and peppergrass on the remaining east, west, and southern sides. Within the bermed area, the vegetation is dominated by wild lettuce (*Lactuca* sp.) with minor pockets of willow shrubs (USACE 2008; U.S. Fish and Wildlife Service 2010). No wetlands, riparian areas, or other sensitive habitat are found within the usable portion of the site.

Decker Island Site. This site encompasses most of Decker Island, except for a northern parcel owned by USFWS, which is a wetland restoration site. A large berm running from northeast to southwest through the site divides it into two distinctive parts: (1) the area east of the berm, which is characterized by wetlands that transition to an emergent marsh in the southern portion; and (2) the area west of the berm, which is dominated by non-native grassland, marked by a tamarisk community and recent disturbance at the site's center. At the time of survey, active pumping in the southern extent of the western portion led to

flooding, creating a temporary wetland. A wetland margin borders the western edge of the site and the Sacramento DWSC. The usable portion of the site is located northwest of the berm that divides the site into two sections. This area is primarily composed of non-native grassland, irrigated agriculture, and general shrubs and dominated by peppergrass, bromes, and thistle (Silybum spp.) (U.S. Fish and Wildlife Service 2010). There is a large tamarisk community around the center of the northern half of the site, surrounding a recently disturbed area next to an old landing. No wetlands occur within the usable portion of the site. Sensitive habitats occurring within the usable portion of the site include 0.87 acres of riparian habitat and 0.90 acres of open water.

Sherman Island - Scour Pond and McCormick Pit. Sherman Island is approximately 20 feet below sea level. The island is bounded by the San Joaquin River on the south and the Sacramento River on the north, and is protected by levees. Scour Pond and McCormack Pit are located along the southern boundary of Sherman Island as shown in Figure 3-9. Both sites have historically received dredge materials and has the material has used for levee rehabilitation and reinforcement on Sherman Island.

The existing Scour Pond site is approximately 30 acres. The Reclamation District 341 currently has plans to expand the site by approximately 35 acres to the west and approximately 75 acres to the east making the entire site approximately 140 acres in size. The expanded site would then have a dredge material capacity of approximately 250,000 cubic yards. The vegetation type on the site consists of agriculture and non-native grassland. A small pond is situated on the southern boundary of the site.

The existing McCormack Pit site (Assessor's Parcel No. 158-030-003) is approximately 26 acres. The Reclamation District 341 has plans to expand the site by approximately 25 acres, making the entire site approximately 51 acres in size. The expanded McCormack Pit site would then have a dredge material capacity of approximately 250,000 cubic yards. The vegetation type on the site consists of non-native grassland and ruderal barren cover types.

Bradford Island. The Bradford Island dredged material storage site encompasses 110 acres. The site is specifically used for dredge materials from the Stockton Deep Water Ship Channel along the San Joaquin River. The vegetation type on the site consists of non-native grassland, ruderal barren cover types, and native willow stands. The site is frequently used for cattle grazing. Accessibility is by boat only.

5.0 EFFECTS OF THE PROPOSED ACTION

The following section evaluates direct and indirect effects of the action on listed species based on the anticipated changes to the physical environments and habitats in the action area and the species life history, habitat use, and distribution in the action area.

Effects of the proposed project include both short- and long-term effects. Short-term effects include direct impacts from construction activities (e.g., increased suspended sediment and

turbidity). Long-term or permanent impacts generally result from the conversion of open water habitat to tidal marsh.

Indirect effects are project-related effects that would typically occur later in time and which could occur outside of the area directly affected. For this project, indirect effects could include long-term changes in sediment transport mechanisms and deposition patterns within the local project area and habitat conditions for wildlife, including listed species.

The conversion of open water habitat to tidal marsh will indirectly affect habitat conditions for listed species, including the Delta smelt and to a lesser extent the giant garter snake. To assess ecosystem restoration benefits, Habitat Evaluation Procedures (HEP) were used to evaluate potential long-term effects on fish and wildlife habitats over a 50-year period of analysis. The Habitat Suitability Index Model for the Marsh Wren was used to assess outputs of alternatives. The marsh wren requires emergent herbaceous vegetation, typically cattails and bulrushes for nesting and cover in water >15 centimeters. The emergent marsh habitat being proposed would meet typical marsh wren requirements and is a scare habitat type within the Delta. This model was selected because it is an approved bluebook model that has been used in other projects in the area, and is focused on the target habitat type. The HEP assumption was made that existing and future without-project conditions provide little to no tidal emergent marsh habitat at the sites. The future with-project assumption is that elevations are restored to support a robust tidal emergent marsh habitat. The HEP showed that 89.5 acres of restored tidal marsh would result in an output of 88.1 AAHU's.

Effects on Existing Habitats

The proposed action (Alternative 3) would permanently convert 89.5 acres of open water to freshwater tidal marsh habitat as shown in Table 4. Impacts to sensitive vegetative habitat types located on the periphery of Big Break and Little Franks Tract such as existing tidal marsh and riparian vegetation would be avoided. Because the proposed action relies on obtaining sediment from dredged material source sites in addition to O&M dredged material, this alternative could potentially disturb vegetative habitats located on the dredged material sites. Table 4 and Figures 7-10 identify the terrestrial habitats present at the proposed dredged material source sites. The impact analysis assumes that construction activities required to excavate and transport material would be designed to avoid disturbance to sensitive habitats by limiting construction activities to usable non-sensitive areas within these sites.

Habitat development at Big Break would occur gradually over time as dredged material placement occurs. Project construction would require at least 5 years to complete. Restored tidal emergent marsh would gradually establish and provide habitat for fish and wildlife species. Overall, the permanent conversion of wetland habitats would result in a substantial improvement to the wetland functions and values on the project site for fish and wildlife, including special status species. The gain of higher value tidal marsh habitat would more than offset the loss of open water habitat.

Table 4. Net Change in Habitat Types at Big Break, and Little Franks Tract, and Dredged Material Source Sites under the No-Action Alternative and Action Alternatives after Project Construction.

	Alternative 1: No-Action Alternative (i.e., Existing Conditions)	Alternative 2		Alternative 3 (Proposed Action)	
Community or Habitat Type	**Acres**	**Acres**	**Net Change**	**Acres**	**Net Change**
Flooded Island Restoration Sites					
Big Break					
Tidal perennial aquatic (open water)	1490.0	1448.1	-41.9	1409.7	-80.3
Tidal emergent marsh	305.7	347.6	41.9	386.0	80.3
Valley foothill riparian	100.2	100.2	0	100.2	0
Annual grassland	19.3	19.3	0	19.3	0
Coastal Scrub	2.6	2.6	0	2.6	0
Little Franks Tract					
Tidal perennial aquatic	294.8	294.8	0	285.6	-9.2
Tidal emergent marsh	103.4	103.4	0	112.6	9.2
Valley foothill riparian	5.2	5.2	0	5.2	0
Coastal Scrub	7.9	7.9	0	7.9	0
Dredged Material Source Sites					
McCormack Pit					
Annual Grassland	30.0	-	-	30.0	0
Barren	7.8	-	-	7.8	0
Scour Pit					
Agricultural Cropland	53.1	-	-	53.1	0
Annual Grassland	4.8	-	-	4.8	0
Emergent Wetland	0.6	-	-	0.6	0
Barren	0.5	-	-	0.5	0
Valley Foothill Riparian	0.4	-	-	0.4	0
Coastal Scrub	0.3	-	-	0.3	0
Decker Island					
Annual Grassland	328.9	-	-	328.9	0
Emergent Wetland	54.3	-	-	54.3	0
Valley Foothill Riparian	52.1	-	-	52.1	0
Urban	11.9	-	-	11.9	0
Barren	10.5	-	-	10.5	0
Tidal perennial aquatic (open water)	0.3	-	-	0.3	0
Non-native/Ornamental Conifer/Hardwood Mixture	0.2	-	-	0.2	0
Bradford Island					
Annual grassland	55.6	-	-	55.6	0
Valley foothill riparian	48.6	-	-	48.6	0
Barren	20.3	-	-	20.3	0
Emergent Wetland	4.6	-	-	4.6	0
Coastal Scrub	0.5	-	-	0.5	0

5.1 Delta Smelt

Short-term effects

Construction would occur over a 5-year period during the summer and fall of each year, a time when Delta smelt may be rearing. Construction-related effects on delta smelt rearing and migration will be minimized by restricting in-water construction activities to the August 1 through November 30 work window, thereby avoiding the seasons when these life stages are most likely to occur. Construction activities would not occur during spawning (January–July).

Direct mortality of individuals could occur to fish are present during construction. Placement of dredged sediment may also potentially disturb, injure, or kill any fish in the area of the construction sites during construction.

The sound generated by construction activities could temporarily disrupt essential behavior patterns (e.g., feeding, escape from predators, migration) of adult and juvenile fish at the Project sites and the surrounding areas. Noise effects may occur at the project site and general vicinity.

Construction would result in elevated levels of suspended sediment, causing increased turbidity and potential sedimentation of benthic (bottom) habitat used by juvenile and adult fish for feeding, cover, and other essential behaviors. Increased turbidity may decrease feeding opportunities and increased suspended solids could clog and abrade gill filaments (U.S. Fish and Wildlife Service 2008). Decreased light penetration through the water column may reduce photosynthesis and reduce the extent of aquatic vegetation upon which delta smelt spawn, as well as the amount of phytoplankton which are fed upon by the delta smelt's zooplankton prey. Resulting short-term effects could include reduced feeding success, and compromised ability to escape from predators.

Toxic substances used by construction equipment including gasoline and diesel, lubricants, and other petroleum-based products, could enter the waterways adjacent to the project site as a result of spills or leakage from machinery or storage containers. Mortality or physiological impairment of fish or disruption of essential behavior patterns is possible if exposure to sufficient concentrations occurs.

Non-mobile benthic organisms that are food sources for fish would be smothered by the placement of dredged material and potentially from placement and anchoring of the sediment transport pipelines on the bottom and potential up and down movement of the pipeline with the tides. These areas affected should recover quickly after placement of the dredged material and removal of the pipelines as these areas are recolonized by benthic organisms.

Long-term effects

The restoration of tidal marsh habitat will increase instream structure and aquatic habitat complexity. Planted aquatic vegetation will begin to infiltrate the shallow water habitat

created by dredged material placement and gradually cover the site. These factors in combination would provide high quality habitat. The tidal marsh habitat would provide escape cover, creating ideal refugia from large predators for small larval and juvenile fishes. Inundated vegetated wetland should provide an increase in potential Delta smelt spawning habitat. Overall, the project would have a net long-term benefit to Delta smelt.

5.2 Giant Garter Snake

Short-term effects

Much of the action area is unlikely to provide giant garter snake aquatic habitat. Because the giant garter snake is typically absent from larger rivers and other water bodies that support introduced populations of large predatory fish, the snake is unlikely to present during construction within the flooded areas to be restored to tidal marsh. Effects on the snake from construction activities within the restoration areas are therefore unlikely.

Supporting aquatic habitat has a greater potential to occur in areas adjacent to the project area, in drainage ditches and irrigation canals near the dredge material placement sites and along the pipeline routes. Suitable habitat may be impacted by project construction within 200 feet of these features. Direct impacts include the removal of basking sites necessary for thermoregulation, and destruction of burrows or crevices that provide hibernacula. Individual snakes may be killed or hurt by moving construction equipment and personnel. Construction disturbance may also cause giant garter snakes to move into areas where they have a greater chance of being killed by vehicles (i.e., roads) or predation. Because there are only a few documented sightings of giant garter snake in the general area, there is a low potential for injury or mortality of the snake during construction activities.

Long-term effects

The project is unlikely to have any long-term effect on the giant garter snake. The snake is unlikely to occur in the areas to be restored to tidal marsh because giant garter snake are typically absent from larger rivers and water bodies that support large predatory fish. Potential effects on suitable habitat near dredge material placement sites and along the pipeline routes would be limited to the construction period; no long-term effects would occur once construction is complete and disturbed areas are restored.

6.0 CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA.

The Bay-Delta Conservation Plan, the Delta Wetlands Project, the Corps' ship channel navigation projects, the Sacramento River Bank Protection Project, are projects undergoing or have undergone Section 7 consultation and therefore are not discussed below.

6.1 Anticipated Non-Federal Actions in the Action Area

The following non-federal actions are reasonably certain to occur within the action area considered in this Biological Assessment.

Dutch Slough Tidal Marsh Restoration Project. The Dutch Slough Tidal Marsh Restoration Project proposes wetland and upland restoration and public access to a 1,178-acre Dutch Slough property owned by DWR near Big Break. This project seeks to restore habitat for native fishes and other aquatic and wetland species, improve the understanding of restoration science in tidal marsh wetland ecosystems in the region, and provide public access to the restored area. This project in conjunction with the DILFS action at Big Break would provide significant benefits to listed species. A Final Environmental Impact Report for this project was certified by DWR on March 17, 2010. The EIR addressed the potential environmental impacts of proposed changes to the tidal wetlands restoration project in the Dutch Slough area at the mouth of Marsh Creek in Eastern Contra Costa County.

6.2 Cumulative Effects on Listed Species and Critical Habitats

Efforts are underway in the Delta to restore tidal marsh habitat and reverse the decline in ecosystem function and values. The potential for long-term cumulative impacts on the listed species appear to be beneficial due to these efforts. The DILFS action when added to these other actions is not expected to degrade the environmental baseline for the Delta smelt or the giant garter snake.

7.0 DETERMINATIONS

The determination of effects of the proposed Lower Pajaro River Flood Control Project on federally listed species is based on the potential for these species to occur within the action area, and the potential for adverse or beneficial effects of the action on these species. Table 5 defines the possible determinations for listed species that may be concluded under Section 7 consultation (USFWS and NMFS 1998).

Table 5. Definition of Determinations for Listed Species

Determination	Definition
No effect (NE)	No direct or indirect effects
Not likely to adversely affect (NLAA)	Effects are beneficial, insignificant (very small in scale and cannot be meaningfully measured, detected, or evaluated), or discountable (extremely unlikely to occur)
Likely to adversely affect (LAA)	Adverse effects that are not insignificant or discountable

7.1 Determinations for the Proposed Action

Table 6 lists the determinations for the species that are considered in this Biological Assessment. The rationale for these determinations is provided above in the discussion of effects for each species (see Chapter 5) and is briefly summarized in the text that follows.

Table 6. Determinations for Species Considered in this Biological Assessment

Species	Determination
Delta smelt and critical habitat	LAA
Giant Garter Snake	NLAA

Delta Smelt

The proposed action is likely to adversely affect because construction activities may result in the injury and mortality of individual Delta smelt. While incidental take of Delta smelt may occur during construction, the proposed action to restore tidal marsh is anticipated to have long-term benefits to Delta smelt.

The proposed action would is not likely to adversely affect on designated critical habitat because the project has been designed to minimize any impacts to the extent feasible. An approved stormwater management plan will be in place to minimize any increase in sediment flow and turbidity, as will a plan to prevent the spill of toxic or potentially toxic materials (including concrete) into the water during all construction.

Giant Garter Snake

The proposed action is not likely to adversely affect the giant garter snake because there is no suitable habitat in the areas proposed for tidal marsh restoration, and the low likelihood that the species would be present in the construction areas and temporary nature of the impacts. Construction activities will be designed to avoid disturbance to areas of suitable habitat by maintenance of a 200-foot buffer from these areas.

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Photographs

Photograph 1. Portable Water Pumping System

Photograph 2. Slurry Mixing Hopper Pit

Photograph 3. Floating Dredge Material Transport Pipeline

Photograph 4. Slurry Outfall

Photograph 5. Island Construction Using Geotextile Containers, Illinois Waterway near Peoria, Il.

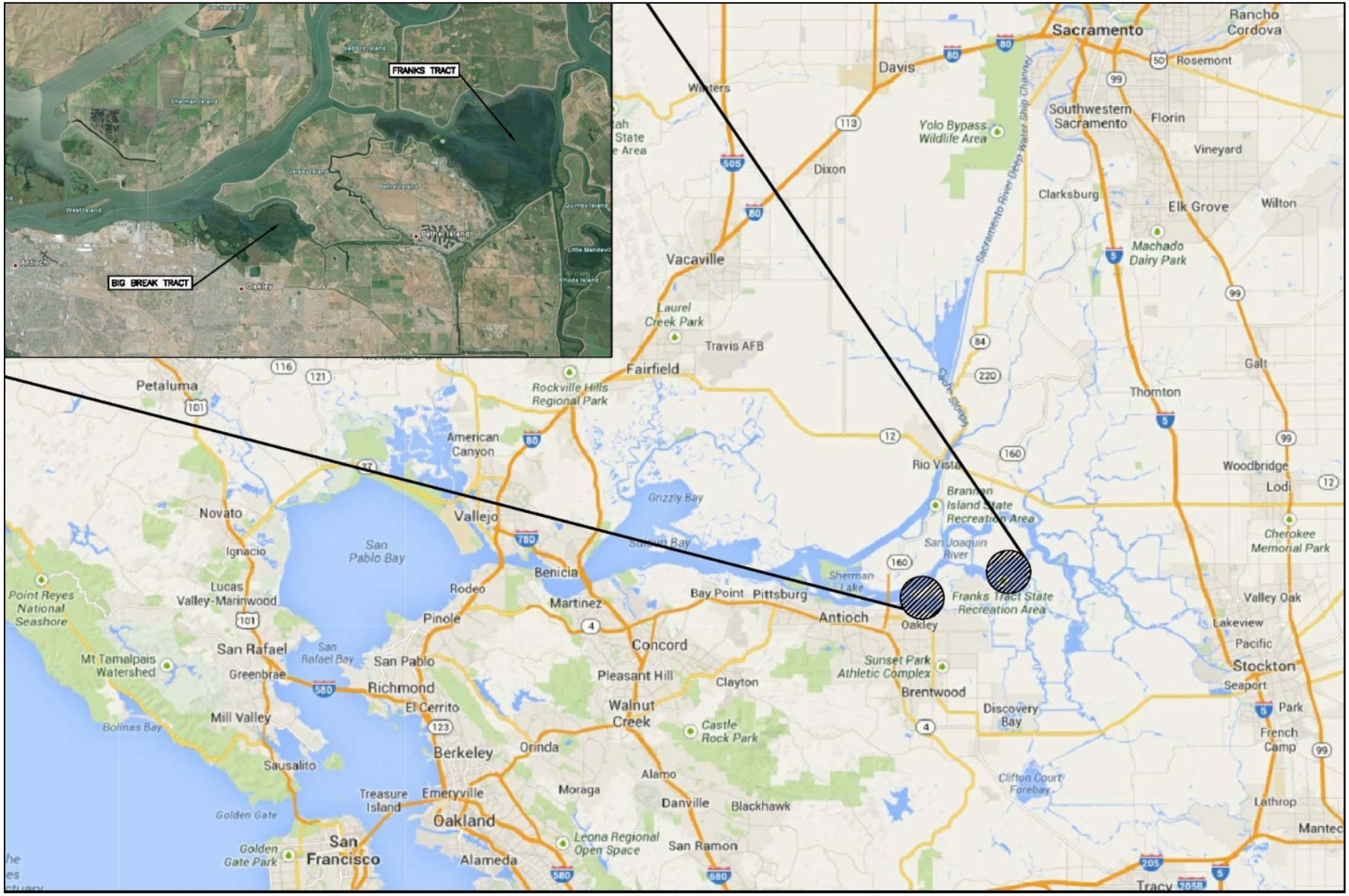


Figure 1. Project Area Locations

Figure 2. Project Area Locations

Big Break Increments (One square equals one acre)

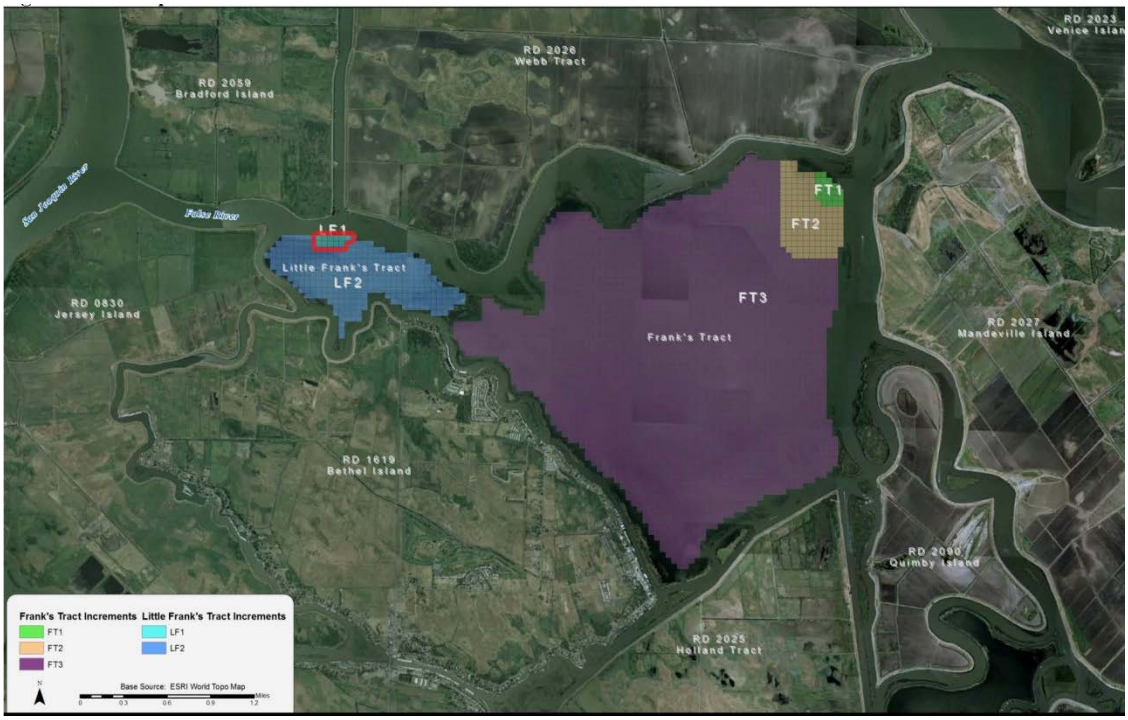
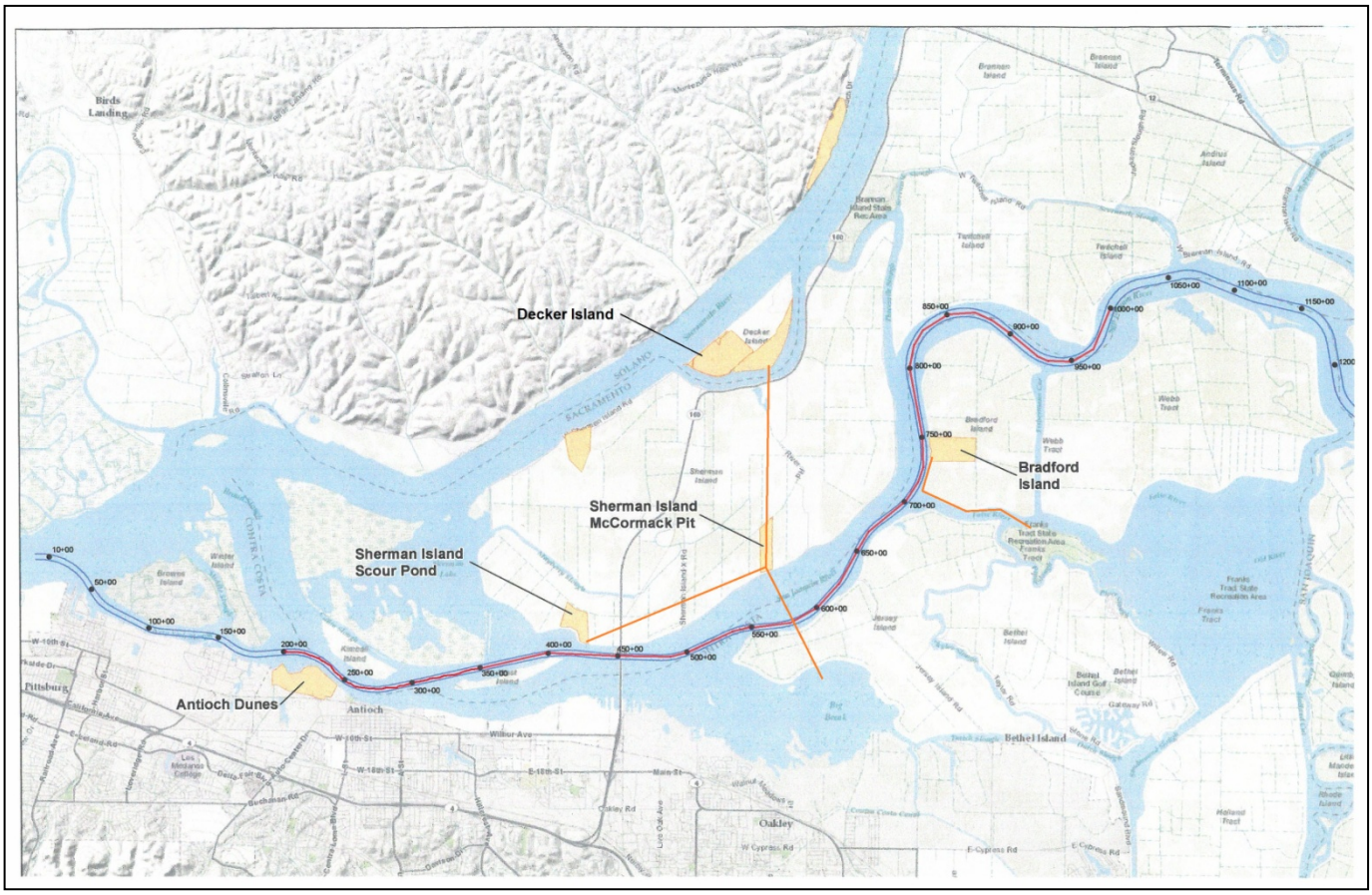


Figure 3. Big Break and Little Frank's Tract Alternative Increments



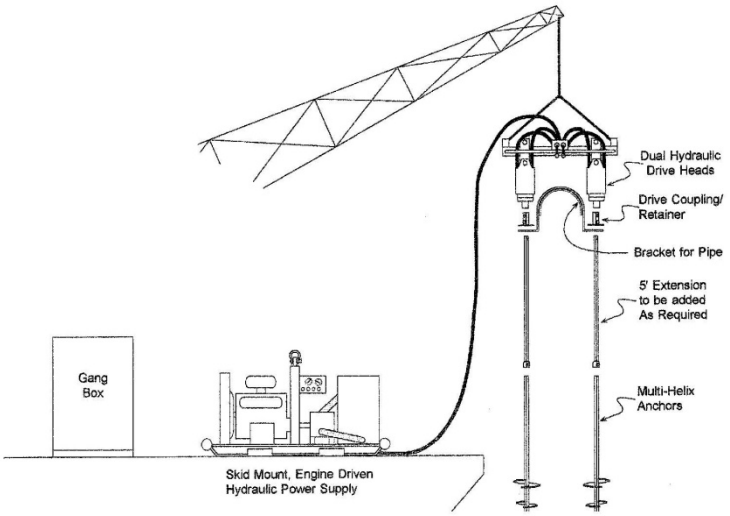
Legend

Proposed 2015-2020 Channel Dredging: Station Points 200+00 to 1000+00

Proposed Slurry Piping Layout

Figure 4: Proposed Channel Dredging and Existing Material Placement Sites

Marine Crane
Staking
Head Schematic



with Pipe
Processing

Pipe Segment Staking Schematic

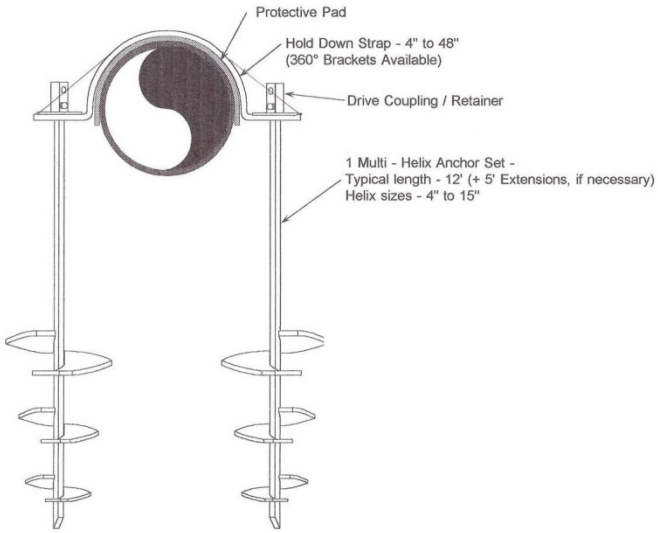


Figure 5. Marine Crane And Processing Head/ Pipe Segment Staking Schematics

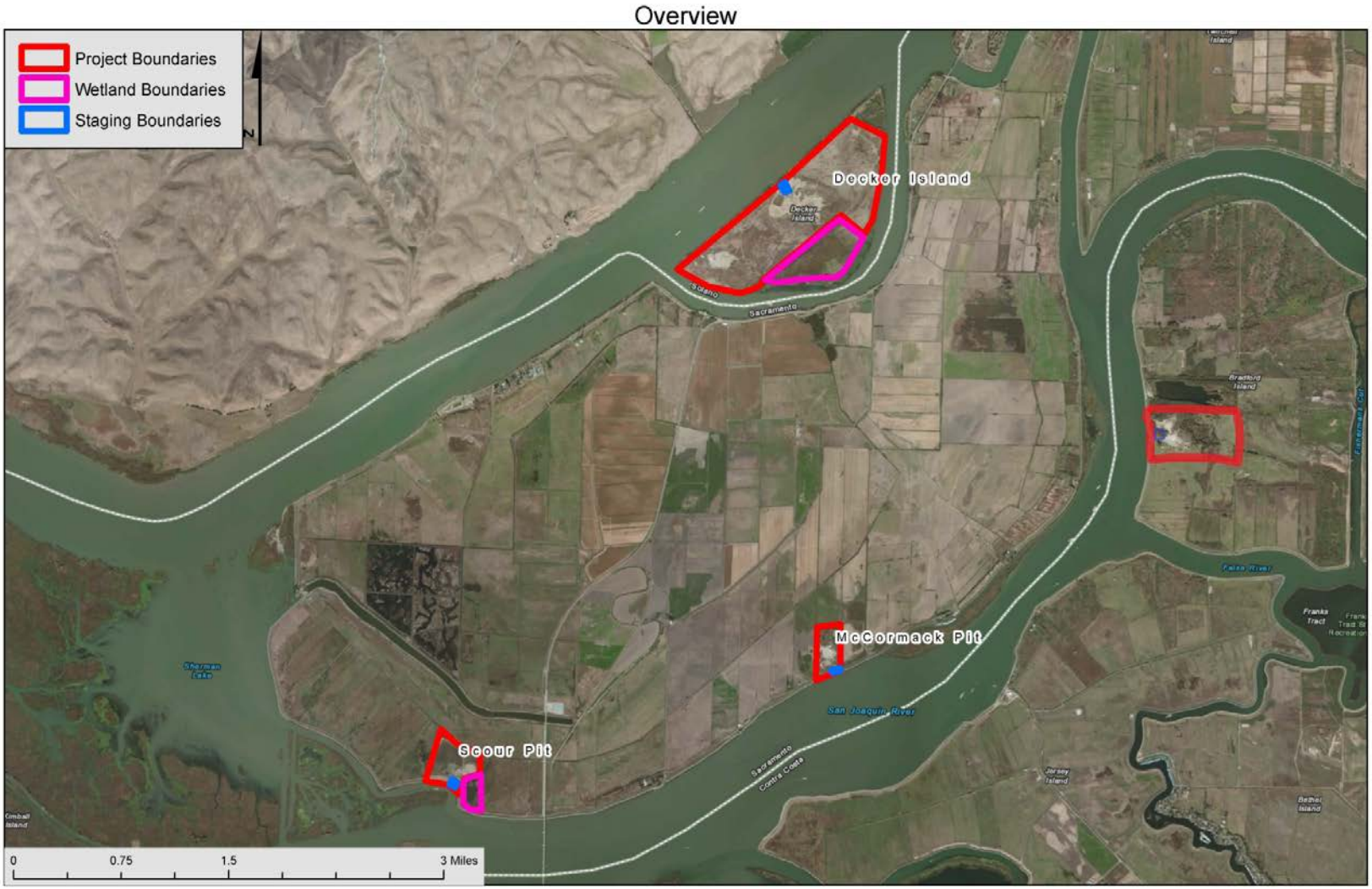


Figure 6. Borrow Site Overview Map

Figure 7. Sherman Island McCormack Borrow Site Vegetation Mapping

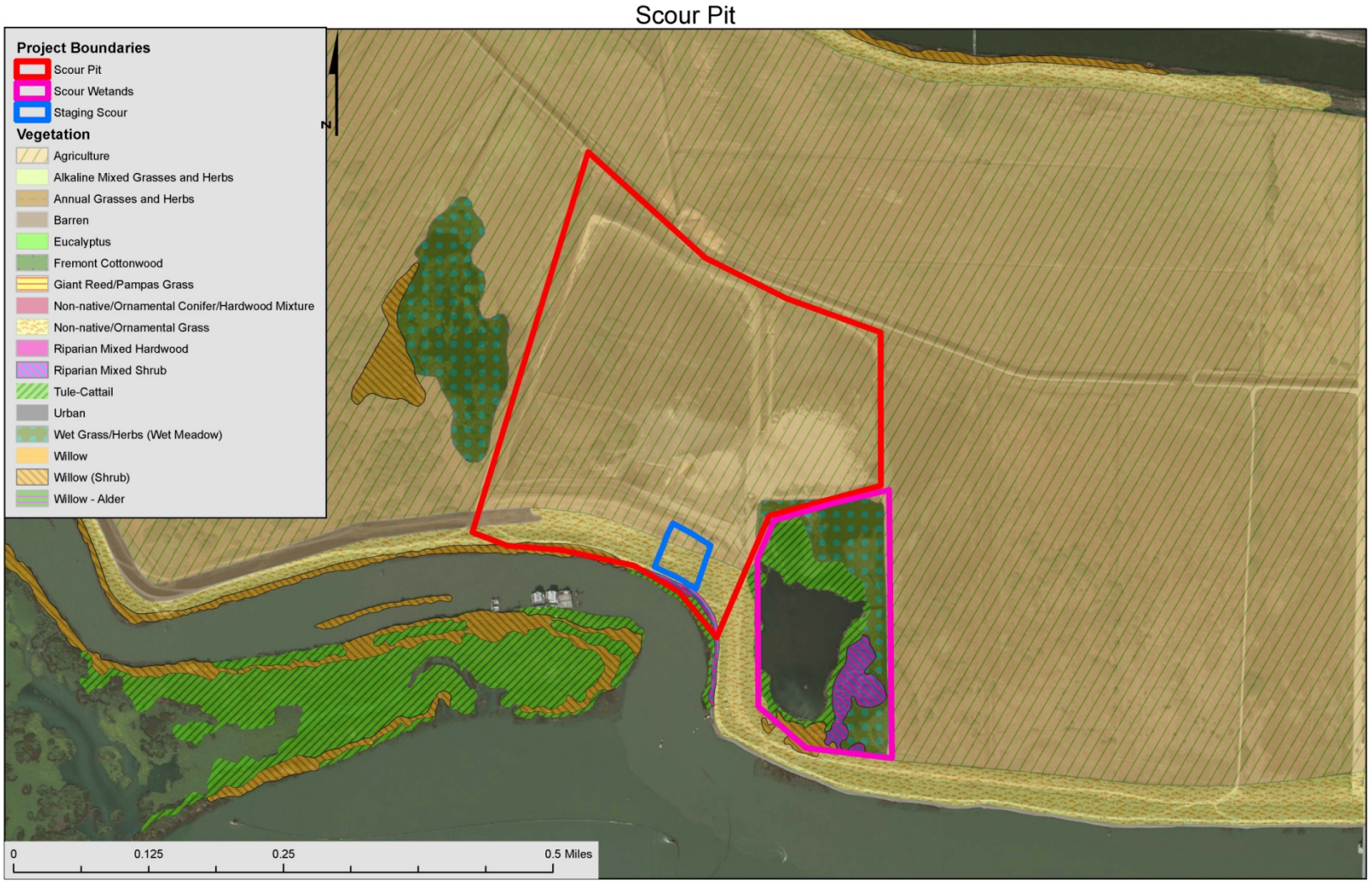


Figure 8. Sherman Island Scour Pit Borrow Site Vegetation Mapping

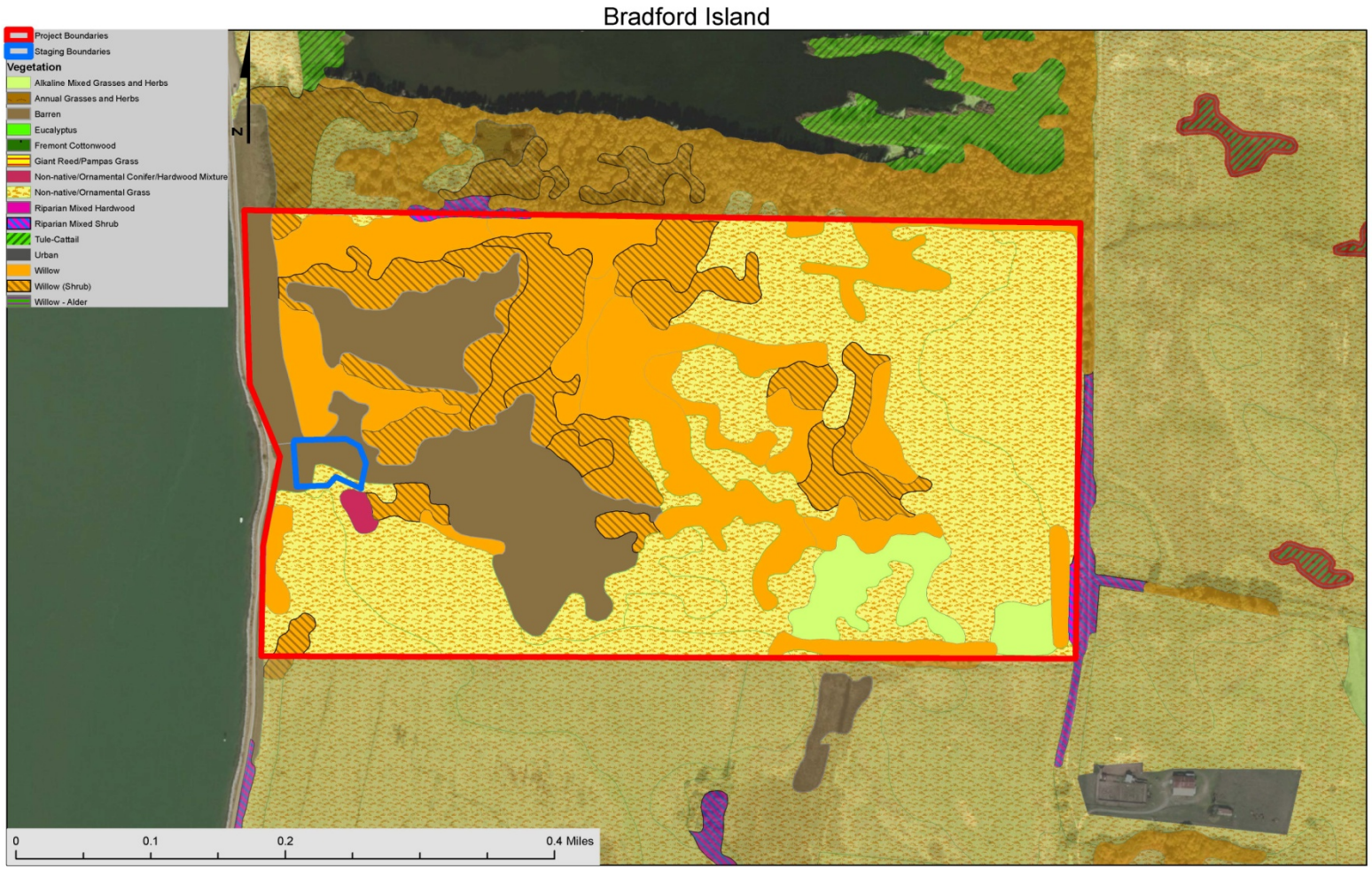


Figure 9. Bradford Island Borrow Site Vegetation Mapping

Figure 10. Decker Island Borrow Site Vegetation Map

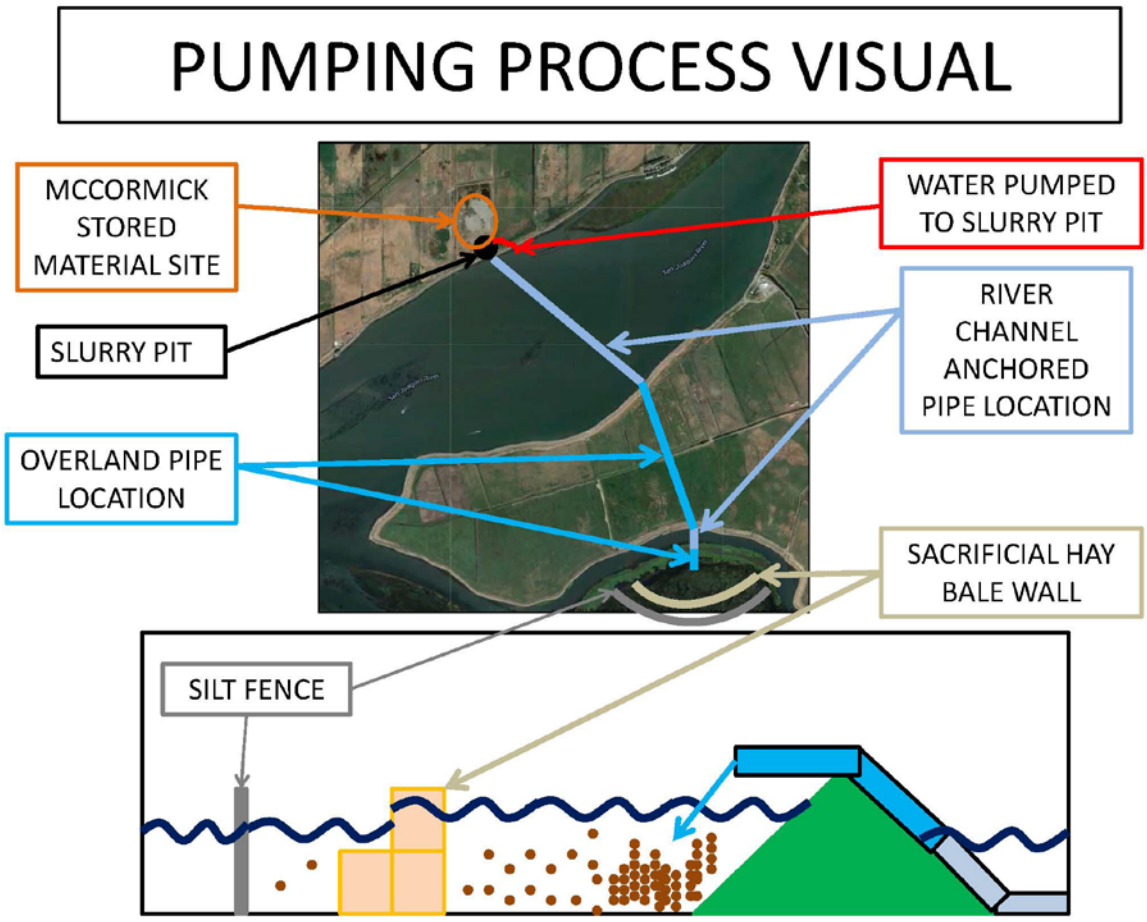


Figure 11. Slurry Pumping Process Schematic

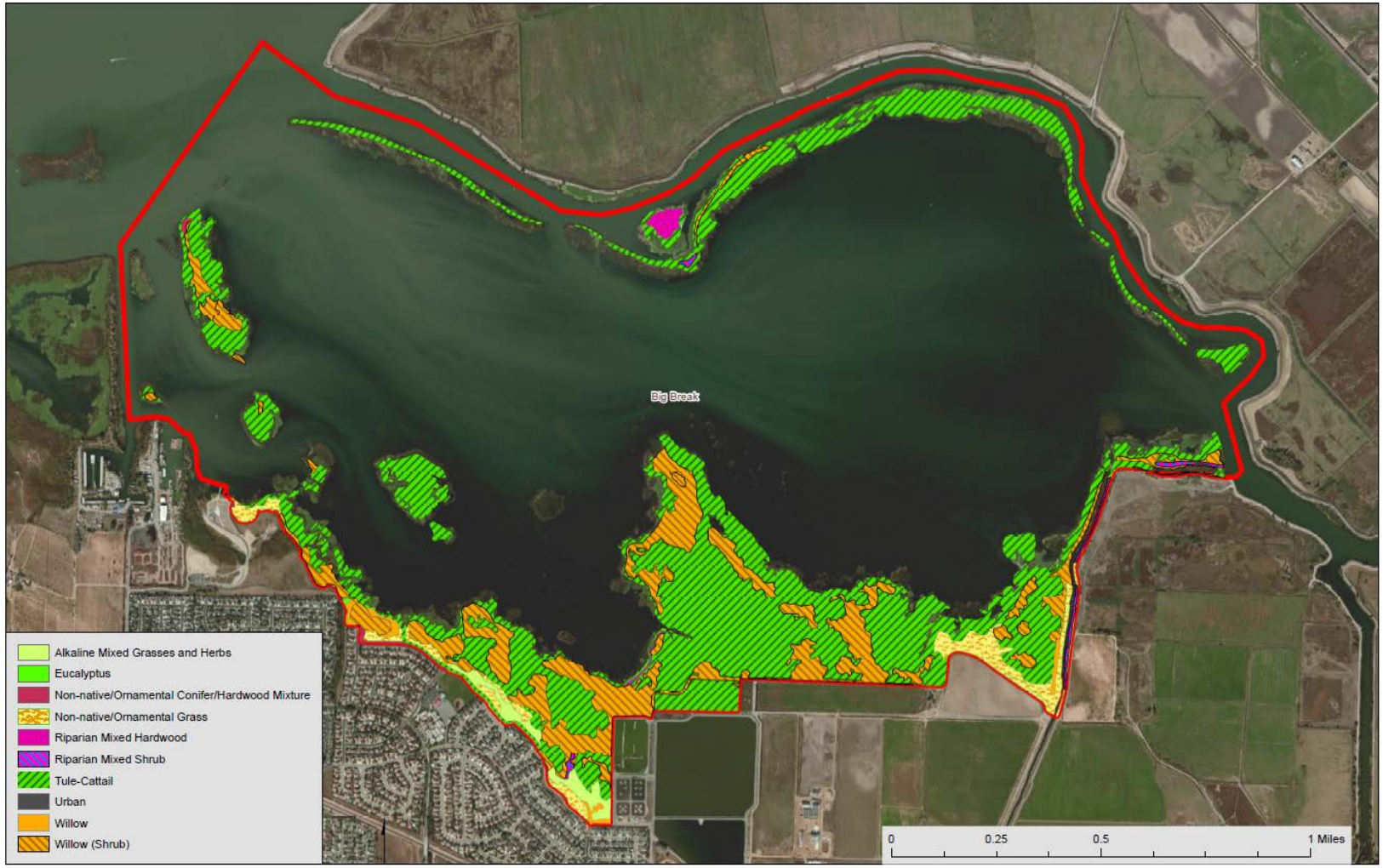


Figure 12. Big Break Vegetation Map.

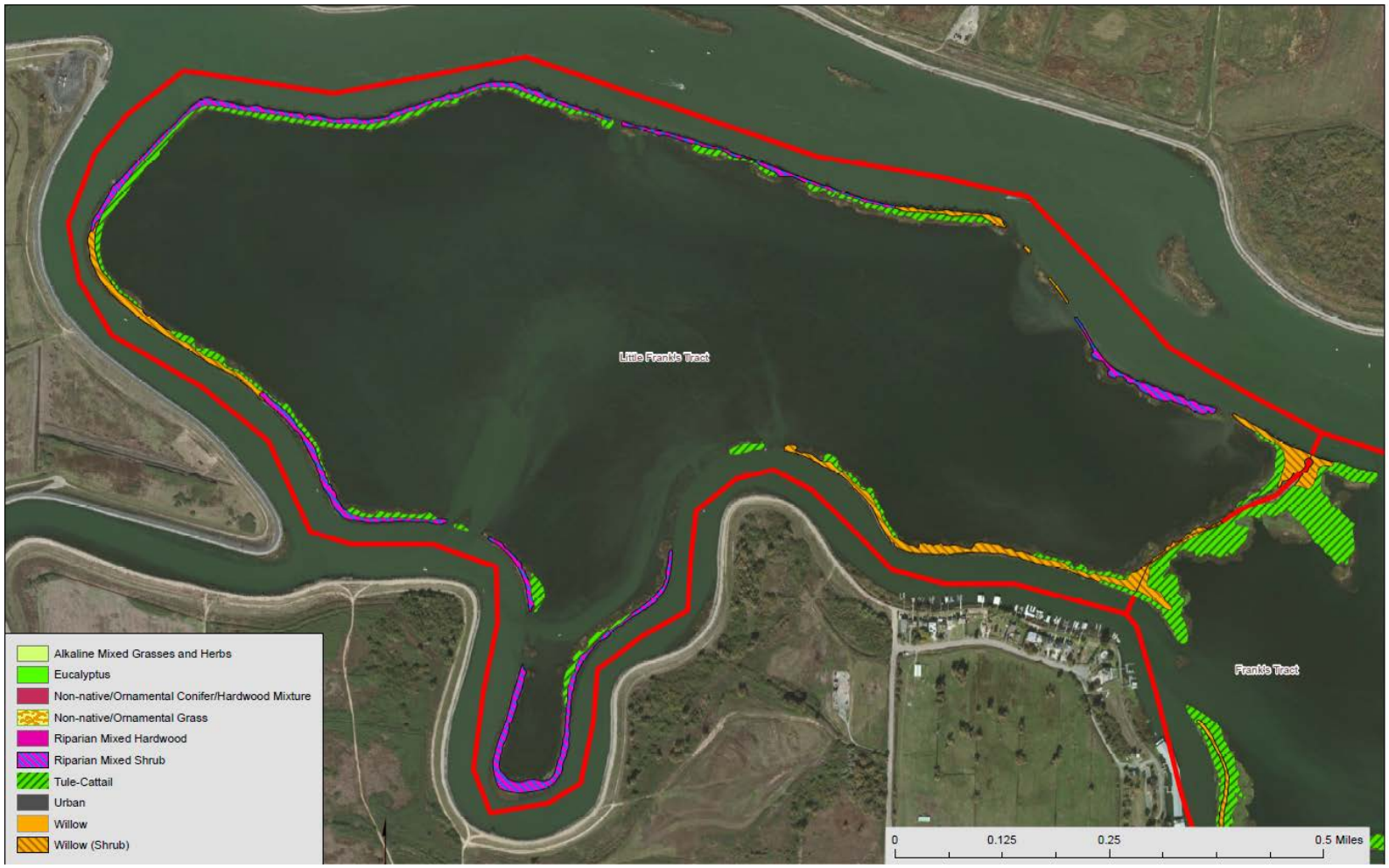


Figure 13. Little Franks Tract Vegetation Map

Appendix A

USFWS Species List

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 131216121916

Database Last Updated: September 18, 2011

Quad Lists

Listed Species

Invertebrates

Apodemia mormo langei
Lange's metalmark butterfly (E)

Branchinecta conservatio
Conservancy fairy shrimp (E)

Branchinecta lynchi
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Elaphrus viridis
delta green ground beetle (T)

Lepidurus packardi
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)

Rana draytonii
California red-legged frog (T)

Reptiles

Thamnophis gigas
giant garter snake (T)

Birds

Rallus longirostris obsoletus
California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Mammals

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Cordylanthus mollis ssp. mollis
soft bird's-beak (E)

Erysimum capitatum ssp. angustatum
Contra Costa wallflower (E)
Critical Habitat, Contra Costa wallflower (X)

Lasthenia conjugens
Contra Costa goldfields (E)

Neostapfia colusana
Colusa grass (T)

Oenothera deltoides ssp. howellii
Antioch Dunes evening-primrose (E)
Critical habitat, Antioch Dunes evening-primrose (X)

Sidalcea keckii
Keck's checker-mallow (=checkerbloom) (E)

Quads Containing Listed, Proposed or Candidate Species:

RIO VISTA (480B)
JERSEY ISLAND (480C)
BOULDIN ISLAND (480D)
ANTIOCH NORTH (481D)

County Lists

Contra Costa County

Listed Species

Invertebrates

Apodemia mormo langei
Lange's metalmark butterfly (E)

Branchinecta conservatio
Conservancy fairy shrimp (E)

Branchinecta longiantenna

Critical habitat, longhorn fairy shrimp (X)
longhorn fairy shrimp (E)

Branchinecta lynchi
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Elaphrus viridis
delta green ground beetle (T)

Lepidurus packardi
vernal pool tadpole shrimp (E)

Speyeria callippe callippe
callippe silverspot butterfly (E)

Syncaris pacifica
California freshwater shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Eucyclogobius newberryi
tidewater goby (E)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus kisutch
coho salmon - central CA coast (E) (NMFS)
Critical habitat, coho salmon - central CA coast (X) (NMFS)

Oncorhynchus mykiss
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)

Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

Masticophis lateralis euryxanthus
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Thamnophis gigas
giant garter snake (T)

Birds

Charadrius alexandrinus nivosus
western snowy plover (T)

Pelecanus occidentalis californicus
California brown pelican (E)

Rallus longirostris obsoletus
California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Strix occidentalis caurina
northern spotted owl (T)

Mammals

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Amsinckia grandiflora
large-flowered fiddleneck (E)

Arctostaphylos pallida
pallid manzanita (=Alameda or Oakland Hills manzanita) (T)

Calochortus tiburonensis
Tiburon mariposa lily (T)

Castilleja affinis ssp. neglecta
Tiburon paintbrush (E)

Chorizanthe robusta var. robusta
robust spineflower (E)

Clarkia franciscana
Presidio clarkia (E)

Cordylanthus mollis ssp. mollis
soft bird's-beak (E)

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Erysimum capitatum ssp. angustatum
Contra Costa wallflower (E)
Critical Habitat, Contra Costa wallflower (X)

Hesperolinon congestum
Marin dwarf-flax (=western flax) (T)

Holocarpha macradenia
Critical habitat, Santa Cruz tarplant (X)
Santa Cruz tarplant (T)

Lasthenia conjugens
Contra Costa goldfields (E)
Critical habitat, Contra Costa goldfields (X)

Neostapfia colusana
Colusa grass (T)

Oenothera deltoides ssp. howellii
Antioch Dunes evening-primrose (E)
Critical habitat, Antioch Dunes evening-primrose (X)

Pentachaeta bellidiflora
white-rayed pentachaeta (E)

Sidalcea keckii
Keck's checker-mallow (=checkerbloom) (E)

Streptanthus niger
Tiburon jewelflower (E)

Suaeda californica
California sea blite (E)

Trifolium amoenum
showy Indian clover (E)

Proposed Species

Plants

Cordylanthus mollis ssp. mollis
Critical habitat, soft bird's-beak (PX)

Sacramento County

Listed Species

Invertebrates

Apodemia mormo langei
Lange's metalmark butterfly (E)

Branchinecta conservatio
Conservancy fairy shrimp (E)

Branchinecta lynchi
Critical habitat, vernal pool fairy shrimp (X)
vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus
Critical habitat, valley elderberry longhorn beetle (X)
valley elderberry longhorn beetle (T)

Elaphrus viridis
delta green ground beetle (T)

Lepidurus packardi
Critical habitat, vernal pool tadpole shrimp (X)
vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Hypomesus transpacificus
Critical habitat, delta smelt (X)
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
Critical Habitat, Central Valley spring-run chinook (X) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
California tiger salamander, central population (T)
Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
California red-legged frog (T)

Reptiles

Thamnophis gigas
giant garter snake (T)

Birds

Charadrius alexandrinus nivosus
western snowy plover (T)

Rallus longirostris obsoletus
California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Vireo bellii pusillus
Least Bell's vireo (E)

Mammals

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Sylvilagus bachmani riparius
riparian brush rabbit (E)

Vulpes macrotis mutica
San Joaquin kit fox (E)

Plants

Arctostaphylos myrtifolia
Ione manzanita (T)

Calystegia stebbinsii
Stebbins's morning-glory (E)

Castilleja campestris ssp. succulenta
Critical habitat, succulent (=fleshy) owl's-clover (X)
succulent (=fleshy) owl's-clover (T)

Ceanothus roderickii
Pine Hill ceanothus (E)

Cordylanthus mollis ssp. mollis
soft bird's-beak (E)

Cordylanthus palmatus
palmate-bracted bird's-beak (E)

Eriogonum apricum var. apricum
Ione buckwheat (E)

Eriogonum apricum var. prostratum
Irish Hill buckwheat (E)

Erysimum capitatum ssp. angustatum
Contra Costa wallflower (E)
Critical Habitat, Contra Costa wallflower (X)

Fremontodendron californicum ssp. decumbens
Pine Hill flannelbush (E)

Galium californicum ssp. sierrae
El Dorado bedstraw (E)

Lasthenia conjugens
Contra Costa goldfields (E)

Neostapfia colusana
Colusa grass (T)

Oenothera deltoides ssp. howellii
Antioch Dunes evening-primrose (E)
Critical habitat, Antioch Dunes evening-primrose (X)

Orcuttia tenuis
Critical habitat, slender Orcutt grass (X)
slender Orcutt grass (T)

Orcuttia viscida
Critical habitat, Sacramento Orcutt grass (X)
Sacramento Orcutt grass (E)

Senecio layneae
Layne's butterweed (=ragwort) (T)

Sidalcea keckii
Keck's checker-mallow (=checkerbloom) (E)

Candidate Species

Birds

Coccyzus americanus occidentalis
Western yellow-billed cuckoo (C)

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological

Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 16, 2014.