

APPENDIX F

**CONSULTATION ON ENDANGERED SPECIES ACT  
AND DESIGNATED CRITICAL HABITAT**

## APPENDIX F

### Endangered Species Act Consultations

The California Endangered Species Act (ESA) requires that each state lead agency consult with the California Department of Fish and Game (CDFG) to ensure that any action authorized, funded, or carried out by that lead agency is not likely to jeopardize the continued existence of any species that is state listed as endangered, threatened, or rare. As part of the EIR/EIS process for the LTMS, the CDFG issued a Biological Opinion addressing the species and habitats under its jurisdiction. (The full text of the Biological Opinion is found in the Record of Decision.) If a proposed project would affect a species that is state listed, the proponent must consult with CDFG.

Section 7 of the federal ESA of 1973 provides some of the most valuable and powerful tools to conserve listed species, assist with species' recovery, and help protect critical habitat. It mandates all federal agencies to determine how to use their existing authorities to further the purposes of the ESA in recovering listed species, and to address existing and potential conservation issues. Section 7(a)(2) of the ESA requires a federal agency (called the "action agency"), in consultation with the Secretary of the Interior (U.S. Fish and Wildlife Service) and the Secretary of Commerce (National Marine Fisheries Service), to ensure that any action (e.g., issuing permits for private dredgers) authorized, funded, or carried out by that agency is not likely to jeopardize the continued existence of any listed species. Additionally, the action cannot result in the destruction or adverse modification of the species habitat if that habitat is determined to be critical (by the Secretary after consultation, as appropriate, with affected States), unless the action agency is exempted under Section 7(h) of the ESA. In fulfilling the requirements of Section 7(a)(2) of the ESA, each action agency shall use the best scientific and commercial data available.

Furthermore, under Section 7(a)(3) of the ESA, the federal agency shall consult with the Secretary on any prospective agency action at the request of, and in cooperation with, the prospective permit or license applicant if the applicant (or agency) has reason to believe that a listed species is present in the area affected by this project and that implementation of such action will likely affect such species. Therefore, the federal action would involve both the approval of a permit or license sought by an applicant, and the activities resulting from that action. After the federal action agency has initiated informal consultation [under Section 7(b)(2) and (3) of the ESA] with the Secretary, the Secretary shall provide to the federal action agency and the applicant, a written statement setting forth the Secretary's opinion, and a summary of the information on which the opinion is based, detailing how the agency action affects the listed species or designated critical habitat. If a jeopardy or adverse modification is found, the Secretary will suggest those reasonable and prudent alternatives, which the Secretary believes would not violate subsection (a)(2) of the ESA, and can be taken by the federal agency or applicant in implementing the agency action.

If a proposed federal action may adversely affect a listed species or designated critical habitat, formal consultation is required (except when, through informal consultation, the USFWS and NMFS concur, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat). A formal consultation concludes with the issuance of a biological opinion and an incidental

take statement by either or both USFWS and NMFS. USFWS's and NMFS's *Endangered Species Consultation Handbook* (USFWS and NMFS March 1998) is useful for the applicant/permittee to understand the oftentimes complex and detailed requirements under the ESA to implement a dredging or disposal action. The Regulatory Branch of the USACE, San Francisco District; BCDC; CDFG; and NMFS are coordinating to streamline the consultation process for applicants/permittees. They are working to effectively shorten consultation times, without giving up protection for Isted species or designated critical habitats. They continue to use and review the best available information.

### Magnuson-Stephens Fishery Conservation and Management Act Consultation

The federal Magnuson-Stephens Fishery Conservation and Management Act (MSFCMA) requires federal agencies to consult with the NMFS regarding the potential effects of actions on "essential fish habitat" (EFH) and respond in writing to NMFS recommendations. State agency activities which would impact EFH also require NMFS comment.

### Species of Special Concern

The USFWS and CDFG provided lists of species that could potentially occur in the LTMS Planning Area (12 counties) and that might be affected by dredging and disposal activities. The lists include any species that are listed, that are candidates for listing, or that have been recommended for listing as endangered or threatened by a state or federal agency under the ESAs. Although the Planning Area spans 12 counties, there are many locations within each county where dredging or disposal is not expected.

### Areas and Times of Restricted Dredging and Disposal Activity in the San Francisco Bay/Delta for Species of Special Concern

At the critical locations and within the restricted periods defined in Tables F-1, F-2, and F-3, dredging and disposal activities may not be permitted unless specific consultation with the resource agencies is initiated and approval is obtained. In cases where listed species (Table F-4) are not present and are not expected to be present, normal dredging during these restricted periods may be approved on a case-by-case, limited basis by the appropriate resource agencies. In cases where the listed species are present, the use of special mitigation measures may also enable dredging during restricted periods without undue adverse effects. The mitigation measures are noted as consultation and permit requirements.

**Table F-1. Areas and Times of Restricted DREDGING Activity in the San Francisco Bay/Delta Estuary for Species of Special Concern**

(Page 1 of 5)

| <i>Species</i>             | <i>Rank (1)</i> | <i>Critical Location</i>   | <i>Potential Impacts</i>  | <i>Dredging Restriction (2)</i>   | <i>Period of Restriction</i> |
|----------------------------|-----------------|--|---|---|------------------------------|
| Chinook Salmon (ADULTS)    | 1               | Pinole Shoal (San Pablo Bay), Suisun Bay channel                                   | Interference with migration; degradation of water quality   | Restrict dredging in these areas during period of restriction. Otherwise, individual Consultation with NMFS is REQUIRED.  | December 1 - May 31          |
|                            |                 | East of Sherman Island, along migratory corridors to and from the Sacramento River | Interference with migration; degradation of water quality   | Restrict dredging in these areas during period of restriction. Otherwise, individual Consultation with NMFS is REQUIRED.  | November 1 - May 15          |
| Chinook Salmon (JUVENILES) | 1               | SF Bay Bridge upstream to Sherman Island, including sloughs                        | Direct habitat loss or degradation; water quality degradation; interference with foraging or food resources; entrainment by dredge          | Restrict dredging in these areas when species is present. Otherwise, see Consultation and Permit requirements: A, B (re. Entrainment); C, D (re. habitat loss); and E (re. Habitat/water quality degradation).  | December 1 - May 31          |
|                            |                 | East of Sherman Island, along migratory corridors to and from the Sacramento River | Direct habitat loss or degradation; water quality degradation; interference with foraging or food resources; entrainment by dredge          | Restrict dredging in these areas when species is present. Otherwise, see Consultation and Permit requirements: A, B (re. entrainment); C, D (re. habitat loss); and E (re: habitat/ water quality degradation). | October 1 - May 31           |
| Steelhead Trout            | 1               | SF Bay Bridge upstream to Sherman Island, including sloughs                        | Interference with migration; degradation of water quality; direct habitat loss or degradation; interference with foraging or food resources | Restrict dredging in these areas during period of restriction. Otherwise, individual Consultation with NMFS is REQUIRED.  | December 1 - May 31          |
|                            | 1               | Napa River, Petaluma River, Sonoma Creek   | Habitat degradation; adverse effects on life stages   | Restrict dredging in these areas during period of restriction. Otherwise, individual Consultation with NMFS is REQUIRED.  | October 15 - July 31         |

**Table F-1. Areas and Times of Restricted DREDGING Activity in the San Francisco Bay/Delta Estuary for Species of Special Concern**

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| <i>Species</i>                 | <i>Rank (1)</i> | <i>Critical Location</i>   | <i>Potential Impacts</i>   | <i>Dredging Restriction (2)</i>   | <i>Period of Restriction</i>          |
|--------------------------------|-----------------|--|--|---|---------------------------------------|
| Steelhead Trout<br>(continued) |                 | Central San Francisco Bay  | Interference with migration;<br>degradation of water quality;<br>direct habitat loss or degradation;<br>interference with foraging or food<br>resources. | Restrict dredging in these areas<br>when species present, otherwise<br>individual consultation with NMFS<br>and CDFG is REQUIRED. See<br>Consultation and Permit Require-<br>ments: A, B (re: entrainment); C,<br>D (re: habitat loss); and E(re:<br>habitat/ water quality degradation). | December 1 - May 31                   |
| Steelhead Trout                | 1               | East of Sherman Island, along<br>migratory corridors to and from<br>the Sacramento River | Interference with migration;<br>degradation of water quality;<br>direct habitat loss or degradation;<br>interference with foraging or food<br>resources  | Restrict dredging in these areas<br>during period of restriction.<br>Otherwise, individual Consultation<br>with NMFS is REQUIRED.   | October 1 - May 31                    |
| Delta Smelt                    | 1               | Suisun Bay including marshes,<br>from Carquinez Bridge east to<br>Collinsville           | Direct entrainment by dredge;<br>spawning ground habitat<br>degradation  | NOTE: ESA Consultation is<br>REQUIRED for any dredging<br>project in this area, at any time.  | January 1 - December 31 (all<br>year) |
|                                | 1               | Southern Delta   | Direct entrainment by dredge;<br>spawning ground habitat<br>degradation  | Restrict dredging in these areas<br>when species is present.<br>Otherwise, see Consultation and<br>Permit require-ments: A, B, (re:<br>Entrainment); E (re: Habitat<br>degradation).  | February 1 - June 30                  |
|                                | 1               | Central Delta  | Direct entrainment by dredge;<br>spawning ground habitat<br>degradation  | Restrict dredging in these areas<br>during period of restriction.<br>Otherwise, individual Consultation<br>with FWS and CDFG is<br>REQUIRED.  | December 1 - June 30                  |
|                                | 1               | Northern Delta   | Direct entrainment by dredge;<br>spawning ground habitat<br>degradation  | Restrict dredging in these areas<br>during period of restriction.<br>Otherwise, individual Consultation<br>with FWS and CDFG is<br>REQUIRED.  | September 15 - July 31                |

**Table F-1. Areas and Times of Restricted DREDGING Activity in the San Francisco Bay/Delta Estuary for Species of Special Concern**

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| <i>Species</i>                   | <i>Rank (1)</i> | <i>Critical Location</i>   | <i>Potential Impacts</i>  | <i>Dredging Restriction (2)</i>  | <i>Period of Restriction</i>       |
|----------------------------------|-----------------|--|---|--|------------------------------------|
| Sacramento Splittail (JUVENILES) | 2               | North San Pablo Bay, Napa and Petaluma Rivers                              | Direct entrainment by dredge  | Restrict dredging in these areas during period of restriction. Otherwise, individual conferencing (consultation if species is listed as endangered) with FWS and CDFG is REQUIRED. | February 1 - July 31               |
|                                  | 2               | Suisun Bay including marshes, from Carquinez Bridge east to Collinsville   | Direct entrainment by dredge  | NOTE: ESA conferencing (consultation if species is listed as endangered) is REQUIRED for any dredging project in this area, at any time.   | January 1 - December 31 (all year) |
|                                  | 2               | Delta  | Direct entrainment by dredge  | Restrict dredging in these areas during period of restriction. Otherwise, conferencing (consultation if species is listed as endangered) with FWS and CDFG is REQUIRED.            | December 1 - October 31            |
| Longfin Smelt                    | 3               | San Pablo Bay  | Direct entrainment of juveniles by dredge   | Restrict dredging in these areas as much as possible during period of restriction.   | February 1 - July 31               |
|                                  | 3               | Suisun Bay including marshes, from Carquinez Bridge east to Collinsville   | Direct entrainment by dredge; spawning ground habitat degradation                 | Restrict dredging in these areas as much as possible during period of restriction.   | December 1 - August 31             |
|                                  | 3               | Western (= Northern) Delta   | Direct entrainment by dredge; spawning ground habitat degradation                 | Restrict dredging in these areas as much as possible during period of restriction.   | December 1 - February 28           |
| Pacific Herring                  | 3               | Historical spawning areas in Central San Francisco Bay and Richardson Bay. | Interference with spawning activity; reduced hatching success and larval survival | Restrict dredging in these areas when species is present; see Consultation and Permit requirement G.   | December 1 - February 28           |
| Recreational marine fishes       | 3               | None for dredging  | None for dredging   | None for dredging  | N/A                                |

**Table F-1. Areas and Times of Restricted DREDGING Activity in the San Francisco Bay/Delta Estuary for Species of Special Concern**

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| <i>Species</i>          | <i>Rank (1)</i> | <i>Critical Location</i>  | <i>Potential Impacts</i>   | <i>Dredging Restriction (2)</i>   | <i>Period of Restriction</i>       |
|-------------------------|-----------------|---|--|---|------------------------------------|
| Dungeness Crab          | 4               | Shallow berthing areas and channels, North San Francisco Bay and San Pablo Bay                                  | Direct entrainment by dredge of early juvenile stages                              | Consultation and Permit requirements A and B apply when juveniles are present   | May 1 - June 30                    |
| California Least Tern   | 1               | All eelgrass beds from San Francisco Bay east through Suisun Marsh  | Loss of eelgrass bed foraging habitat  | Consultation with FWS and CDFG is REQUIRED for any direct or indirect impacts to this habitat   | January 1 - December 31 (all year) |
|                         | 1               | Coastal waters and sloughs within 1 mile of the coastline from Berkeley Marina south through San Lorenzo Creek. | Turbidity effects on foraging success  | Restrict dredging within 3 miles of active nesting areas during Tern foraging period, and when prey species are at critical life stages (see Consultation and Permit Requirement G).  | March 15 - July 31                 |
|                         | 1               | Coastal waters, sloughs, and salt ponds in South San Francisco Bay south of the Highway 92 bridge.              | Turbidity effects on foraging success  | Restrict dredging when foraging Tern are present (see Consultation and Permit Requirement G).   | June 1 - September 7               |
| California Clapper Rail | 1               | In and adjacent to tidal salt marshes throughout San Francisco Bay and Suisun Marsh                             | Destruction of breeding and nesting habitat, and/or loss of upland refugial cover. | Consultation with FWS and CDFG is REQUIRED for projects that will result in direct habitat loss; see Consultation and Permit requirements D and F.  | January 1 - December 31 (all year) |
|                         | 1               | In and adjacent to tidal salt marshes throughout San Francisco Bay and Suisun Marsh                             | Disturbance during breeding season (without direct habitat loss)                   | Restrict dredging in these areas when species is present; see Consultation and Permit requirements D and F.   | February 1 - August 31             |
| Western Snowy Plover    | 1               | South San Francisco Bay, San Pablo Bay  | Loss of mudflat foraging habitat (new-work projects)                               | NOTE: Consultation is REQUIRED with FWS and CDFG for any new-work projects that will cause a direct loss of mudflat habitat in these areas (LTMS working to conclude "programmatic consultation" for inclusion in a future LTMS Management Plan). | January 1 - December 31 (all year) |

**Table F-1. Areas and Times of Restricted DREDGING Activity in the San Francisco Bay/Delta Estuary for Species of Special Concern**  
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| <i>Species</i>  | <i>Rank (1)</i> | <i>Critical Location</i>   | <i>Potential Impacts</i>                                      | <i>Dredging Restriction (2)</i>   | <i>Period of Restriction</i>       |
|---|-----------------|--|---|---|------------------------------------|
| California Brown Pelican  | 1               | Significant roost sites at: Alameda breakwater; Angel Island; Brooks Island; and Sisters Island                    | Disturbance of individuals at large communal roosts           | No dredging within 300 feet of known nighttime communal roost sites during the time period between one hour before sunset to sunrise. | July 1- September 30               |
| Salt Marsh Harvest Mouse  | 1               | In and adjacent to diked and tidal salt marshes throughout San Francisco Bay and Suisun Marsh east to Collinsville | Loss of salt marsh habitat and adjacent upland refugial cover | NOTE: Consultation is REQUIRED with FWS and CDFG for any project that will cause a direct loss of salt marsh habitat in these areas   | January 1 - December 31 (all year) |
| <p><i>Notes:</i></p> <ol style="list-style-type: none"> <li>1. Refer to Table F-3 for definitions of species' ranks and for consultation and permit requirements identified under <i>Dredging Restriction</i>.</li> <li>2. The term "RESTRICT" in this column means that dredging or disposal activities generally will not be authorized during periods of restriction unless approved via a project-specific consultation conducted by or for the applicant, except as noted under the specified consultation and permit requirements (Table 5.2.3.5-1). The term "MINIMIZE DISPOSAL" in this column means that the LTMS agencies will ensure that no more disposal than necessary occurs at the times and sites listed, (1) through management limitations placed on disposal sites themselves, and/or (2) through project-specific review.</li> </ol> |                 |  |   |   |                                    |



**Table F-2. Areas and Times of Restricted DISPOSAL Activity in the San Francisco Bay/Delta Estuary for Species of Special Concern**  
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| <i>Species</i>             | <i>Rank (1)</i> | <i>Critical Location</i>  | <i>Potential Impacts</i>  | <i>DISPOSAL Restriction (2)</i>  | <i>Period of Restriction (3)</i>   |
|----------------------------|-----------------|---|---|--|------------------------------------|
| Chinook Salmon (ADULTS)    | 1               | SF-16 (Suisun Bay disposal site), and SF-9 (Carquinez Strait disposal site)                         | Degradation of water quality; interference with migration                           | Minimize disposal at these sites during period of restriction  | December 1 - May 31                |
|                            |                 | Aquatic disposal east of Sherman Island, along migratory corridors to and from the Sacramento River | Degradation of water quality; interference with foraging habitat and food resources | Restrict disposal to the extent feasible in these areas during period of restriction. Otherwise, Consultation and Permit Requirements A, B, C, D and E apply.                        | October 1 - May 31                 |
| Chinook Salmon (JUVENILES) | 1               | SF-16 (Suisun Bay disposal site), and SF-9 (Carquinez Strait disposal site)                         | Degradation of water quality; interference with foraging habitat and food resources | Minimize disposal at these sites during period of restriction.   | December 1 - May 31                |
|                            |                 | East of Sherman Island, along migratory corridors to and from the Sacramento River                  | Degradation of water quality; interference with foraging habitat and food resources | Restrict disposal to the extent feasible in these areas during period of restriction. Otherwise, Consultation and Permit Requirements A, B, C, D and E apply.                        | October 1 - May 31                 |
| Steelhead Trout            | 1               | SF-9, SF-10 (San Pablo Bay), & SF-11 (Alcatraz) disposal sites                                      | Degradation of water quality; interference with foraging habitat and food resources | Minimize disposal at these sites during period of restriction.   | December 1 - October 31            |
|                            |                 | East of Sherman Island, along migratory corridors to and from the Sacramento River                  | Degradation of water quality; interference with foraging habitat and food resources | Restrict disposal to the extent feasible in these areas during period of restriction. Otherwise, Consultation and Permit Requirements A, B, C, D and E apply.                        | October 1 - May 31                 |
| Delta Smelt                | 1               | All Delta critical habitat  | Spawning ground habitat degradation   | Formal Consultation with FWS and CDFG is REQUIRED for any aquatic disposal outside of levees in this area, at any time. No restrictions on upland disposal relative to this species. | January 1 - December 31 (all year) |

**Table F-2. Areas and Times of Restricted DISPOSAL Activity in the San Francisco Bay/Delta Estuary for Species of Special Concern**  
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| <i>Species</i>             | <i>Rank (1)</i> | <i>Critical Location</i>   | <i>Potential Impacts</i>  | <i>DISPOSAL Restriction (2)</i>   | <i>Period of Restriction (3)</i>   |
|----------------------------|-----------------|--|---|---|------------------------------------|
| Sacramento Splittail       | 2               | SF-16, SF-9, SF-10, SF-11, and SF-8 (San Francisco Bar Channel) disposal sites   | None  | None  | N/A                                |
|                            | 2               | North San Pablo Bay, Napa and Petaluma Rivers, Suisun Bay including marshes, and Delta (all), other than SF-8, SF-9, SF-10, SF-11, SF-16                       | Habitat degradation   | Consultation with FWS and CDFG is REQUIRED for any aquatic disposal outboard of levees in this area, at any time. No restrictions on upland disposal relative to this species.                    | January 1 - December 31 (all year) |
| Longfin Smelt              | 3               | San Pablo Bay (other than SF-10) and Suisun Bay (other than SF-16) including marshes from Benicia Bridge east to Collins-ville, and Western (= Northern) Delta | Spawning ground habitat degradation   | Minimize disposal in these areas as much as possible.   | January 1 - December 31 (all year) |
| Pacific Herring            | 3               | None   | None  | None  | N/A                                |
| Recreational marine fishes | 3               | SF-10 and SF-11 disposal sites   | Habitat degradation   | Minimize disposal at these sites during peak sportfishing season.   | May 1 - October 31                 |
| Dungeness Crab             | 4               | None   | None  | None  | N/A                                |
| California Least Tern      | 1               | All eelgrass beds from San Francisco Bay east through Suisun Bay   | Potential direct habitat loss of eelgrass habitat associated with in-Bay disposal | None at SF-8, SF-9, SF-10, SF-11, SF-16. However, Consultation with FWS and CDFG is REQUIRED for other nearshore, upland, or beneficial use disposal activities that may affect eelgrass habitat. | January 1 - December 31 (all year) |

**Table F-2. Areas and Times of Restricted DISPOSAL Activity in the San Francisco Bay/Delta Estuary for Species of Special Concern**  
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| <i>Species</i>          | <i>Rank (1)</i> | <i>Critical Location</i>   | <i>Potential Impacts</i>  | <i>DISPOSAL Restriction (2)</i>   | <i>Period of Restriction (3)</i>   |
|-------------------------|-----------------|--|---|---|------------------------------------|
|                         |                 | Coastal waters, sloughs, and salt ponds in San Francisco Bay, or within 3 miles of the NAS Alameda nesting site.   | Habitat degradation associated with in-Bay disposal   | None at SF-8, SF-9, SF-10, SF-11, SF-16. However, Consultation with FWS and CDFG is REQUIRED for other nearshore, upland, or beneficial use disposal activities that may affect eelgrass habitat. | January 1 - December 31 (all year) |
| Delta Smelt             | 1               | Suisun Bay including marshes, from Carquinez Bridge east to Collinsville (other than SF-16)  | Rearing and limited spawning habitat degradation  | Consultation with FWS and CDFG is REQUIRED for any aquatic disposal in this area, at any time.  | January 1 – December 31 (all year) |
|                         | 1               | Coastal waters, sloughs, and salt ponds within 3 miles of nesting area at NAS Alameda (see Consultation and Permit Requirement I for other possible restriction areas) | Potential direct habitat loss associated with nearshore or upland disposal or beneficial use projects | None at SF-8, SF-9, SF-10, SF-11, SF-16. However, Consultation with FWS and CDFG is REQUIRED for other nearshore, upland, or beneficial use disposal activities that may affect this habitat.     | January 1 – December 31 (all year) |
|                         | 1               | Coastal waters, sloughs, and salt ponds in South San Francisco Bay   | Potential direct habitat loss associated with nearshore or upland disposal or beneficial use projects | None at SF-8, SF-9, SF-10, SF-11, SF-16. However, Consultation with FWS and CDFG is REQUIRED for other nearshore, upland, or beneficial use disposal activities that may affect this habitat.     | January 1 - December 31 (all year) |
| California Clapper Rail | 1               | In and adjacent to tidal salt marshes throughout San Francisco Bay and Suisun Marsh  | Potential direct habitat loss associated with nearshore or upland disposal or beneficial use projects | None at SF-8, SF-9, SF-10, SF-11, SF-16. However, Consultation with FWS and CDFG is REQUIRED for other nearshore, upland, or beneficial use disposal activities that may affect this habitat.     | January 1 - December 31 (all year) |

**Table F-2. Areas and Times of Restricted DISPOSAL Activity in the San Francisco Bay/Delta Estuary for Species of Special Concern**  
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| <i>Species</i>  | <i>Rank (1)</i> | <i>Critical Location</i>   | <i>Potential Impacts</i>  | <i>DISPOSAL Restriction (2)</i>   | <i>Period of Restriction (3)</i>   |
|---|-----------------|--|---|---|------------------------------------|
| Western Snowy Plover  | 1               | South San Francisco Bay, San Pablo Bay   | Potential direct habitat loss associated with nearshore or upland disposal or beneficial use projects | None at SF-8, SF-9, SF-10, SF-11, SF-16. However, Consultation with FWS and CDFG is REQUIRED for other nearshore, upland, or beneficial use disposal activities that may affect this habitat. | January 1 - December 31 (all year) |
| California Brown Pelican  | 1               | Significant roost sites at: Alameda breakwater; Angel Island; Brooks Island; and Sisters Island          | Disturbance of individuals at large communal roosts   | No disposal within 300 feet of known nighttime communal roosts and during the time period between one hour before sunset to sunrise.  | July 1 - September 30              |
| Salt Marsh Harvest Mouse  | 1               | In and adjacent to tidal salt marshes throughout San Francisco Bay and Suisun Marsh east to Collinsville | Potential direct habitat loss associated with nearshore or upland disposal or beneficial use projects | None at SF-8, SF-9, SF-10, SF-11, SF-16. However, Consultation with FWS and CDFG is REQUIRED for other nearshore, upland, or beneficial use disposal activities that may affect this habitat. | January 1 - December 31 (all year) |
| <p><i>Notes:</i> 1. Refer to Table F-3 for definitions of species' ranks and for consultation and permit requirements identified under <i>Disposal Restriction</i>.</p> <p>2. The term "RESTRICT" in this column means that dredging or disposal activities generally will not be authorized during periods of restriction unless approved via a project-specific consultation conducted by or for the applicant, except as noted under the specified consultation and permit requirements (Table 5.2.3.5-1). The term "MINIMIZE DISPOSAL" in this column means that the LTMS agencies will ensure that no more disposal than necessary occurs at the times and sites listed, (1) through management limitations placed on disposal sites themselves, and/or (2) through project-specific review.</p> |                 |  |   |   |                                    |

**Table F-3. Consultation & Permit Requirements Legend for Dredging Windows and Disposal Restriction Tables**  
(Page 1 of 1)

| <i>Species Ranking</i>   | <i>Consultation and Permit Requirements (Dredging and Disposal Restrictions)</i>   |  |
|--|--|--|
| 1. Federal or state-listed endangered or threatened species. Consultation is required with NMFS, USFWS, and possibly CDFG, if dredging or disposal is proposed during the period of restricted activity in critical locations.                                 | A. Clamshell dredging shall be required whenever practicable in areas within 250 feet of a shoreline OR in depths less than 20 feet.   | E. Best Management Practices to reduce turbidity (including silt curtains or other physical or operational measures) shall be required for these projects.   |
| 2. Species proposed for listing under the federal ESA, candidate for listing under the California ESA, or CDFG Species of Special Concern for which impacts from dredging or disposal could pose significant problems to existing or future population levels. | B. If hydraulic dredging in depths less than 20 feet, dredge head must be maintained at or below substrate surface. Head may not be raised more than 3 feet off bottom for flushing; shut off pump when raising head more than 3 feet off bottom (e.g., at end of dredging). | F. Restriction applies within the identified critical period, and within 250 feet of emergent vegetation. USFWS and CDFG must be contacted in these circumstances.   |
| 3. Status reviews are being conducted. Species with established recreational or commercial value or ecological function for which impacts from dredging or disposal may pose significant problems to existing or future population levels.                     | C. For new-work projects where eelgrass will be unavoidably affected, a compensatory mitigation plan must be submitted and approved by USFWS, NMFS, CDFG, USACE, and EPA prior to permitting.  | G. If dredging must be conducted during this period, CDFG must be contacted and the permittee must provide an observer to identify herring spawning activity. Dredging must stop immediately if herring are within 200 m of the work site, and may not continue until hatch-out is complete (approximately 10-14 days). <sup>1</sup> |
| 4. Species with established recreational or commercial value or ecological function for which impacts from dredging or disposal should pose only minor problems to existing or future population levels.   | D. If project will cause unavoidable direct or indirect effects to submerged or emergent aquatic vegetation, compensatory mitigation at 3:1 ratio is required for lost functions and values. Other proposed ratios require consultation with USFWS and CDFG.                 | H. Other historically used nesting areas include Bair Island, Oakland Airport, Alvarado salt ponds, PG&E Pittsburg, and Port Chicago. Contact USFWS to determine whether species may be present; if present, dredging restriction in Table applies.  |

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<sup>1</sup> This condition is in accordance with Appendix J of the LTMS EIS/EIR. However, the LTMS agencies, USFWS, and CDFG need to confer to resolve comments provided in USFWS's Biological Opinion.

**Table F-4. Species of Concern**

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| <b>Common Name</b>                        | <b>Scientific Name</b>                   | <b>Status</b> | <b>Comments</b>  |
|---|--|---------------|--|
| <b>Mammals</b>                            |  |               |  |
| Alameda Island mole                       | <i>Scapanus latimanus parvus</i>         | FSC, SSC      | No occurrences in CNDDDB. <i>S. latimanus</i> habitat is soft soil in valleys and mountain meadows in several biotic communities from the Lower Sonoran to the Hudsonian life zones.               |
| *Berkeley kangaroo rat                    | <i>Dipodomys heermanni berkeleyensis</i> | FSC           | Habitat is > 50'. Found in Briones Valley and east Oakland. (PE-LS1992).   |
| *Fringed myotis bat                       | <i>Myotis thysanodes</i>                 | FSC           | Upper Sonoran life zones in open woods. Range is all along Pacific coast.  |
| *Greater western (California) mastiff bat | <i>Eumops perotis californicus</i>       | FSC           | Alameda (Tracy - cliffs), San Benito, and Mariposa counties south in arid/semiarid lowlands.   |
| *Long-eared myotis bat                    | <i>Myotis evotis</i>                     | FSC           | Mostly in woods in Upper Sonoran, Transition, and Canadian life zones. Pacific coast range and Sierra Nevada.  |
| *Long-legged (hairy-winged) myotis bat    | <i>Myotis volans</i>                     | FSC           | Open forest in upper Sonoran and Transition life zones.  |
| *Pacific western big-eared bat            | <i>Plecotus townsendii townsendii</i>    | FSC, SSC      | Oak woodland, pasture, grassy hillsides. Petaluma River, Marin. (PE-LS1992)  |
| *Point Reyes jumping mouse                | <i>Zapus trinotatus orarius</i>          | FSC, SSC      | No occurrences in CNDDDB. <i>Zapus trinotatus</i> found chiefly in meadows in the forests of redwood, fir, spruce, and hemlock. Range extends south from Washington to north of San Francisco Bay. |
| *Point Reyes mountain beaver              | <i>Aplodontia rufa phaea</i>             | FSC, SSC      | Riparian stream habitat with dense vegetation - Drakes Bay & Double Point (Marin).   |
| Riparian brush rabbit                     | <i>Sylvilagus bachmani riparius</i>      | FPE, SE       | Habitat is valley floor riparian and floodplain - only in San Joaquin and Stanislaus counties (Ripon Quad).  |
| Salt marsh harvest mouse                  | <i>Reithrodontomys raviventris</i>       | FE, SE        | Tidal salicornia (salt and brackish marsh) habitat; 129 occurrences.   |
| Salt marsh vagrant shrew                  | <i>Sorex vagrans halicoetes</i>          | FSC, SSC      | Tidal salt marsh (Redwood Point, Mountain View, San Quentin, Richmond).  |
| *San Francisco dusky-footed woodrat       | <i>Neotoma fuscipes annectens</i>        | FSC, SSC      | No occurrences in CNDDDB. <i>N. fuscipes</i> range does not include San Francisco Bay area or Central Valley, according to Ingles.   |
| *San Joaquin pocket mouse                 | <i>Perognathus inoratus</i>              | FSC           | Grassy or weedy fine-textured soil in the Lower and Upper Sonoran life zones of the San Joaquin and Salinas valleys.   |
| San Joaquin kit fox                       | <i>Vulpes macrotis mutica</i>            | FE, SE        | Grazed grassland, agricultural land, valley/coastal mountain interface zone. Primarily northwest San Joaquin valley.   |
| San Joaquin Valley (riparian) woodrat     | <i>Neotoma fuscipes riparia</i>          | FPE, SSC      | Valley floor, riparian floodplain in San Joaquin (Corral Hollow Creek).  |

**Table F-4. Species of Concern**

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| <b>Common Name</b>               | <b>Scientific Name</b>  | <b>Status</b> | <b>Comments</b>   |
|----------------------------------|---|---------------|---|
| *Small-footed myotis bat         | <i>Myotis ciliolabrum</i><br>(formerly <i>M. subulatus</i> )    | FSC           | Arid uplands.   |
| Suisun ornate shrew              | <i>Sorex ornatus sinuosus</i>                                   | FSC, SSC      | Grizzly Island, Mare Island, Napa, Benicia (PE-LS1987). <i>S. ornatus</i> habitat is streams and brush-covered hillsides. |
| *Yuma myotis bat                 | <i>Myotis yumanensis</i>  | FSC           | Chiefly open woods, suboreal zones throughout state.  |
| <b>Birds</b>                     |   |               |   |
| Alameda (South Bay) song sparrow | <i>Melospiza melodia pusilla</i>                                | FSC           | Salt marsh habitat.   |
| Aleutian Canada goose            | <i>Branta canadensis leucopareia</i>                            | FT            | Wetlands, grasslands, cultivated fields.  |
| American peregrine falcon        | <i>Falco peregrinus anatum</i>                                  | FE, SE        | High cliffs, banks, dunes, near water (Oakland airport).  |
| Bald eagle                       | <i>Haliaeetus leucocephalus</i>                                 | FT, SE        | Coast, rivers, large lakes in open areas.   |
| *Bell's sage sparrow             | <i>Amphispiza belli belli</i>                                   | FSC, SSC      | Coast of California.  |
| Black rail                       | <i>Laterallus jamaicensis</i>                                   | FSC, ST       | Salt, brackish, and freshwater marsh habitat. Pickleweed habitat.   |
| California clapper rail          | <i>Rallus longirostris obsoletus</i>                            | FE, SE        | Salt and brackish marshes; fresh water marshes in southwest.  |
| California least tern            | <i>Sterna antillarum</i> (= <i>ablifrons</i> )<br><i>browni</i> | FE, SE        | Salt marshes and salt ponds, open flat beaches, river and lake margins, near shallow water.                               |
| California brown pelican         | <i>Pelecanus occidentalis californicus</i>                      | FE, SE        | Open coastal habitat.   |
| *Ferruginous hawk                | <i>Buteo regalis</i>  | FSC, SSC      | Open country, usually prairies, plains, badlands.   |
| *Harlequin duck                  | <i>Histrionicus histrionicus</i>                                | FSC, SSC      | Coastal islets, winters along North American coasts.  |
| *Little willow flycatcher        | <i>Empidonas traillii brewsteri</i>                             | FSC, SE       |   |
| *Marbled murrelet                | <i>Brachyramphus marmoratus</i>                                 | FT, SE        | Conifer forests near coast, inland lakes, coastal waters, nests inland; feeds on crustaceans and fish.                    |
| *Mountain plover                 | <i>Charadrius montanus</i>                                      | FSC, SSC      |   |
| *Northern spotted owl            | <i>Strix occidentalis caurina</i>                               | FT            | Old growth forest above 200 feet.   |
| Salt marsh common yellowthroat   | <i>Geothlypis trichas sinuosa</i>                               | FSC, SSC      | Fresh, salt, and brackish water marshes.  |
| San Pablo (Suisun) song sparrow  | <i>Melospiza melodia samuelis</i>                               | FSC, SSC      | Marsh habitat.  |
| Swainson's hawk                  | <i>Buteo swainsoni</i>  | FSC, ST       | Migratory, wintering in Delta, rarely nesting.  |
| Tricolored blackbird             | <i>Agelaius tricolor</i>  | FSC, SSC      | Fresh water marshes, croplands, nest near/over water.   |

**Table F-4. Species of Concern**

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| <b>Common Name</b>                 | <b>Scientific Name</b>                   | <b>Status</b> | <b>Comments</b>   |
|------------------------------------|--|---------------|---|
| Western burrowing owl              | <i>Athene cunicularia hypugea</i>        | FSC, SSC      |   |
| Western snowy plover               | <i>Charadrius alexandrinus nivosus</i>   | FT, SSC       | Sandy beaches on marine and estuarine shores.   |
| White-faced ibis                   | <i>Plegadis chihi</i>                    | FSC, SSC      | Marshes, swamps, ponds, rivers, mostly freshwater habitat.  |
| <b>Reptiles</b>                    |  |               |   |
| *Alameda whipsnake (striped racer) | <i>Masticophis lateralis euryxanthus</i> | FPE, ST       | Oak woodlands, canyons, hillsides above 500 feet. East Oakland and Contra Costa County areas (Mt. Diablo/Las Trampas).                            |
| California horned lizard           | <i>Phrynosoma coronatum frontale</i>     | FSC, SSC      | Grazed grassland in San Joaquin/Tracy area; 3 of 5 occurrences in San Joaquin delta area.   |
| San Francisco garter snake         | <i>Thamnophis sirtalis tetrataenia</i>   | FE, SE        | Mostly freshwater pond/reservoir habitat, treefrog diet, in hills of San Mateo County (CNDDDB). Also at low elevation near San Francisco Airport. |
| *San Joaquin whipsnake             | <i>Masticophis flagellum ruddocki</i>    | FSC, SSC      | Zero occurrences in CNDDB.  |
| Giant garter snake                 | <i>Thamnophis gigas</i>                  | FT, ST        | Ten of 94 occurrences in Delta area - Jersey and Liberty islands; occurs Fresno to Sacramento.  |
| Green turtle                       | <i>Chelonia mydas</i>                    | FT            | Rare visitor to Central California waters.  |
| Leatherback turtle                 | <i>Dermochelys coriacea</i>              | FE            | Rare visitor to Central California waters.  |
| Loggerhead turtle                  | <i>Caretta caretta</i>                   | FT            | Rare visitor to Central California waters.  |
| Northwestern pond turtle           | <i>Clemmys marmorata marmorata</i>       | FSC, SSC      | Riparian creek-sides, floodplains, estuarine environments.  |
| Olive (Pacific) Ridley sea turtle  | <i>Lepidochelys olivacea</i>             | FT            | Rare visitor to Central California waters.  |
| *Silvery legless lizard            | <i>Anniella pulchra pulchra</i>          | FSC, SSC      | Zero occurrences in CNDDB.  |
| *Southwestern pond turtle          | <i>Clemmys marmorata pallida</i>         | FSC, SSC      | Oak woodland, riparian habitat all outside area (Southern California).  |
| <b>Amphibians</b>                  |  |               |   |
| California red-legged frog         | <i>Rana aurora draytoni</i>              | FT, SSC       | Grazed grasslands, ponds.   |
| California tiger salamander        | <i>Ambystoma californiense</i>           | FC, SSC       | Stock ponds in annual grasslands of valley-foothill hardwood habitats. Sonoma, Petaluma River area.   |
| *Foothill yellow-legged frog       | <i>Rana boylei</i>                       | FSC, SSC      | Mostly in foothills (Austin Creek, Russian River, Rohnert Park - Sonoma; and Saint Helena - Napa County).   |
| *Northern red-legged frog          | <i>Rana aurora aurora</i>                | FSC, SSC      | Bog habitat in redwood forest; all 19 occurrences in Humboldt area.   |



**Table F-4. Species of Concern**

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| <b>Common Name</b>                           | <b>Scientific Name</b>             | <b>Status</b> | <b>Comments</b>   |
|--|------------------------------------|---------------|---|
| *Western spadefoot toad                      | <i>Sacphiopus hammondi</i>         | FSC, SSC      | Pond habitat.   |
| <b>Fish</b>                                  |                                    |               |   |
| Coho salmon                                  | <i>Oncorhynchus kisutch</i>        | FT            | Historically known from San Pablo Bay tributaries.  |
| Delta smelt                                  | <i>Hypomesus transpacificus</i>    | FT, ST        |   |
| Green sturgeon                               | <i>Acipenser medirostris</i>       | FSC, SSC      |   |
| Kern Brook lamprey                           | <i>Lampetra hubbsi</i>             | FSC, SSC      |   |
| Longfin smelt                                | <i>Spirinchus thaleichthys</i>     | FSC, SSC      |   |
| Pacific lamprey                              | <i>Lampetra tridentata</i>         | FSC           |   |
| River lamprey                                | <i>Lampetra ayresi</i>             | FSC, SSC      |   |
| Sacramento splittail                         | <i>Pogonichthys macrolepidotus</i> | FPT, SSC      |   |
| Steelhead trout (coastal central California) | <i>Oncorhynchus mykiss</i>         | FT            | Includes all SF Bay steelhead except Central Valley (Sacramento, San Joaquin rivers) stocks.                              |
| Steelhead trout (Central Valley)             | <i>Oncorhynchus mykiss</i>         | FPE           | Includes steelhead of Sacramento, San Joaquin rivers, still under review by NMFS.   |
| Tidewater goby                               | <i>Eucyclogobius newberryi</i>     | FE, SSC       |   |
| Spring-run chinook salmon                    | <i>Oncorhynchus tshawytscha</i>    | FPE, SSC      |   |
| Fall/late fall-run chinook salmon            | <i>Oncorhynchus tshawytscha</i>    | FPT           |   |
| Winter-run chinook salmon                    | <i>Oncorhynchus tshawytscha</i>    | FE, SE        |   |
| <b>Invertebrates</b>                         |                                    |               |   |
| *Antioch cophuran robberfly                  | <i>Cophura hurdi</i>               | FSC           | One specimen known - Antioch dunes (LS-1939).   |
| *Antioch Dunes anthicid beetle               | <i>Anthicus antiochensis</i>       | FSC           | Antioch dunes preserve area. PE (LS-1953). No appropriate sites for rehandling or disposal facilities.                    |
| *Antioch efferian robberfly                  | <i>Efferia antiochi</i>            | FSC           | One specimen known - Antioch dunes (LS-1959).   |
| *Antioch mutillid wasp                       | <i>Myrmosula pacifica</i>          | FSC           | One specimen known - Antioch dunes (LS-1952).   |
| *Antioch sphecid wasp                        | <i>Philanthus nasalis</i>          | FSC           | Antioch dunes, Sacramento/San Joaquin Delta area. No appropriate sites for rehandling or disposal facilities.             |
| *Bay checkerspot butterfly                   | <i>Euphydryas editha bayensis</i>  | FT            | Found on native grasslands, outcrops of serpentine soil - hillsides of San Mateo county and inland, east of Mount Diablo. |

**Table F-4. Species of Concern**

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| <b>Common Name</b>                       | <b>Scientific Name</b>                      | <b>Status</b> | <b>Comments</b>  |
|--|---|---------------|--|
| *Bridges' coast range shoulderband snail | <i>Helminthoglypta nickliniana bridgesi</i> | FSC           | Open hillsides with tall grass/weeds in Contra Costa and Alameda counties. Found at Marsh Creek Canyon near Mount Diablo |
| *Bumblebee scarab beetle                 | <i>Lichnanthe ursina</i>                    | FSC           | Habitat is sand dunes along outer coast.   |
| California freshwater shrimp             | <i>Syncaris pacifica</i>                    | FE, SE        | Fourteen occurrences - all in Napa, Sonoma, Marin counties.  |
| *Callippe silverspot butterfly           | <i>Speyeria callippe callippe</i>           | FPE           | Hillsides on San Bruno Mountain, > 200 feet.   |
| Ciervo aegialian scarab beetle           | <i>Aegialia concinna</i>                    | FC1           | Sandy substrates (one occurrence).   |
| Conservancy fairy shrimp                 | <i>Branchinecta conservatio</i>             | FE            | Zero occurrences in CNDDB.   |
| Curved-foot hygrotus diving beetle       | <i>Hygrotus curvipes</i>                    | FSC           | One occurrence in aquatic, shallow muddy pool at Oakley (east of Antioch).   |
| Delta green ground beetle                | <i>Elaphrus viridus</i>                     | FT            | Grassland and vernal pool habitat. Two occurrences in Solano County (Dozier and Elmira Quads).                           |
| *Globose dune beetle                     | <i>Coelus globosus</i>                      | FSC           | Eight occurrences all in Southern California.  |
| *Hurd's metapogon robberfly              | <i>Metapogon hurdi</i>                      | FSC           | Zero occurrences in CNDDB.   |
| Lange's metalmark butterfly              | <i>Apodemia mormo langei</i>                | FE            | Antioch sand dunes.  |
| *Leech's skyline diving beetle           | <i>Hydroporous leechi</i>                   | FSC           | Zero occurrences in CNDDB.   |
| *Longhorn fairy shrimp                   | <i>Branchinecta longiantenna</i>            | FE            | Freshwater pond habitat. Two of seven occurrences in Alameda & Contra Costa counties. Wind energy development threatens. |
| Marin elfin butterfly                    | <i>Incisalia mossii</i>                     | FSC           | Not found in CNDDB.  |
| Middlekauf's shieldback katydid          | <i>Idiostatus middlekauf</i>                | FSC           | One occurrence in Antioch dunes.   |
| *Mission blue butterfly                  | <i>Icaricia icariodes missionensis</i>      | FE            | Occur on slopes and hillsides in San Mateo and San Francisco counties.   |
| *Molestan blister beetle                 | <i>Lytta molesta</i>                        | FSC           | Two occurrences – one southwest of Modesto (Westley), other Sequoia National Park.                                       |
| *Molestan blister beetle                 | <i>Lytta molesta</i>                        | FSC           | Seasonally found in Central Valley from Contra Costa to Kern counties; one of 11 occurrences in Brentwood.               |
| Myrtle's silverspot butterfly            | <i>Speyeria zerene myrtleae</i>             | FE            | Zero occurrences in CNDDB.   |
| Opler's longhorn moth                    | <i>Adella oplerella</i>                     | FSC           | Zero occurrences in CNDDB.   |
| Ricksecker's water scavenger beetle      | <i>Hydrochara ricksecke</i>                 | FSC           | One of 4 occurrences in Jepson Prairie Preserve (not much known).  |
| Sacramento anthicid beetle               | <i>Anthicus sacramento</i>                  | FSC           | Found in sand among dredge spoil.  |

**Table F-4. Species of Concern**

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| <b>Common Name</b>                   | <b>Scientific Name</b>                           | <b>Status</b> | <b>Comments</b>   |
|--------------------------------------|--|---------------|---|
| *San Bruno elfin butterfly           | <i>Incisalia mossii bayensis</i>                 | FE            | Found on hillsides and ridgetops; San Mateo County: San Bruno Mountains, Whiting ridge.                             |
| San Francisco lacewing               | <i>Nothochrysa californica</i>                   | FSC           | Zero occurrences in CNDDB.  |
| San Joaquin dune beetle              | <i>Coelus gracilis</i>                           | FSC           | One of 5 occurrences in Antioch Dunes (1974) - rest in Fresno and Kings canyon.                                     |
| Sonoma arctic skipper                | <i>Carterocephalus palaemon</i> ssp.             | FSC           | Zero occurrences in CNDDB.  |
| *Valley elderberry longhorn beetle   | <i>Desmocerus californicus dimorphus</i>         | FT            | Riparian habitat, mostly higher elevations. Of 124 occurrences, several in Yolo and San Joaquin counties.           |
| *Vernal pool fairy shrimp            | <i>Branchinecta lynchi</i>                       | FT            | Vernal pool habitat - upland. Twelve occurrences - Madera to Sacramento counties                                    |
| Vernal pool tadpole shrimp           | <i>Lepidurus packardi</i>                        | FE            | One of 4 occurrences at Kesterson, confluence of Salt Slough and San Joaquin River.                                 |
| <b>Plants</b>                        |  |               |   |
| Adobe lily                           | <i>Fritillaria pluriflora</i>                    | FSC           |   |
| *Adobe sanicle                       | <i>Sanicula maritima</i>                         | FSC, SR       | Last seen in Potrero Hills, San Francisco (> 250 feet) before 1900. Other 10 occurrences found from Monterey south. |
| Alkali milk-vetch                    | <i>Astragalus tener</i> var. <i>tener</i>        | FSC           | Found at elevations 0 to 50 feet in Union City, San Francisco, Napa, and Montezuma Wetlands site.                   |
| Antioch Dunes evening-primrose       | <i>Oenothera deltooides</i> ssp. <i>howellii</i> | FE, SE        | Grassy dune habitat. Found at Antioch Dunes and Jersey Island (8 occurrences).                                      |
| *Baker's manzanita                   | <i>Arctostaphylos bakeri</i> ssp. <i>bakeri</i>  | SR            | Serpentine, chaparral habitat (Camp Meeker, Sonoma) (8 occurrences).  |
| Baker's stickyseed (Sonoma sunshine) | <i>Blennosperma bakeri</i>                       | FE, SE        | Vernal pools and swales. Excellent site near Sears Point (others southwest of Santa Rosa, Sebastapol).              |
| *Beach layia                         | <i>Layia carnosa</i>                             | FE, SE        | Point Reyes area > 30 feet (PE). Other 22 occurrences found in Humboldt, Monterey and Drakes Bay.                   |
| *Brewer's dwarf-flax (western-flax)  | <i>Hesperolinon breweri</i>                      | FSC           | Chaparral, foothill grasslands, often rocky serpentine soil (near Antioch).   |
| Brittlescale                         | <i>Atriplex depressa</i>                         | FSC           | Riparian salt marsh habitat. Two of 41 occurrences in area, Dozier (Solano) and Montezuma Slough.                   |
| Burke's goldfields                   | <i>Lasthenia burkei</i>                          | FE, SE        | Vernal pools, Sonoma County.  |
| California sea blite                 | <i>Suaeda californica</i>                        | FE, SE        | Salt flats and marsh habitat (upper littoral). Two of 10 occurrences: Yacht harbor-Palo Alto, west of Albany.       |

**Table F-4. Species of Concern**

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| <b>Common Name</b>          | <b>Scientific Name</b>                             | <b>Status</b> | <b>Comments</b>   |
|-----------------------------|--|---------------|---|
| Caper-fruited tropidocarpum | <i>Tropidocarpum capparideum</i>                   | FSC           | Two of 12 occurrences in delta (Clifton Court Forebay & Union Island).  |
| Carquinez goldenbush        | <i>Isocoma arguta</i>                              | FSC           | Habitat is low benches adjacent to seasonal drainage (5 occurrences). Found in Montezuma Wetlands/Bird Island area.   |
| *Coast lily                 | <i>Lilium maritimum</i>                            | FSC           | All 48 occurrences on north coast (Mendocino, Sonoma counties).   |
| Colusa grass                | <i>Neostapfia colusana</i>                         | FT, SE        | Alkaline saline playa, vernal pool habitat - several of 22 occurrences near Olcott Lake, Jepson Prairie Preserve & Davis area.  |
| *Compact cobweb thistle     | <i>Cirsium occidentale</i> var. <i>compactum</i>   | FSC           | Twelve occurrences all in San Luis Obispo area.   |
| Contra Costa goldfields     | <i>Lasthenia conjugens</i>                         | FE            | Vernal pools in open grassy areas, seasonal wetlands habitat. Found at Grizzly Island, Solano County.   |
| Contra Costa wallflower     | <i>Erysimum capitatum</i> ssp. <i>angustatum</i>   | FE, SE        | Not in CNDDDB.  |
| *Crystal Springs lessingia  | <i>Lessingia arachnoidea</i>                       | FSC           | Zero occurrences in CNDDDB.   |
| *Delta coyote-thistle       | <i>Eryngium racemosum</i>                          | FSC, SE       | Delta area south of Stockton.   |
| Delta tule-pea              | <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>      | FSC           | Freshwater and brackish marshes, < 5 feet elevation. (Brannan Island, Fagan's Marsh, Edgerly Island, Coon Island, Napa [CW])  |
| *Diablo rock-rose           | <i>Helianthella castanea</i>                       | FSC           | Upland forest, chaparral. Hillsides of Oakland, San Francisco, Mount Diablo (300-700 feet) (15 occurrences).  |
| Diamond-petaled poppy       | <i>Eschscholzia rhombipetala</i>                   | FSC           | One occurrence of 6 in Antioch (rest San Luis Obispo area). Nothing of Antioch site known.  |
| Ferris's milk-vetch         | <i>Astragalus tener</i> var. <i>ferrisiae</i>      | FSC           | One of 10 occurrences in vernal meadow southeast of Dixon (rest Northern California).   |
| *Fountain thistle           | <i>Cirsium fontinale</i> var. <i>fontinale</i>     | FE, SE        | Crystal Springs Reservoir, San Mateo.   |
| Fragrant fritillary         | <i>Fritillaria liliacea</i>                        | FSC           | Located > 40 feet elevation in coastal prairie, open grassland, including Jepson Prairie Preserve. (Point Reyes, Pulgas Ridge, Potrero Hills [San Francisco], Mills College [Oakland]). |
| (?)Gairdner's yampah        | <i>Perideridia gairdneri</i> ssp. <i>gairdneri</i> | FSC           | Zero occurrences in CNDDDB.   |
| Heartscale                  | <i>Atriplex cordulata</i>                          | FSC           | Alkaline meadow at edge of marsh. Approximately 5 of 40 occurrences in area (Dozier, Solano). Most in south.  |
| *Hickman's cinquefoil       | <i>Potentilla hickmanii</i>                        | FPE, SE       | Ocean bluff habitat (1 of 3 sites Half Moon Bay - rest Monterey).   |
| Hispid bird's-beak          | <i>Cordylanthus mollis</i> ssp. <i>hispidus</i>    | FSC           | Tidal zone of Suisun Marsh; also alkaline grassland and alkaline scrub from Central Valley to Southern California.  |

**Table F-4. Species of Concern**

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| <b>Common Name</b>                     | <b>Scientific Name</b>                              | <b>Status</b> | <b>Comments</b>  |
|--|---|---------------|--|
| Hoover's button-celery                 | <i>Eryngium aristulatum</i> var. <i>hooveri</i>     | FSC           | Zero occurrences in CNDDB.   |
| *Interior California larkspur          | <i>Delphinium californicum</i> ssp. <i>interius</i> | FSC           | Zero occurrences in CNDDB.   |
| *Kellogg's (wedge-leaved) horkelia     | <i>Horkelia cuneata</i> ssp. <i>sericea</i>         | FSC           | Coniferous forests, coastal scrub.   |
| *Large-flowered fiddleneck             | <i>Amsinckia grandiflora</i>                        | FE, SE        | Annual upland grassland. LLL and Black Diamond Mine are sites.   |
| Legenere                               | <i>Legenere limosa</i>                              | FSC           | Vernal pool 2.4 miles south of Napa Hospital, and east side of Highway 29 (Suscol Ridge) at around 40 feet elevation.  |
| *Little mousetail                      | <i>Myosurus minimus</i> ssp. <i>apus</i>            | FSC           | All 17 occurrences Southern California.  |
| *Marin checkermallow                   | <i>Sidalcea hickmanii</i> ssp. <i>viridis</i>       | FSC           | Zero occurrences in CNDDB.   |
| *Marin dwarf-flax (western-flax)       | <i>Hesperolinon congestum</i>                       | FT, ST        | Grassy serpentine slopes of Marin, Petaluma River, Crystal Springs Road, San Mateo; Presidio, San Francisco; found at elevations > 140 feet.   |
| Marin bent-grass                       | <i>Agrostis balsdalei</i> var. <i>marinensis</i>    | SR            |  |
| Marin knotweed                         | <i>Polygonum marinense</i>                          | FSC           | Napa River, Cuttings Wharf.  |
| Marsh sandwort                         | <i>Arenaria paludicola</i>                          | FE, SE        | One occurrence at Presidio Swamp, Fort Point (San Francisco).  |
| Mason's lilaeopsis                     | <i>Lilaeopsis masonii</i>                           | FSC, SR       | Fresh, brackish, and salt water marsh vegetation in littoral zone with strong tidal influence. Mare Island is saltiest location, also found along Napa River (south of Rotto Landing). |
| *Mission Delores campion               | <i>Silene verecunda</i> ssp. <i>verecunda</i>       | FSC           | Hillsides and dunes greater than 100 feet in elevation, San Francisco location.  |
| *Montara manzanita                     | <i>Arctostaphylos montaraensis</i>                  | FSC           | Coastal scrub (> 100 feet), San Bruno Mountain and Montara Mountain.   |
| *Most beautiful (uncommon) jewelflower | <i>Streptanthus albidus</i> ssp. <i>peramoenus</i>  | FSC           | Serpentine grasslands in Santa Rosa hills and Oakland hills (800 feet).  |
| Mount Diablo bird's beak               | <i>Cordylanthus nidularius</i>                      | FSC, SR       | Not in CNDDB.  |
| *Mount Diablo jewelflower              | <i>Streptanthus hispidus</i>                        | FSC           | Hillsides on Mount Diablo.   |
| *Mount Diablo phacelia                 | <i>Phacelia phacelioides</i>                        | FSC           | Rocky, serpentine slopes on Mount Diablo.  |
| *Mount Tamalpais thistle               | <i>Cirsium hydrophilum</i> var. <i>vasevi</i>       | FSC           | Hillsides of Mount Tamalpais.  |
| Northcoast (Point Reyes) bird's-beak   | <i>Cordylanthus maritimus</i> ssp. <i>palustris</i> | FSC           | 38 occurrences mostly Drakes Bay & north, also Alameda Marsh, Tiburon, Palo Alto.  |
| *Northcoast semaphore grass            | <i>Pleuropogon hooverianus</i>                      | FSC, SR       | Grassy flats, under redwood trees, mostly north of area.   |

**Table F-4. Species of Concern**

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| <b>Common Name</b>                     | <b>Scientific Name</b>                                | <b>Status</b> | <b>Comments</b>   |
|--|---|---------------|---|
| *Northern California black walnut      | <i>Juglans californica</i> var. <i>hindsii</i>        | FSC           | Riparian forests, riparian woodlands.   |
| *Pallid manzanita (Alameda manzanita)  | <i>Arctostaphylos pallida</i>                         | FPT, SE       | Oakland, Berkeley hills, > 1,100 feet (LS-1991).  |
| *Palmate-bracted bird's-beak           | <i>Cordylanthus palmatus</i>                          | FE, SE        | Alkali sink habitat from Fresno, south, to Woodland, north.   |
| Papoose spikeweed (Congdon's tarplant) | <i>Hemizonia parryi</i> ssp. <i>congdonii</i>         | FSC           | Grasslands (< 100m) (LS-1986). 1 of 24 occurrences - Benicia along I-680, rest in Santa Clara and south.            |
| *Point Reyes horkelia                  | <i>Horkelia marinensis</i>                            | FSC           | Located on Point Reyes peninsula (> 40 feet).   |
| *Presidio clarkia                      | <i>Clarkia franciscana</i>                            | FE, SE        | Coastal scrub/grasslands in Presidio, San Francisco and Oakland hills (> 75 feet in elevation).                     |
| *Presidio manzanita                    | <i>Arctostaphylos hookeri</i> ssp. <i>ravenii</i>     | FE, SE        | Serpentine slopes of South San Francisco and Presidio (PE, LS-1989) (7 occurrences).                                |
| *Recurved larkspur                     | <i>Delphinium recurvatum</i>                          | FSC           | Alkaline soils and swales. Two of 21 occurrences around Clifton Court Forebay, rest in Southern California.         |
| Robust spineflower                     | <i>Chorizanthe robusta</i>                            | FE            | Coastal dune/scrub (30-150 feet). Alameda, Colma (San Francisco).   |
| *Rock sanicle                          | <i>Sanicula saxatilis</i>                             | FSC, SR       | Talus slopes below chaparral, Mount Diablo and Lick Observatory.  |
| *Sacramento Orcutt grass               | <i>Orcuttia viscida</i>                               | FPE, SE       | Vernal pool, grasslands. Eight occurrences mostly Buffalo Creek, Sacramento.  |
| *San Bruno Mountain manzanita          | <i>Arctostaphylos imbricata</i>                       | FSC           | Brushy slopes of San Bruno Mountain (> 700 feet) (4 occurrences).   |
| *San Francisco gumplant                | <i>Grindelia hirsutula</i> var. <i>maritima</i>       | FSC           | Cliffy coastal scrub plant community, open slopes in San Francisco (> 100 feet) (15 occurrences).                   |
| *San Francisco lessingia               | <i>Lessingia germanorum</i>                           | FPE, SE       | Found at elevations > 80 feet in Daly City and the Presidio area.   |
| San Francisco Bay spineflower          | <i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>    | FSC           | Zero occurrences in CNDDB.  |
| *San Francisco manzanita               | <i>Arctostaphylos hookeri</i> ssp. <i>franciscana</i> | FSC           | Serpentine slopes (> 300 feet). Last seen 1942, Presidio Ave.   |
| *San Francisco owl's clover            | <i>Triphysaria floribunda</i>                         | FSC           | Found at elevations > 100 feet at Point Reyes National Seashore, San Bruno Mountain, Lake Merced, and the Presidio. |
| *San Francisco popcornflower           | <i>Plagiobothrys diffusus</i>                         | FSC, SE       | Found at elevations > 200 feet in Presidio. Last seen - 1933.   |
| *San Mateo thornmint                   | <i>Acanthomintha duttonii</i>                         | FE, SE        | Found at Crystal Springs Reservoir.   |
| San Mateo tree lupine                  | <i>Lupinus arboreus</i> var. <i>eximius</i>           | FSC           | Not in CNDDB.   |

**Table F-4. Species of Concern**

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| <b>Common Name</b>          | <b>Scientific Name</b>                             | <b>Status</b> | <b>Comments</b>  |
|-----------------------------|--|---------------|--|
| *San Mateo woolly sunflower | <i>Eriophyllum latilobum</i>                       | FE, SE        | Grassy hillsides in San Mateo between I-280 and Merner Road (2 occurrences).   |
| *Santa Cruz microseris      | <i>Microseris (Stebbinoseris) decipiens</i>        | FSC           | All 16 occurrences in Santa Cruz County.   |
| *Santa Cruz tarweed         | <i>Holocarpha macradenia</i>                       | FC, SE        | Uplands: coastal, prairie, foothill, grassland. Most 39 occurrences in Santa Cruz County.  |
| Sebastopol meadow foam      | <i>Limnanthes vinculaus</i>                        | FE, SE        | Vernal pools, Sonoma County.   |
| Showy Indian clover         | <i>Trifolium amoenum</i>                           | FPE           | Found at elevations 20-65 feet, Napa Junction and Buchli Station Road (LS-1952).   |
| *Slough thistle             | <i>Cirsium crassicaule</i>                         | FSC           | Two sites near San Joaquin River (rest of 17 occurrences in Kern County).  |
| Soft bird's beak            | <i>Cordylanthus mollis</i> ssp. <i>mollis</i>      | FE, SR        | Coastal salt marsh habitat. Point Pinole Regional Shoreline (Contra Costa County), Jersey Island, Grizzly Island.  |
| *Sonoma ceanothus           | <i>Ceanothus sonomensis</i>                        | FSC           | Southwest-facing slopes in Sonoma (15 occurrences).  |
| *Sonoma spineflower         | <i>Chorizanthe valida</i>                          | FE, SE        | Present at Point Reyes National Seashore > 40 feet.  |
| *South Bay clarkia          | <i>Clarkia concinna</i> ssp. <i>automixa</i>       | FSC           | Zero occurrences in CNDDB.   |
| Suisun Marsh aster          | <i>Aster lentus</i>                                | FSC           | Nearshore marsh vegetation, grows along bank or shore in tidally influenced coastal and valley freshwater marshes. Northeast of Fagan Slough, Jersey Island. |
| Suisun thistle              | <i>Cirsium hydrophilum</i> var. <i>hydrophilum</i> | FE            | Dense salt marsh vegetation, Grizzly Island.   |
| *Tamalpais lessingia        | <i>Lessingia micradenia</i> var. <i>micradenia</i> | FSC           | Zero occurrences in CNDDB.   |
| *Tamalpais manzanita        | <i>Arctostaphylos hookeri</i> ssp. <i>montana</i>  | FSC           | Serpentine slopes of Mount Tamalpais.  |
| *Tamalpais streptanthus     | <i>Streptanthus batrachopus</i>                    | FSC           | Hillsides, ridges of Mount Tamalpais.  |
| *Tiburon jewelflower        | <i>Streptanthus niger</i>                          | FE, SE        | Serpentine outcrops, cliffs, grasslands along Tiburon ridge.   |
| Tiburon mariposa lily       | <i>Calochortus tiburonensis</i>                    | FT, ST        | Serpentine grassland habitat - one occurrence.   |
| Tiburon paintbrush          | <i>Castilleja affinis</i> ssp. <i>neglecta</i>     | FE, ST        | Serpentine grassland habitat. Six occurrences from Napa (American Canyon) to Tiburon.  |
| Tiburon tarweed             | <i>Hemizonia multicaulis</i> ssp. <i>vernalis</i>  | FSC           | Not in CNDDB.  |
| *Two-carpeled dwarf-flax    | <i>Hesperolinon bicarpellatum</i>                  | FSC           | Zero occurrences in CNDDB.   |

**Table F-4. Species of Concern**

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| <i>Common Name</i>  | <i>Scientific Name</i>                       | <i>Status</i> | <i>Comments</i>   |     |                             |     |                         |     |                             |     |                   |     |                   |      |   |      |  |     |                  |      |  |         |                                       |     |                         |          |                |
|---|--|---------------|---|-----|-----------------------------|-----|-------------------------|-----|-----------------------------|-----|-------------------|-----|-------------------|------|---|------|--|-----|------------------|------|--|---------|---------------------------------------|-----|-------------------------|----------|----------------|
| *Valley sagittaria (Sanford's arrowhead)  | <i>Sagittaria sanfordii</i>                  | FSC           | Vernal marsh and muddy slough habitat (south and north of Central Valley - too far east of area).           |     |                             |     |                         |     |                             |     |                   |     |                   |      |   |      |  |     |                  |      |  |         |                                       |     |                         |          |                |
| Valley spearscale (San Joaquin saltbush)  | <i>Atriplex joaquiniana</i>                  | FSC           | Coastal prairie, alkaline-saline flat (Montezuma area). Also northeast of Slaughterhouse Point, Napa River. |     |                             |     |                         |     |                             |     |                   |     |                   |      |   |      |  |     |                  |      |  |         |                                       |     |                         |          |                |
| *White-rayed pentachaeta  | <i>Pentachaeta bellidiflora</i>              | FE, SE        | Grassy slopes in Marin, Greenbrae, and Larkspur and east edge of San Bruno Mountain.                        |     |                             |     |                         |     |                             |     |                   |     |                   |      |   |      |  |     |                  |      |  |         |                                       |     |                         |          |                |
| <p>Key:       *           Indicates species not in the LTMS Planning Area.</p> <table> <tr> <td>FE:</td> <td>Federally listed Endangered</td> <td>ST:</td> <td>State-listed Threatened</td> </tr> <tr> <td>FT:</td> <td>Federally listed Threatened</td> <td>SR:</td> <td>State-listed Rare</td> </tr> <tr> <td>FC:</td> <td>Federal Candidate</td> <td>SSC:</td> <td>State-listed Species of Special Concern</td> </tr> <tr> <td>FPE:</td> <td>Federally proposed for listing as Endangered</td> <td>PE:</td> <td>Presumed Extinct</td> </tr> <tr> <td>FPT:</td> <td>Federally proposed for listing as Threatened</td> <td>CNDDDB:</td> <td>California Natural Diversity Database</td> </tr> <tr> <td>SE:</td> <td>State-listed Endangered</td> <td>LS 1992:</td> <td>Last seen 1992</td> </tr> </table> |  |               |   | FE: | Federally listed Endangered | ST: | State-listed Threatened | FT: | Federally listed Threatened | SR: | State-listed Rare | FC: | Federal Candidate | SSC: | State-listed Species of Special Concern | FPE: | Federally proposed for listing as Endangered | PE: | Presumed Extinct | FPT: | Federally proposed for listing as Threatened | CNDDDB: | California Natural Diversity Database | SE: | State-listed Endangered | LS 1992: | Last seen 1992 |
| FE:   | Federally listed Endangered                  | ST:           | State-listed Threatened   |     |                             |     |                         |     |                             |     |                   |     |                   |      |   |      |  |     |                  |      |  |         |                                       |     |                         |          |                |
| FT:   | Federally listed Threatened                  | SR:           | State-listed Rare   |     |                             |     |                         |     |                             |     |                   |     |                   |      |   |      |  |     |                  |      |  |         |                                       |     |                         |          |                |
| FC:   | Federal Candidate                            | SSC:          | State-listed Species of Special Concern   |     |                             |     |                         |     |                             |     |                   |     |                   |      |   |      |  |     |                  |      |  |         |                                       |     |                         |          |                |
| FPE:  | Federally proposed for listing as Endangered | PE:           | Presumed Extinct  |     |                             |     |                         |     |                             |     |                   |     |                   |      |   |      |  |     |                  |      |  |         |                                       |     |                         |          |                |
| FPT:  | Federally proposed for listing as Threatened | CNDDDB:       | California Natural Diversity Database   |     |                             |     |                         |     |                             |     |                   |     |                   |      |   |      |  |     |                  |      |  |         |                                       |     |                         |          |                |
| SE:   | State-listed Endangered                      | LS 1992:      | Last seen 1992  |     |                             |     |                         |     |                             |     |                   |     |                   |      |   |      |  |     |                  |      |  |         |                                       |     |                         |          |                |