

### 4.3.1 Introduction

This chapter discusses the potential for the Proposed Program to affect biological resources. Specifically, this section: (1) discusses state and federal regulations relevant to the biological resources affected by the Proposed Program; (2) provides an overview of the existing environmental setting throughout the state; (3) identifies wildlife and plant species potentially affected by the Proposed Program; and (4) makes findings regarding the significance of the Proposed Program's impacts on biological resources.

The following appendices support this chapter:

- Appendix I: Descriptions of habitat types likely to occur in or adjacent to Proposed Program activities;
- Appendix J: Species lists generated from California Natural Diversity Database (CNDDDB) query;
- Appendix K: Detailed life history descriptions for *Fish* action species
- Appendix L: Species-based restrictions on Proposed Program activities
- Appendix M. Management of Invasive Species

For the purposes of this chapter, the word "fish" when written as *Fish* refers to all wild fish, mollusks, crustaceans, invertebrates, or amphibians, including any part, spawn, or ova thereof, per the definition promulgated in Fish and Game Code section 45. References to fin fish are written without italics and in appropriate grammatical context.

#### ***Organization of the Discussion of Existing Conditions***

This chapter addresses the following aspects of the existing conditions within the context of the Proposed Program.

- "Regulatory Setting" describes state and federal regulations relevant to the assessment of existing conditions and environmental consequences of the Proposed Program;
- "Environmental Setting" describes the various eco-regions of California where suction dredging may occur; and
- "Biological Resources" lists the organisms that potentially inhabit the Program Area. This section also identifies "special-status species" within the Program Area.

## 1 **Sources of Information**

2 The descriptions and analyses presented in this chapter were prepared using a broad range  
3 of information sources, including:

- 4 ■ The California Natural Diversity Database (CNDDDB);
- 5 ■ Studies specific to suction dredge mining;
- 6 ■ More generic reports relevant to biological communities and organisms  
7 including scientific analyses published in peer-reviewed journals and books;
- 8 ■ Professional experience with analysis of fisheries management programs,  
9 endangered species conservation, mining activities, and the effects of suction  
10 dredging in California;
- 11 ■ Other data sources as cited below; many of these resources are available online,  
12 as detailed in Chapter 8, *References Cited*.

### 13 **4.3.2 Regulatory Setting**

14 This section describes federal and state regulations, laws, permits, and policies that are  
15 relevant to protection of biological resources within the Program Area. A general  
16 description of local policies and ordinances that may be applicable to suction dredging is  
17 also provided.

#### 18 ***Federal Laws, Regulations, and Policies***

##### 19 Endangered Species Act of 1973

20 The Endangered Species Act (ESA) (16 U.S. Code [USC] 1531–1544) provides for the  
21 conservation of species that are endangered or threatened throughout all or a significant  
22 portion of their range, as well as the protection of habitats on which they depend. The U.S.  
23 Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric  
24 Administration's National Marine Fisheries Service (NMFS) share responsibility for  
25 implementing the ESA. In general, USFWS manages land and freshwater species, while  
26 NMFS manages marine and anadromous species. As defined by the ESA, endangered refers  
27 to species that are "in danger of extinction within the foreseeable future throughout all or a  
28 significant portion of its range," while threatened refers to "those animals and plants likely  
29 to become endangered within the foreseeable future throughout all or a significant portion  
30 of their ranges." Refer to *Special Status Species* discussion in Section 4.3.3 below, for details  
31 on the various regulatory classifications for species covered under ESA.

##### 32 *Endangered Species Act Section 4(d)*

33 Incidental take of a species listed as threatened under the federal ESA may be broadly  
34 authorized under Section 4(d) of the ESA, which authorizes incidental take of such  
35 threatened species consistent with certain conditions. Section 4(d) is not applicable to  
36 species listed as endangered under the ESA. Through a Section 4(d) rule, the USFWS or  
37 NMFS may apply take prohibitions for threatened species but exempt certain programs or  
38 activities (such as recreational fisheries) if they meet the requirements specified in the rule.  
39 The USFWS or NMFS may apply a Section 4(d) rule either at the time of listing or

1 subsequently. A familiar example is the 4(d) rule that protects anglers if they accidentally  
2 catch a listed fish species, provided that they release it unharmed.

### 3 *Endangered Species Act Section 7*

4 Section 7 requires federal agencies to consult with USFWS or NMFS, or both, before  
5 performing any action (including actions such as funding a program or issuing a permit)  
6 that may affect listed species or designated critical habitat. Section 7 consultations are  
7 designed to assist federal agencies in fulfilling their duty to ensure federal actions do not  
8 jeopardize the continued existence of a species or destroy or adversely modify critical  
9 habitat. Because the Proposed Program does not have a federal partner or nexus (in the  
10 form of a discretionary approval such as a Clean Water Act Section 404 permit) CDFG is not  
11 required, nor able to, undertake Section 7 consultation. Suction dredging that takes place on  
12 federal lands (e.g., National Forests), and is conducted in a manner that requires a federal  
13 agency to issue a discretionary permit, may be subject to Section 7 consultation if their  
14 activities have the potential for take of federally listed species.

### 15 *Endangered Species Act Section 9*

16 Under the ESA, it is illegal for any person, private entity, or government agency to take  
17 endangered species without federal authorization. Take of most threatened species is  
18 similarly prohibited. *Take* is defined to mean harass, harm, pursue, hunt, shoot, wound, kill,  
19 trap, capture, or collect, or attempt to engage in such conduct. *Harm* is defined to mean an  
20 act that actually kills or injures fish or wildlife. Take may include significant habitat  
21 modification or degradation that actually kills or injures fish or wildlife by significantly  
22 impairing essential behavioral patterns, including breeding, spawning, rearing, migrating,  
23 feeding, or sheltering. The incidental take of listed species can be authorized under Section  
24 7 or Section 10 of the ESA.

### 25 *Endangered Species Act Section 10*

26 Absent a 4(d) rule or a completed Section 7 consultation, incidental take of a listed species  
27 can only be authorized under Section 10 of the ESA. A Section 10(a)(1)(A) permit  
28 authorizes the intentional take of listed species for research or propagation that enhances  
29 the survival of the listed species in question. Incidental take by a non-federal entity also  
30 may be authorized through a Section 10(a)(1)(B) permit, including approval of a habitat  
31 conservation plan. While the Proposed Program assessed in this EIR is not seeking a Section  
32 10(a)(1)(B) permit, it is possible this section of the ESA is applicable to individual suction  
33 dredgers if their activities have the potential for take of federally listed species.

### 34 *Endangered Species Act Recovery Planning*

35 The USFWS and NMFS are responsible for evaluating the status of species listed under the  
36 ESA, and developing recovery plans for those species. The ESA requires that recovery plans  
37 be developed that evaluate the current status of the listed population or species, assess the  
38 factors affecting the species, identify recovery (delisting) goals, identify the entire suite of  
39 actions necessary to achieve these goals, and estimate the cost and time required to carry  
40 out those actions.

### *Endangered Species Act Critical Habitat*

When a species is proposed for listing as endangered or threatened under the ESA, USFWS or NMFS must consider whether there are areas of habitat that are essential to the species' conservation. Those areas may be proposed for designation as "critical habitat." Under Section 7, all federal agencies must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species, or destroy or adversely modify its designated critical habitat. These requirements apply only to federal agency actions, and only to habitat that has been designated. Critical habitat requirements do not apply to citizens engaged in activities on private land that do not involve a federal agency.

### Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Act of 1976 is the primary act governing federal management of fisheries in federal waters, from the three nautical-mile state territorial sea limit to outer limit of the U.S. Exclusive Economic Zone. It establishes exclusive U.S. management authority over all fishing within the Exclusive Economic Zone, all anadromous fish throughout their migratory range except when in a foreign nation's waters, and all fish on the continental shelf. The Act establishes eight Regional Fishery Management Councils responsible for the preparation of fishery management plans to achieve the optimum yield from U.S. fisheries in their regions. The Magnuson-Stevens Act also requires federal agencies to consult with the National Marine Fisheries Service on actions that could damage Essential Fish Habitat (EFH). EFH includes those habitats that support the different life stages of each managed species. A single species may use many different habitats throughout its life to support breeding, spawning, nursery, feeding, and protection functions. EFH can consist of both the water column and the underlying surface (e.g. streambed) of a particular area. EFH has been designated in many locations throughout the Program Area.

### Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (Title 16, United States Code [USC], Part 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 Code of Federal Regulations [CFR] 21, 50 CFR 10). Most actions that result in taking of, or the permanent or temporary possession of, a protected species constitute violations of the MBTA. The MBTA also prohibits destruction of occupied nests. The Migratory Bird Permit Memorandum (MBPM-2) dated April 15, 2003, clarifies that destruction of most unoccupied bird nests (without eggs or nestlings) is permissible under the MBTA; exceptions include nests of federally threatened or endangered migratory birds, bald eagles (*Haliaeetus leucocephalus*), and golden eagles (*Aquila chrysaetos*). USFWS is responsible for overseeing compliance with the MBTA.



1           ***State Laws, Regulations, and Policies***

2           California Environmental Quality Act

3           Title 14, section 15380, of the California Code of Regulations defines the terms species,  
4           endangered, rare, and threatened as they pertain to CEQA. Section 15380 also provides a  
5           greater level of consideration for state-listed or federally-listed species, and for any species  
6           that can be shown to meet the criteria for listing, but which has not yet been listed. The  
7           criteria for listing of a species under CEQA are as follows:

- 8                   ■ When its survival and reproduction in the wild are in immediate jeopardy from  
9                   one or more causes, including loss of habitat, change in habitat, overexploitation,  
10                  predation, competition, disease, or other factors; or
- 11                  ■ Although not presently threatened with extinction, the species is existing in such  
12                  small numbers throughout all or a significant portion of its range that it may  
13                  become endangered if its environment worsens; or
- 14                  ■ The species is likely to become endangered within the foreseeable future  
15                  throughout all or a significant portion of its range and may be considered  
16                  "threatened" as that term is used in the Federal Endangered Species Act.

17           California Fish and Game Commission

18           The California Constitution establishes the California Fish and Game Commission  
19           (Commission) (CA Constitution Article 4, § 20). The Fish and Game Code delegates the  
20           power to the Commission to regulate the taking or possession of birds, mammals, fish,  
21           amphibian and reptiles (Fish & G. Code, § 200). The Commission has adopted regulations  
22           setting forth the manner and method of the take of certain fish and wildlife in the California  
23           Code of Regulations, title 14. Likewise, the Commission has exclusive statutory authority  
24           under the Fish and Game Code to designate species as endangered or threatened under the  
25           California Endangered Species Act. (Fish & G. Code, § 2070)

26           California Fish and Game Code—Species Protection

27           The Fish and Game Code establishes CDFG (Fish & G. Code, § 700) and states that the fish  
28           and wildlife resources of the state are held in trust for the people of the state by and  
29           through CDFG (Fish & G. Code, § 711.7, subdiv. (a)). Fish and Game Code section 1802 states  
30           that CDFG has jurisdiction over the conservation, protection, and management of fish,  
31           wildlife, native plants, and habitat necessary for biologically sustainable populations of  
32           those species. All licenses, permits, tag reservations and other entitlements for the take of  
33           fish and game authorized by the Fish and Game Code are prepared and issued by CDFG  
34           (Fish & G. Code, § 1050, subdiv. (a)).

35           Provisions of the Fish and Game Code provide special protection to certain enumerated  
36           species such as:

- 37                   ■ section 3503 protects eggs and nests of all birds.
- 38                   ■ section 3503.5 protects birds of prey and their nests.

- 1           ■ section 3513 protects all birds covered under the Federal Migratory Bird Treaty
- 2           Act.
- 3           ■ section 3511 lists fully protected birds.
- 4           ■ section 5515 lists fully protected fish species.
- 5           ■ section 3800 defines nongame birds.
- 6           ■ section 4700 lists fully protected mammals.
- 7           ■ section 5050 lists fully protected amphibians and reptiles.

#### 8           California Fish and Game Code—Lake or Streambed Alteration

9           Fish and Game Code section 1602 states that "an entity may not substantially divert or  
10          obstruct the natural flow of, or substantially change or use any material from the bed,  
11          channel, or bank of, any river, stream, or lake" unless CDFG receives written notification  
12          regarding the activity and the entity pays the applicable fee. If CDFG determines that the  
13          activity may substantially adversely affect an existing fish or wildlife resource, CDFG issues  
14          an Agreement to the entity that includes reasonable measures necessary to protect the  
15          resource. Activities that typically require a Lake or Streambed Alteration Agreement  
16          include, but are not limited to, excavation or placement of fill within a stream channel,  
17          vegetation clearing, installation and operation of structures that divert the flow of water,  
18          installation of culverts and bridge supports, cofferdams for construction dewatering, and  
19          bank reinforcement.

20          As indicated earlier (Chapter 2), there are several circumstances under the Proposed  
21          Program (i.e., power winching, operation of a suction dredge with a nozzle larger than four  
22          inches, water diversions or impoundments, and dredging in lakes), for which a suction  
23          dredge miner would be required to submit notification to CDFG pursuant to Fish and Game  
24          Code section 1602, in addition to obtaining a suction dredge permit required pursuant to  
25          Fish and Game Code section 5653 et seq.

#### 26          California Fish and Game Code—Native Plant Protection Act

27          The Native Plant Protection Act (NPPA) of 1977 (Fish & G. Code, §§ 1900-1913) directs  
28          CDFG to carry out the Legislature's intent to "preserve, protect and enhance rare and  
29          endangered plants in this state." The NPPA authorizes the Commission to designate plants  
30          as 'endangered' or 'rare' and 'take' of any such plants is prohibited by the Fish and Game  
31          Code, except as authorized in limited circumstances."

#### 32          California Fish and Game Code—California Endangered Species Act

33          The California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.) is intended to  
34          conserve, protect, restore, and enhance species designated as endangered or threatened,  
35          and their habitat (Fish & G. Code, § 2052). The Commission has exclusive statutory  
36          authority to designate species as endangered or threatened under CESA (California  
37          Constitution, article IV, § 20, subd. (b); Fish & G. Code, § 2070). Animal species designated  
38          as endangered or threatened under CESA are listed in California Code of Regulations, Title  
39          14, section 670.5. Plant species designated as endangered or threatened under CESA, or  
40          designated as a rare plant species under the California Native Plant Protection Act (Fish & G.  
41          Code, § 1900 et seq.), are listed in California Code of Regulations, Title 14, section 670.2.

1 CESA directs all state agencies, boards, and commissions to seek to conserve endangered  
2 and threatened species, and to utilize their authority in furtherance of that policy (Fish & G.  
3 Code, § 2055). For purposes of CESA, "conserve," "conserving," and "conservation" mean to  
4 use, and the use of all methods and procedures which are necessary to bring any  
5 endangered or threatened species to the point at which the protections provided by CESA  
6 are no longer necessary. These methods and procedures include, but are not limited to, all  
7 activities associated with scientific resources management, such as research, census, law  
8 enforcement, habitat acquisition, restoration and maintenance, propagation, live trapping,  
9 and transplantation, and, in the extraordinary case where population pressures within a  
10 given ecosystem cannot be otherwise relieved, may include regulated taking (Fish & G.  
11 Code, § 2061). CESA emphasizes that state agencies should not approve projects as  
12 proposed which would jeopardize the continued existence of any endangered or threatened  
13 species or result in the destruction or adverse modification of habitat essential to the  
14 continued existence of those species, if there are reasonable and prudent alternatives  
15 available consistent with conserving the species or its habitat that would prevent jeopardy  
16 (Fish & G. Code, § 2052.1).

17 Species designated as endangered or threatened under CESA, and species designated as  
18 candidates for listing or delisting under CESA, are subject to what is commonly known as  
19 CESA's "take" prohibition. In general, this prohibition provides that no person shall import  
20 into the state, or export out of the state, or take, possess, purchase, or sell within the state  
21 (or attempt to do any of those acts), any species, or any part or product thereof, designated  
22 by the Commission as protected under CESA, except as otherwise provided by law (Fish & G.  
23 Code, §§ 2080, 2085; see also Cal. Code Regs., tit. 14, § 670.2, subd. (i)(1)(B)1). "Take" is  
24 defined specifically in the Fish and Game Code to mean "hunt, pursue, catch, capture, or  
25 kill," or an attempt to do any such act, and violations of CESA's take prohibition are criminal  
26 misdemeanors under state law (Fish & G. Code, §§ 86, 12000; see also *Department of Fish  
27 and Game v. Anderson-Cottonwood Irrigation District* (1992) 8 Cal.App.4th 1554). Unlike the  
28 ESA, CESA applies the take prohibitions to species under petition for listing (state  
29 candidates) in addition to listed species. Section 2081 of the Fish and Game Code expressly  
30 allows CDFG to authorize, by permit, the incidental take of endangered, threatened, and  
31 candidate species if all of the following conditions are met:

- 32 ■ The take is incidental to an otherwise lawful activity.
- 33 ■ The impacts of the authorized take are minimized and fully mitigated.
- 34 ■ Issuance of the permit will not jeopardize the continued existence of the species.
- 35 ■ The permit is consistent with any regulations adopted in accordance with  
36 sections 2112 and 2114 (legislature-funded recovery strategy pilot programs in  
37 the affected area).
- 38 ■ The applicant ensures that adequate funding is provided for implementing  
39 mitigation measures and monitoring compliance with these measures and their  
40 effectiveness.

41 Recent case law provides important guidance regarding the issuance criteria for an  
42 Incidental Take Permit under Fish and Game Code section 2081, subdivision (b). In  
43 *Environmental Protection and Information Center v. California Dept. of Forestry and Fire  
44 Protection* (2008) 44 Cal.4th 459, for example, the California Supreme Court clarified with  
45 respect to an Incidental Take Permit issued pursuant to Fish and Game Code section 2081,

1 subdivision (b), that "'take' in this context means to catch, capture or kill" (44 Cal.4th, p.  
2 507, citing Fish & G. Code, § 86). Similarly, in *Environmental Council of Sacramento v. City of*  
3 *Sacramento* (2006) 142 Cal.App.4th 1018, the Third District Court of Appeal underscored  
4 that the issuance criteria necessarily involve a complex mix of quantitative and qualitative  
5 factors that CDFG must balance and gauge in the exercise of its independent judgment.  
6 Likewise, with respect to the requirement that the permittee minimize and fully mitigate all  
7 the impacts of the authorized take, the court rejected "any insinuation that the definition of  
8 'take' under Fish and Game Code section 2081, subdivision (b)(2), encompasses the taking  
9 of habitat alone or the impacts of the taking. As Section 86 of the Fish and Game Code makes  
10 clear, proscribed taking involves mortality (142 Cal.App.4th, p. 1040).

11 In short, the incidental take of listed species is authorized by CDFG on a discretionary basis.  
12 Typically, mitigation measures, including species and habitat avoidance, minimization,  
13 restoration or enhancement, acquisition, and permanent protection of compensatory  
14 habitat, along with monitoring and management and funding assurances, are necessary to  
15 demonstrate that project impacts are fully mitigated. Full mitigation for take of listed  
16 species is determined on a project-specific basis, and a variety of combinations of mitigation  
17 actions can form the basis for a conclusion that the impacts of the taking caused by any  
18 particular project are fully mitigated as required by CESA. Generally, though, full mitigation  
19 can be achieved by offsetting the project's incidental take of individuals of the covered  
20 species, along with the other spatial, temporal, direct, indirect, and cumulative impacts,  
21 including habitat loss, that constitute "impacts of the taking" as that term is used in CESA,  
22 such that the covered species continues to survive and thrive after completion of the project  
23 and required mitigation.

24 The CESA also provides that if a person obtains a federal incidental take statement or  
25 incidental take permit under specified provisions of the ESA for species also listed under the  
26 CESA, no further authorization is necessary under CESA if the federal permit satisfies all the  
27 requirements of CESA and the person follows specified procedures (Fish & G. Code, §  
28 2080.1). Refer to *Special Status Species* discussion in Section 4.3.3 of this Chapter for detail  
29 on the various regulatory classifications for species covered under CESA.

### 30 ***Local Ordinances and Land Use Designations***

31 There are numerous ordinances and policies enforced at the county and city levels that aim  
32 to protect fish, wildlife and their habitats. These ordinances include restrictions on activities  
33 that may be conducted in streams, riparian and wetlands areas. There are also many land  
34 use designations at the federal, state and local levels that may preclude the use of suction  
35 dredge equipment. Examples of these areas include federally designated wilderness, state  
36 Ecological Reserves, and county open space preserves. Due to the broad geographic range of  
37 the Proposed Program and limited authority of CDFG, areas that may be restricted from  
38 suction dredging due to local ordinances or land use designations are not considered  
39 specifically in this analysis. As stated in the regulations, issuance of a suction dredge permit  
40 does not relieve the permittee of the responsibility of complying with applicable federal,  
41 state, or local laws or ordinances.

### 4.3.3 Environmental Setting

#### ***Geographic Regions***

The geographic scope of the Proposed Program encompasses the entire state. In the past, suction dredging activities have been concentrated on the rivers, streams and lakes within the Klamath Basin, the Mother Lode Region of the Sierra Nevada, and to a lesser extent streams within the San Gabriel and Los Angeles River watersheds. However, the Proposed Program does not limit the activity to these areas, therefore all perennial freshwater streams and lakes and adjacent lands are considered in the environmental setting of this EIR.

For purposes of this analysis, California is divided into eight regions according to physiographic characteristics (e.g., topography and hydrography) (Bunn et al., 2007). The descriptions of these regions, presented below, address the general physical landscape (Figure 4.3-1) and major stressors affecting wildlife and habitats within each of eight regions. The eight regions are:

- Mojave Desert Region,
- Colorado Desert Region,
- South Coast Region,
- Central Coast Region,
- North Coast-Klamath Region,
- Modoc Plateau Region,
- Sierra Nevada and Cascades Region, and
- Central Valley and Bay-Delta Region.

Full accounts for each region are provided by Bunn et al. (2007), which, except as noted otherwise, was the source for the summaries presented below.

#### **Mojave Desert Region**

The 32-million-acre Mojave Desert extends into four states: California, Nevada, Arizona, and Utah. The majority of the landscape is a moderately high plateau at elevations between 2,000 and 3,000 feet. Variations in topography, soil composition, and aspect largely account for habitat diversity. Aquatic, wetland, and riparian habitat is associated with seeps, springs, ephemeral and perennial streams. Significant perennial streams include the Amargosa and Mojave Rivers, as well as Surprise Canyon and Cottonwood Creek in the Panamint Range.

The federal government manages about 80% of the Mojave Desert Region in California. The largest land manager is the Bureau of Land Management (BLM), overseeing 8 million acres. The National Park Service (NPS) manages another 5 million acres, including the Mojave National Preserve and Death Valley and Joshua Tree National Parks, and the Department of Defense manages five military bases that cover the remaining 2.5 million acres of federal land. In contrast, the State Park System and CDFG manage only 0.32% of the region.

1 Major stressors affecting wildlife and habitats in the Mojave Desert Region include multiple  
2 uses conflicting with wildlife on public lands, growth and development, solar energy  
3 development, fire, groundwater overdraft, loss of riparian habitat, inappropriate off-road  
4 vehicle use, excessive livestock grazing, excessive burro and horse grazing, invasive plants,  
5 non-native fish, military lands management conflicts, illegal harvest or illegal  
6 commercialization, and mining operations.

7 None of the Suction Dredger Survey respondents reported dredging in the Mojave Desert  
8 Region (see Appendix F).

### 9 Colorado Desert Region

10 The 7 million acres of the Colorado Desert Region extend from the Mojave Desert in the  
11 north to the Mexican border in the south, and from the Colorado River in the east to the  
12 Peninsular Ranges in the west. The majority of the landscape lies below 1,000 feet elevation,  
13 but elevations range from 275 feet below sea level in the Salton Trough to nearly 10,000  
14 feet in the Peninsular Ranges. These mountain ranges block most coastal air, resulting in an  
15 arid climate. The region experiences higher summer daytime temperatures than those  
16 found in higher-elevation deserts, and seldom experiences frost. Precipitation occurs over  
17 two seasons, one in winter and one in late summer. The common habitats of the Colorado  
18 Desert Region are creosote bush scrub; mixed scrub, including yucca (*Yucca* spp.) and cholla  
19 (*Opuntia* spp.) cactus; desert saltbush (*Atriplex polycarpa*); sandy soil grasslands; and desert  
20 dunes. Higher elevations are dominated by pinyon pine (primarily *Pinus monophylla*, *P.*  
21 *edulis* and *P. quadrifolia*), and California juniper (*Juniperus californica*), with areas of  
22 manzanita (*Arctostaphylos* spp.) and Coulter pine (*P. coulteri*).

23 In the Colorado Desert region's arid climate, aquatic and wetland habitats are uncommon  
24 but critical to wildlife. Springs and runoff from seasonal rains form alluvial fans, arroyos, fan  
25 palm oases, freshwater marshes, brine lakes, washes, ephemeral and perennial streams, and  
26 riparian vegetation communities dominated by cottonwood (*Populus* spp.), willow (*Salix*  
27 spp.), and invasive tamarisk (*Tamarix* spp.). The region's two largest water systems are the  
28 Salton Sea and the Colorado River.

29 The largest land manager of the region is the BLM, overseeing 2.9 million acres. Department  
30 of Defense land accounts for 500,000 acres. A number of other public landholdings occur  
31 around the Salton Sea. Slightly less than half of the Joshua Tree National Park lies within the  
32 Colorado Desert Region. Anza Borrego Desert State Park encompasses more than 600,000  
33 acres. Santa Rosa Wildlife Area encompasses about 100,000 acres.

34 Although the Colorado Desert remains one of the least populated regions in California,  
35 human activities have had a substantial impact on the region's habitat and wildlife. Some of  
36 the greatest human-caused effects on the region have resulted from water diversions and  
37 flood control measures along the Colorado River. In addition, portions of the region are  
38 experiencing substantial growth and development pressures, most notably within the  
39 Coachella Valley.

40 Major stressors affecting wildlife and habitats in the Colorado Desert Region include water  
41 management conflicts and water transfer effects, inappropriate off-road vehicle use, loss



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**Figure 4.3-1**  
**Biological Regions in California (after Bunn et al., 2007)**

1 and degradation of dune habitats, growth and development, solar energy development, and  
2 invasive species.

3 None of the Suction Dredger Survey respondents reported dredging in the Colorado Desert  
4 Region (see Appendix F).

### 5 South Coast Region

6 The 8 million acres of California's South Coast Region extend along the coast from the  
7 middle of Ventura County in the north, to the Mexican border in the south. Inland, the  
8 region is bounded by the Peninsular Ranges and the transition to the Mojave and Colorado  
9 Deserts on the east, and by the Transverse Ranges on the north. The landscape varies from  
10 wetlands and beaches to hillsides, rugged mountains, arid deserts, and densely populated  
11 metropolitan areas. The region's coastal habitats include coastal strand, lagoons, and river-  
12 mouth estuaries that transition from riparian wetlands to freshwater and saltwater  
13 marshes. Inland, the predominant hillside and bluff communities are coastal sage scrub and  
14 chaparral. Low- to mid-elevation uplands often feature oak woodlands, while coniferous  
15 forests dominate higher-elevation mountainous areas.

16 The region's largest river drainages include the Tijuana, San Diego, San Luis Rey, Santa  
17 Margarita, Santa Ana, San Gabriel, Los Angeles, Santa Clara, and Ventura Rivers. Pine forests  
18 occur along the high-elevation stream reaches, and mountain drainages support southern  
19 mountain yellow-legged frog (*Rana mucosa*), California red-legged frog (*R. draytonii*),  
20 arroyo toad (*Bufo californicus*), arroyo chub (*Gila orcuttii*), Santa Ana sucker (*Catostomus*  
21 *santaanae*), and Santa Ana speckled dace (*Rhinichthys osculus* ssp.). In urbanized coastal  
22 areas, many sections of the region's river corridors are channelized with concrete.

23 Major stressors affecting wildlife and habitats in the South Coast Region include growth and  
24 development, water management conflicts and degradation of aquatic ecosystems, invasive  
25 species, altered fire regimes, and recreational pressures.

26 In recent history, suction dredging in this region has primarily occurred on the East Fork of  
27 the San Gabriel River, Cajon Creek (below Highway 138) and Big Tujunga Creek (USFS,  
28 2007). Suction dredging has also occurred on tributaries of the Santa Clara River (e.g., Piru  
29 Creek). Suction Dredger Survey respondents reported dredging in several other drainages  
30 within the South Coast Region, including Holcomb Creek and the Azusa River (see Appendix  
31 F).

### 32 Central Coast Region

33 The 8 million acres of California's Central Coast Region extend from the southern boundary  
34 of Los Padres National Forest north to the San Francisco Bay lowlands. Inland, the region is  
35 bounded on the east by the Diablo and Temblor mountain ranges. A rugged coastline  
36 characterizes the landscape, with small mountain ranges that roughly parallel the coast,  
37 river valleys with rich alluvial soils, and arid interior valleys and hills. Across the region,  
38 differences in climate, geography, and soils result in widely varying ecological conditions,  
39 supporting diverse coastal, montane, and desert-like natural communities. The region's  
40 coastal habitats include river mouth estuaries, lagoons, sloughs, tidal mudflats, marshes,  
41 coastal scrub, and maritime chaparral. Coastal scrub and grasslands extend inland along  
42 river valleys. The outer coastal ranges support mixed coniferous forests and oak woodlands.



1 The region's largest drainages include the Santa Ynez, Santa Maria, Carmel, Salinas, and  
2 Pajaro watersheds. The outer coastal ranges, including the Santa Cruz and Santa Lucia  
3 mountains, run parallel to the coastline.

4 Major stressors affecting wildlife and habitats in the Central Coast Region include  
5 population growth, expansion of intensive types of agriculture, invasions by exotic species,  
6 and overuse of regional water resources.

7 None of the Suction Dredger Survey respondents reported dredging in the Central Coast  
8 Region (see Appendix F), however many of the Central Coast counties were closed to  
9 dredging under the previous regulations.

#### 10 North Coast–Klamath Region

11 The 14-million-acre North Coast–Klamath Region extends along the Pacific coast from the  
12 Oregon-California border to the San Francisco Bay watershed. The region's inland boundary  
13 is formed by the Cascade Ranges along the north and the transition to the Sacramento  
14 Valley in the south. The region is characterized by large expanses of rugged, forested  
15 mountains that range in elevation from 3,000 feet to over 9,000 feet. The climate features  
16 high precipitation in the coastal areas and dry conditions in some inland valleys. The  
17 region's coastal habitats include beaches, rocky shorelines, estuaries, lagoons, marshes,  
18 open-water bays, grasslands, coastal shrub, pine forests, mixed evergreen forests, and  
19 redwood forests. The inland ecological communities include moist forests dominated by  
20 Douglas fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus contorta*), and sugar pine (*Pinus*  
21 *lambertiana*) mixed with a variety of other conifers and hardwoods.

22 The region's major inland waterways are part of the Klamath River system, which includes  
23 the Klamath, Scott, Shasta, Salmon, and Trinity Rivers. River systems draining the Coast  
24 Ranges include the Eel, Russian, Mattole, Navarro, Smith, Mad, Little, and Gualala Rivers,  
25 and Redwood Creek. The majority of California's rivers with state or federal "wild and  
26 scenic river" designations are in the North Coast–Klamath Region, including portions of the  
27 Klamath, Trinity, Smith, Scott, Salmon, Van Duzen, and Eel Rivers.

28 Major stressors affecting wildlife and habitats in the North Coast–Klamath Region include  
29 water management conflicts, in-stream gravel mining, forest management conflicts, altered  
30 fire regimes, agriculture and urban development, excessive livestock grazing, non-native  
31 fishes, and invasive species. The introduction of nonnative fish to formerly fishless lakes  
32 and streams has substantially affected the aquatic life of the region, particularly in the  
33 subalpine and alpine ecosystems. Decades of stocking fish to create and maintain a  
34 recreational fishery have contributed to the decline of some native species in the region.  
35 The North Coast–Klamath Region is the focus of some of the highest use by suction  
36 dredgers. The Suction Dredger Survey (Appendix F) indicates that the activity has been  
37 particularly concentrated on tributaries of the Klamath, Trinity, Salmon and Scott rivers.

#### 38 Modoc Plateau Region

39 The Modoc Plateau Region is framed by and includes the Warner Mountains and Surprise  
40 Valley along the Nevada border on the east, and the edge of the southern Cascade Ranges on  
41 the west. The region extends north to the Oregon border and south to include the Skedaddle  
42 Mountains and the Honey Lake Basin. Elevations range from 4,000 to 5,000 feet. The region

1 is situated on the western edge of the Great Basin and supports high-desert plant  
2 communities and ecosystems similar to that region, including shrub-steppe, perennial  
3 grasslands, sagebrush, antelope bitterbrush, mountain mahogany, and juniper woodlands.  
4 Conifer forests dominate the higher elevations. Wetland, spring, meadow, vernal pool,  
5 riparian, and aspen communities are scattered throughout the rugged and otherwise dry  
6 desert landscape. The region's major waterway is the Pit River and its tributaries.

7 Sixty percent of the region is federally managed: The Forest Service manages 30%, the BLM  
8 manages 26%, and USFWS and Department of Defense manage about 2% of the land in the  
9 region. CDFG manages 1% of the land, while about 37% is privately owned or belongs to  
10 municipalities.

11 The 3-million-acre Pit River watershed is the major drainage of the Modoc Plateau,  
12 providing 20% of the water to the Sacramento River. The upper reaches of the watershed  
13 are in creeks of the Warner Mountains that drain into Goose Lake. The north fork of the Pit  
14 River flows from Goose Lake southwest and merges with the south fork of the Pit River,  
15 which drains the southern Warner Mountains. Several endemic aquatic species, including  
16 Modoc sucker (*Catostomus microps*), Goose Lake redband trout (*Oncorhynchus mykiss* ssp.),  
17 Goose Lake tui chub (*Gila bicolor* spp.), Goose Lake (Pacific) lamprey (*Lampetra tridentata*),  
18 and Shasta crayfish (*Pacifastacus fortis*), inhabit the watershed (Moyle, 2002).

19 Creeks of the northern Modoc Plateau (or Lost River watershed) drain to Clear Lake. The  
20 outlet of Clear Lake is the Lost River, which circles north into Oregon farmland and then  
21 joins the Klamath River system. The Lost River watershed has its own endemic aquatic fish  
22 and invertebrates.

23 Major stressors affecting wildlife and habitats in the Modoc Plateau Region include  
24 excessive livestock grazing, excessive feral horse grazing, altered fire regimes, Western  
25 juniper (*Juniperus occidentalis*) expansion, invasive plants, forest management conflicts, and  
26 water management conflicts and degradation of aquatic ecosystems. The introduction of  
27 exotic aquatic species [e.g., largemouth bass (*Micropterus salmoides*) and nonnative trout to  
28 lakes; and bullheads (*Ameiurus* spp.), catfishes, and signal crayfish to rivers and streams]  
29 has reduced or extirpated populations of native amphibians and fish and affected  
30 invertebrates in many segments of the rivers, creeks, and lakes of the region. None of the  
31 Suction Dredger Survey respondents reported dredging in the Modoc Plateau Region (see  
32 Appendix F).

### 33 Sierra Nevada and Cascades Region

34 The Sierra Nevada and Cascade Ranges form the spine of California's landscape, extending  
35 525 miles from north to south. The southern Cascades extend from north of the Oregon  
36 border southeastward to Mount Lassen, where they merge with the Sierra Nevada range.  
37 The Sierra Nevada range extends to the south to the Mojave Desert, where it curves south to  
38 link with the Tehachapi Mountains. The region includes oak woodland foothills on the  
39 western slope of the Sierra Nevada and Cascade Ranges and, on the east, the Owens Valley  
40 and edges of the Great Basin. On the west side, elevations gradually increase from near sea  
41 level at the floor of the Central Valley to ridgelines ranging from 6,000 feet in the north to  
42 14,000 feet in the south. The east slope of the Sierra Nevada drops off sharply, and the east  
43 side of the Cascade Range slopes gradually. As elevations increase from west to east,

1 habitats transition from chaparral and oak woodlands to lower-level montane forests of  
2 ponderosa and sugar pine to upper montane forests of firs, Jeffrey pine (*Pinus jeffreyi*), and  
3 lodgepole pine and above timberline to alpine plant communities.

4 Sixty-one percent of the Sierra Nevada and Cascade Ranges are managed by federal  
5 agencies: the Forest Service manages 46%, the National Park Service manages 8%, and BLM  
6 manages 7%. State parks and wildlife areas account for 1% of the region, while the  
7 remaining area is privately owned.

8 The hundreds of creeks and streams on the western slope of the Sierra Nevada and Cascade  
9 Ranges drain via major river basins to merge with the Sacramento River in the north and  
10 the San Joaquin River in the south. The southernmost streams drain into the Tulare Basin  
11 via the Kings, Kaweah, Tule, and Kern rivers, while the streams east of the Sierra Nevada  
12 crest drain into the Great Basin via the Lahontan, Mono, and Owens drainages. Many of the  
13 creeks and streams of northeastern California drain via the Pit River, which joins the  
14 Sacramento River at Lake Shasta.

15 There are 67 aquatic habitat types in the region. Major riparian habitats include valley  
16 foothill riparian, montane riparian, wetland meadow, and aspen. Numerous invertebrate  
17 and vertebrate species are associated with these moist habitats. Other wildlife species,  
18 including some raptors and numerous songbirds, live in drier plant communities and rely  
19 on nearby aquatic and riparian habitats for hunting, foraging, cover, and resting. Of the 67  
20 aquatic habitat types, nearly two-thirds are in decline. Ecosystem functions have been  
21 disrupted in thousands of riparian areas, and more than 600 miles of river habitat have  
22 been submerged under reservoirs.

23 Major stressors affecting wildlife and habitats in the Sierra Nevada and Cascades Region  
24 include growth and land development, forest management conflicts, altered fire regimes,  
25 excessive livestock grazing, invasive plants, recreational pressures, climate change, and  
26 introduced nonnative fish.

27 The Sierra Nevada range, particularly the Mother Lode Region, is the focus of some of the  
28 highest use by suction dredgers. Suction Dredge Survey respondents reported activity  
29 throughout the Sierra Nevada including drainages within Plumas, Butte, Sierra, Nevada,  
30 Yuba, Placer, El Dorado, Amador, Calaveras, Tuolumne, Madera and Mariposa counties.  
31 Dredging was reported on more than 150 different streams in the region. (For more  
32 information, see Appendix F.)

### 33 Central Valley and Bay-Delta Region

34 The Central Valley and Bay-Delta Region comprises most of the low-lying lands of central  
35 California. Forty percent of the state's water falls as either rain or snow over much of the  
36 northern and central parts of the state and drains into the Sacramento or San Joaquin  
37 Rivers, which feed into the Sacramento-San Joaquin Delta (Delta). The Delta and the San  
38 Francisco Bay together form California's largest estuary (1,600 square miles of waterways).  
39 The region has four subregions, each with its own unique climate, topography, ecology, and  
40 land use: the San Francisco Bay area, the Delta, the Sacramento Valley, and the San Joaquin  
41 Valley.

1 The San Francisco Bay area is the most densely populated area of the state of California  
2 outside of the southern California metropolitan region. The region consists of low-lying  
3 baylands, aquatic environments, and watersheds that drain into the San Francisco Bay. The  
4 region is bounded on the east by the Delta, on the west by the Pacific Ocean, in the north by  
5 the North Coast–Klamath Region, and on the south by the Central Coast Region. Low coastal  
6 mountains surround the region, with several peaks rising above 3,000 feet. The climate is  
7 characterized by relatively cool, often foggy summers, and cool winters. The area receives  
8 15–25 inches of rain annually from October to April, leaving most of the smaller streams dry  
9 by the end of summer. The topography of the San Francisco Bay area allows for a variety of  
10 habitats, including deep and shallow estuarine environments in the bay itself. The bay also  
11 supports many marine species. Along the shoreline are coastal salt marshes, coastal scrub,  
12 tidal mudflats, and salt ponds. Ninety percent of the surface water from the Sacramento and  
13 San Joaquin Rivers and their tributaries is received via the Delta. Other major river  
14 drainages include the Napa and Petaluma Rivers and the Sonoma, Petaluma, and Coyote  
15 Creeks.

16 The Great Central Valley contains the Sacramento Valley, the San Joaquin Valley, and the  
17 Delta. Together they form a vast, flat valley, approximately 450 miles long and averaging 50  
18 miles wide, with elevations almost entirely less than 300 feet. The Sutter Buttes (2,000 feet)  
19 are the only topographic feature that exceeds that height. The Central Valley is surrounded  
20 by the Sierra Nevada on the east, the Coast Ranges on the west, the Tehachapi Mountains on  
21 the south, and the Klamath and Cascade mountains on the north. The Central Valley has hot,  
22 dry summers, and foggy, rainy winters. Annual rainfall averages from 5 to 25 inches, with  
23 the least rainfall occurring in the southern portions and along the west side (in the rain  
24 shadow of the coastal mountains). Agriculture dominates land use in the Central Valley. The  
25 major natural upland habitats are annual grassland, valley oaks on floodplains, and vernal  
26 pools on raised terraces.

27 The Delta is a low-lying area that contains the tidally influenced portions of the Sacramento,  
28 San Joaquin, Mokelumne, and Cosumnes Rivers. The Delta was once an extensive brackish  
29 marsh formed by the confluence of the Sacramento and San Joaquin Rivers, but has been  
30 extensively diked and drained for agriculture, flood protection and water supply.

31 The Sacramento Valley contains the largest river in the state, the Sacramento River. The  
32 Sacramento River and its numerous tributaries support winter-run, spring-run, and fall-  
33 /late fall-run Chinook salmon (*Oncorhynchus tshawytscha*) populations; steelhead (*O.*  
34 *mykiss*); green sturgeon (*Acipenser medirostris*); and hardhead (*Mylopharodon*  
35 *conocephalus*). The lower 180 miles of the river are contained by levees, and excess  
36 floodwaters are diverted into large bypasses to reduce risks to human populations.

37 The San Joaquin Valley has two distinct, or separate, drainages. In the northern portion, the  
38 San Joaquin River flows north toward the Delta. It captures water from the Stanislaus,  
39 Tuolumne, and Merced Rivers and supports fall-/late fall-run Chinook salmon populations,  
40 steelhead, and hardhead populations. The southern portion of the valley is isolated from the  
41 ocean and drains to the closed Tulare Basin, except in very wet years when the Tulare Basin  
42 overflows to the San Joaquin River. Lakes and vast wetlands in this region are now dry most  
43 of the time because water has been dammed and diverted for agriculture.

1 Major stressors affecting wildlife and habitats in the Central Valley and Bay-Delta Region  
2 include urban, residential, agricultural, and solar energy growth and development; water  
3 management conflicts; water pollution; invasive species; and climate change. Suction  
4 Dredger Survey respondents reported dredging in a few drainages within the Central Valley  
5 and Bay-Delta Region (Appendix F).

## 6 ***Wildlife Habitats***

7 The California Wildlife Habitat Relationships (CWHR) system classifies and describes the  
8 major wildlife habitat types that occur in the state. At present, 59 habitat types have been  
9 classified (Mayer and Laudenslayer, 1988). Because the geographic scope of the Proposed  
10 Program encompasses the entire state, suction dredging has the potential to occur in any of  
11 the aquatic and riparian-associated habitats within the state.

12 Based on the historical distribution of suction dredging activity, Proposed Program  
13 activities would most likely to take place in and adjacent to: *riverine, montane riparian, and*  
14 *valley foothill riparian* habitats. Suction dredgers would be likely to access and egress  
15 dredging site through developed sites (e.g., boat ramps), barren areas, and/or through the  
16 following wildlife habitat types: *annual grassland, blue oak-foothill pine, Douglas-fir,*  
17 *Klamath mixed conifer, lodgepole pine, montane chaparral, montane hardwood, montane*  
18 *hardwood-conifer, ponderosa pine, and Sierran mixed conifer*. Description of these habitat  
19 types are provided in Appendix I (after Mayer and Laudenslayer, 1988).

## 20 ***Special-Status Species***

### 21 Regulatory Classification

22 Many potential impacts discussed in this chapter are assessed in the context of their  
23 potential to affect special-status species, which are herein defined to include all species that  
24 have been specifically identified by USFWS, NMFS, or CDFG as warranting some level of  
25 protection from human impacts. Special-status plants also include California Rare Plant  
26 Rank<sup>1</sup> List 1 and 2 species. The following terms are used by state and federal agencies to  
27 designate special-status species:

28 **Fully protected (FP):** species designated as fully protected under Fish and Game Code  
29 Sections 3511, 4700, 5050, or 5515. FP species may not be taken at any time unless  
30 authorized by CDFG for necessary scientific research, which cannot include actions for  
31 project mitigation. Necessary scientific research includes efforts to recover fully protected,  
32 endangered, and threatened species. A notification must be published in the California  
33 Regulatory Notice Register prior to CDFG authorizing take of fully protected species. While  
34 some species included under these statutes are also listed as threatened, endangered or  
35 Species of Special Concern, others are not.

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<sup>1</sup> CDFG has formally changed the name of the “CNPS List” or “CNPS Ranks” to “California Rare Plant Rank” (or Rare Plant Rank, RPR). The Rare Plant Status Review groups (300+ botanical experts from government, academia, NGOs and the private sector) produce the rank assignments for rare plants. This collaborative effort is jointly managed by DFG and CNPS (CDFG, 2010).

1       **Federal endangered (FE):** species designated as endangered under ESA. A FE species is  
2 one that is in danger of extinction throughout all or a significant portion of its range.  
3 Incidental take of any individual of an FE species is prohibited except with prior  
4 authorization from USFWS or NMFS.

5       **State endangered (SE):** species designated as endangered under CESA. These include  
6 native species or subspecies that are in serious danger of becoming extinct throughout all,  
7 or a significant portion, of its range due to one or more causes, including loss of habitat,  
8 change in habitat, overexploitation, predation, competition, or disease (CESA § 2062). Take,  
9 as defined by Fish and Game Code Section 86, of any state endangered species is prohibited,  
10 except as authorized by the Fish and Game Code

11       **Federal threatened (FT):** species designated as threatened under ESA. A FT species is one  
12 that is likely to become endangered in the foreseeable future throughout all or a significant  
13 portion of its range. At the discretion of USFWS or NMFS, incidental take of any individual of  
14 an FT species may be prohibited or restricted.

15       **State threatened (ST):** species designated as threatened under CESA. These include native  
16 species or subspecies that, although not presently threatened with extinction, are likely to  
17 become an endangered species in the foreseeable future in the absence of special protection  
18 and management efforts (CESA § 2067). Take, as defined by Fish and Game Code Section 86,  
19 of any state endangered species is prohibited, except as authorized by the Fish and Game  
20 Code.

21       **State candidate (SC):** species designated as a candidate for listing under CESA. These are  
22 native species or subspecies for which the Commission has accepted a petition for further  
23 review under CESA Section 2068, finding that there is sufficient scientific information to  
24 indicate that the petitioned action may be warranted.” Take, as defined by Fish and Game  
25 Code Section 86, of any state endangered species is prohibited, except as authorized by the  
26 Fish and Game Code.

27       **State Species of special concern (SSC):** a species, subspecies, or distinct population of a  
28 vertebrate animal native to California that has been determined by CDFG to warrant  
29 protection and management intended to reduce the need to give the species formal  
30 protection as an SE, ST, or SC species. “Species of special concern” is an administrative  
31 designation and carries no formal legal status. Generally, species of special concern should  
32 be included in an analysis of project impacts if they can be shown to meet the criteria of  
33 sensitivity outlined in Section 15380 of the CEQA Guidelines. That said, some older lists of  
34 Species of Special Concern were not developed using criteria relevant to CEQA and the  
35 information used in generating those lists is out of date. Therefore, the current  
36 circumstances of each unlisted Species of Special Concern must be considered against those  
37 criteria and not automatically assumed to be rare, threatened or endangered.

38       **Federal proposed (FP):** species that have been proposed by USFWS or NMFS for listing as  
39 endangered or threatened under the ESA. Federal proposed species must be evaluated in  
40 the Section 7 consultation for any federal action (described above under “Endangered  
41 Species Act Section 7”) and are normally evaluated in the NEPA review of any action that  
42 may affect the species.

1       **Federal candidate (FC):** species that are candidates for listing as endangered or  
2 threatened under the ESA. Such species have not yet been proposed for listing.  
3 Consideration of FC species can assist environmental planning efforts by providing advance  
4 notice of potential listings, allowing resource managers to alleviate threats and thereby  
5 possibly remove the need to list species as endangered or threatened. Thus, FC species are  
6 normally evaluated in the NEPA review of any action that may affect the species.

7       **Federal species of concern (FSC):** “Species of concern” are not defined or mentioned in  
8 the ESA, but some offices of both NMFS and USFWS use this term to describe special-status  
9 species that have not been designated under any of the formal federal status terms  
10 described above. Usually these are species for which the agency (NMFS or USFWS) has  
11 some concerns about status or threats, but for which there are insufficient data to indicate  
12 that the species warrants treatment as a candidate for listing. Some FSC species are  
13 addressed in this chapter because of USFWS concerns about the possible effects of the  
14 Proposed Program on these species.

15       **California Rare Plant Rank (RPR) Lists 1 and 2 species:** California RPR Lists are jointly  
16 managed by CDFG and the California Native Plant Society (CNPS). List 1A plants are  
17 presumed extinct in California. List 1B plants are considered rare, threatened, or  
18 endangered in California and elsewhere. List 2 plants are rare, threatened, or endangered in  
19 California, but more common elsewhere.

20       **Designated critical habitat and recovery plans:** Many FE and FT species have designated  
21 critical habitat or approved recovery plans, or both. There is also one adopted State  
22 Recovery Strategy (Fish & G. Code, § 2112) for coho salmon. Federal regulations prohibit  
23 actions that would destroy or adversely modify designated critical habitat. One reason for  
24 designation of critical habitat is that, although such habitat may not be currently occupied, it  
25 is essential in order to achieve recovery of these species. Accordingly, for these species, the  
26 species’ range is assumed to include the known range of the species plus any additional  
27 areas of designated critical habitat. Species recovery plans identify actions that are required  
28 in order to secure recovery of a species. Accordingly, the Proposed Program is assessed  
29 with reference to the question of whether it may interfere with the implementation of  
30 recovery plans.

#### 31   **4.3.4 Impact Analysis**

32       The methodology described below accounts for activities conducted in accordance with the  
33 proposed regulations contained in Chapter 2. Additional or more extensive impacts related  
34 to biological resources are possible for those suction dredge activities requiring notification  
35 under Fish and Game Code section 1602. Notification is required for the following activities:

- 36           ■ Use of gas or electric powered winches for the movement of instream boulders  
37           or wood to facilitate suction dredge activities;
- 38           ■ Temporary or permanent flow diversions, impoundments, or dams constructed  
39           for the purposes of facilitating suction dredge activities;
- 40           ■ Suction dredging within lakes; and
- 41           ■ Use of a dredge with an intake nozzle greater than 4 inches in diameter.

1 A general description of how activities requiring Fish and Game Code section 1602  
2 notification would deviate from the impact findings within this SEIR are described at the  
3 end of the impact section below.

#### 4 ***Findings of 1994 Environmental Impact Report***

5 The 1994 EIR analyzed impacts on fish, amphibians, benthic invertebrates, threatened and  
6 endangered species, and stream and riparian habitats. Findings for each of these biological  
7 resources were as follows:

##### 8 Fin Fish

9 Impacts from entrainment for adults and juveniles were considered to be less than  
10 significant. Though initially considered to be potentially significant adverse, effects on yolk,  
11 sac fry, and eggs were ultimately identified as being less than significant with the  
12 incorporation of regulations specifying area closures during fish spawning periods.

13 Other impacts to fish related to turbidity, sedimentation, and disturbance to spawning  
14 gravels were considered to be temporary, localized, and less than significant under  
15 regulated conditions. Such regulations include the specific area closures, restriction on  
16 nozzle sizes, as well as prohibitions on importing of materials, dredging into streambanks,  
17 and diversions of flow.

##### 18 *Behavior and Distribution*

19 Adverse impacts on adult summer holding areas were considered effectively reduced with  
20 regulations such that overall effects would not be deleterious. Effects on large habitat  
21 features (e.g., boulders, woody debris), habitat substrate, and flow modifications were also  
22 found to be less than significant with regulations, including the restrictions on nozzle size  
23 and the prohibitions on impeding fish passage and movement of boulders. Other effects on  
24 habitat were found to be potentially beneficial, such as the loosening of compacted  
25 substrates and providing additional fish holding and resting areas with dredging holes.

##### 26 Amphibians

27 Potential impacts on amphibians and their habitats were considered non-deleterious under  
28 regulated conditions. Regulations stipulating area closures, restriction on nozzle sizes, and  
29 prohibitions on material import, high-banking, and damage to riparian habitat would all  
30 effectively reduce all potential impacts to less than significant.

##### 31 Benthic Invertebrates

32 Suction dredging activity was found to have short-term, localized adverse impacts on the  
33 local invertebrate abundance and community composition. However, overall these impacts  
34 were considered less than significant and were further minimized by proposed regulations.

##### 35 Threatened and Endangered Species

36 Effects on threatened and endangered species were initially considered potentially  
37 significant. However, the proposed regulations were found to adequately reduce impacts to  
38 a less than significant level.



## 1        Stream and Riparian Habitats

### 2        *Substrate Impacts*

3        Effects of suction dredge activities were found to have potentially negative effects on stream  
4        substrate by channelizing streams, increasing embeddedness of substrates downstream of  
5        dredging sites, and developing holes and piles. However, the 1994 EIR concluded that the  
6        regulations adequately address these potential effects such that there would be a less than  
7        significant impact.

### 8        *Streambank Impacts*

9        The 1994 EIR found effects on streambanks from suction dredging activities were  
10       potentially significant. However, the EIR concluded that the regulations for suction dredging  
11       included stipulations which addressed these issues and reduced the impacts to levels below  
12       significance.

### 13       *Riparian Habitat Impacts*

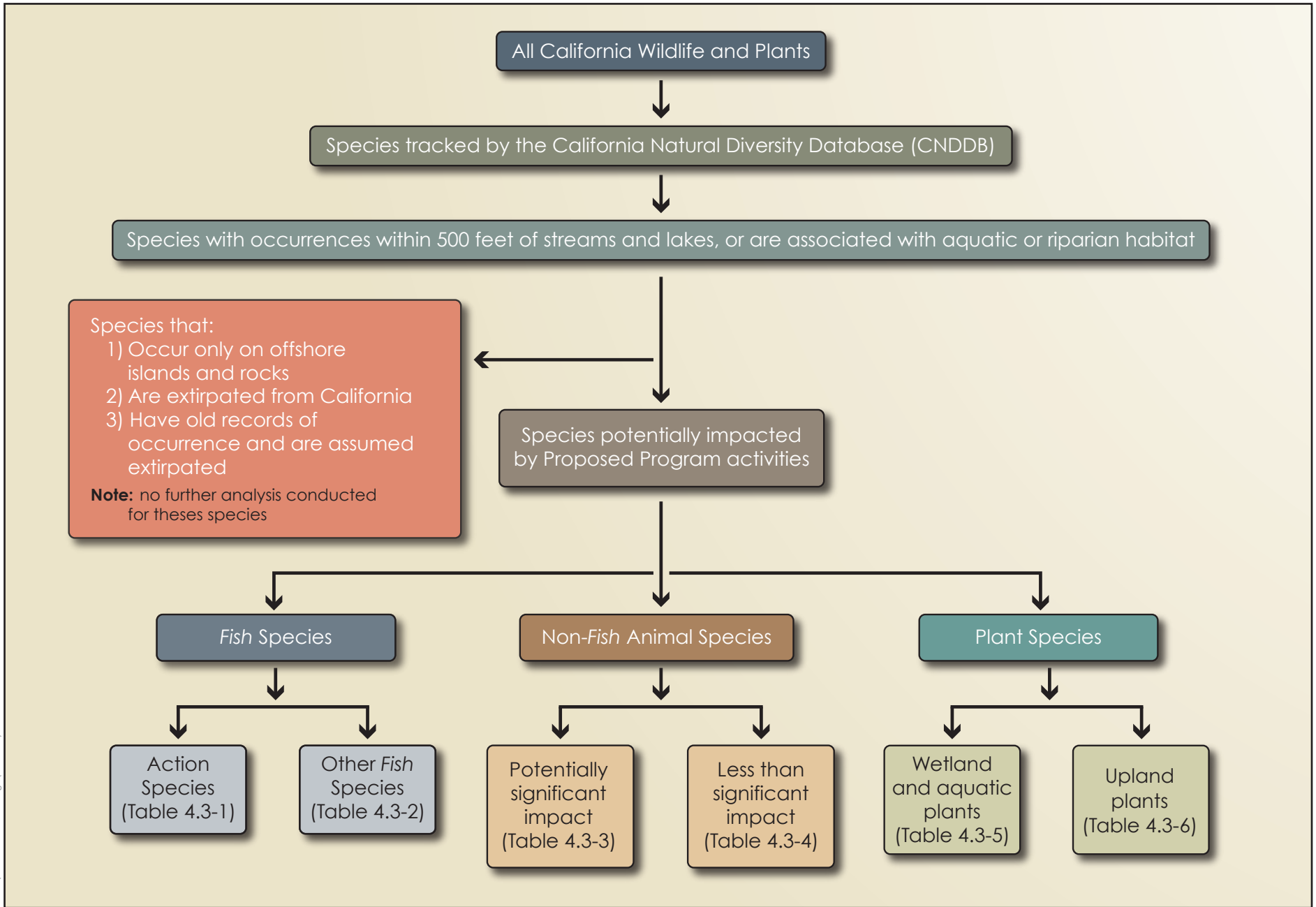
14       According to the 1994 EIR, suction dredging could have significant indirect and direct  
15       effects on riparian vegetation along stream courses. However, the Report found that the  
16       regulations addressed these issues and effectively reduced these impacts to less than  
17       significant.

## 18       **Methodology**

### 19       Selection and Organization of Species Considered in this SEIR

20       This evaluation considers the effects of Proposed Program activities on biological resources  
21       throughout the state. Figure 4.3-2 depicts the process by which specific animal and plant  
22       species were identified for consideration in this SEIR. The process began by considering all  
23       species included in the CNDDDB, which is a subset of all species known to occur in California.  
24       For the purposes of this analysis, it is assumed that California animal and plant species not  
25       included in the CNDDDB are sufficiently widespread and common such that impacts of the  
26       Proposed Program would be less than significant for all significance criteria (See *Criteria for*  
27       *Determining Significance* below). For species that are tracked by the CNDDDB, the following  
28       methodology was utilized to identify species with the potential to be impacted by Proposed  
29       Program activities:

- 30           1. Data from the USGS National Hydrography Dataset (NHD) were used to identify  
31           perennial waterbodies within the state. Specifically, the geographic information  
32           system (GIS) shapefile "nhd\_peren\_nolakes" was used to identify lotic waterbodies  
33           (i.e., rivers, creeks, tidal waters); the GIS shapefile "nhdgtqtracre" was used to  
34           identify lentic waterbodies (i.e., lakes and ponds) greater than 0.25 acres (USGS,  
35           2010).
- 36           2. For assessment purposes, a 500-foot buffer was applied around all perennial  
37           waterbodies to account for channel width, riparian areas, and accuracy of the NHD.
- 38           3. All species occurrences within the CNDDDB, January 2010 update were overlaid on  
39           the perennial waterbody dataset with the 500-foot buffer. The CNDDDB occurrences  
40           that intersected with the perennial waterbody dataset and buffer were considered



Drive:\09.005 Suction Dredge (rev. 2-11).ID

1 to be the species with the potential to be impacted by the Proposed Program. The  
2 CNDDDB includes some species for which there are no spatial data regarding their  
3 locations (i.e. no occurrences records). Species that currently have no occurrences  
4 in the CNDDDB, but occupy aquatic and riparian habitats, were also included.

- 5 4. Species were removed from the list if: (1) they occur only on offshore islands or  
6 rocks; (2) are extirpated from California; or (3) are known only from older historic  
7 records, but for which a determination about extirpation has not been made.

8 The CNDDDB data query described above generated 625 animal species and 1287 plant  
9 species. Appendix J contains a complete list of species generated in the CNDDDB data query.  
10 These species are considered to have the potential to be impacted by the Proposed Program  
11 activities. These species were then organized as follows for further analysis (Figure 4.3-2):

- 12 ■ **Fish Species:** Species for which CDFG has authority under Fish and Game Code  
13 section 5653 to regulate the Proposed Program activities. These species are sub-  
14 divided into the following groups:

- 15 ○ **Action Species:** Species for which CDFG has developed spatial and temporal  
16 restrictions on suction dredging activities so that a deleterious effect  
17 (and/or significant impact) to the species is not likely to occur (See Table  
18 4.3-1 at the end of this chapter); and
- 19 ○ **Other Fish Species:** Species for which CDFG has determined that no spatial  
20 or temporal restrictions on suction dredging are necessary to avoid a  
21 deleterious effect (and/or significant impact) to the species, for one of the  
22 following reasons: (1) suction dredging activities have low potential to have  
23 a deleterious effect on the species; (2) surrogate protection is provided by  
24 the restrictions developed for one or more action species; or (3) the general  
25 operational requirements in the proposed regulations are sufficiently  
26 protective (See Table 4.3-2 at the end of this chapter).

- 27
- 28 ■ **Non-Fish Animal Species:** Animal species for which CDFG does not have the  
29 authority to regulate under Fish and Game Code section 5653, but has  
30 considered in this SEIR:

- 31 ○ **Potentially Significant Impact:** Species for which CDFG has determined  
32 that in the absence of the Proposed Program regulations, suction dredging  
33 has the potential to result in a significant impact. The level of impact to  
34 these species is first considered in the absence of Proposed Program  
35 regulations, and then with incorporation of the regulations (See Table 4.3-3  
36 at the end of this chapter);
- 37 ○ **Less than Significant Impact:** Species for which CDFG has determined that  
38 the program activities have a low potential for impacts due to life history,  
39 habitat requirements, distribution, low likelihood of dredging in suitable  
40 habitat, etc. For species listed in Table 4.3-4, the potential impacts of the  
41 Proposed Program are considered less than significant with respect to all of  
42 the significance criteria described in this section (See *Criteria for*  
43 *Determining Significance* below), and are generally not discussed in further  
44 detail in the impact analysis below.

- 1  
2  
3  
4  
5  
6  
7  
8
- Plant Species: Plant species for which CDFG does not have the authority to regulate under Fish and Game Code section 5653, but has considered in this SEIR:
    - **Aquatic and Wetland Species:** Species that are associated with aquatic and wetland habitats (See Table 4.3-5 at the end of this chapter); and
    - **Upland:** Species that are associated upland habitats (See Table 4.3-6 at the end of this chapter).

### 9 Methods of Assessing Impacts

10 The direct and indirect effects of suction dredging events are considered to be a function of  
11 the intensity, frequency, duration and location of the activity, as illustrated in the  
12 conceptual model shown in Figure 4.3-3. This conceptual model demonstrates how several  
13 governing (independent) variables influence the outcome of a dredging event. The  
14 regulations under the Proposed Program are an attempt to establish limits on the governing  
15 variables to ensure that suction dredging, consistent with the regulations, will not be  
16 deleterious to *Fish* (See Chapter 2, Section 2.2.2 for the definition of deleterious).

17 Another consideration in evaluating potential impacts of this program is the probability that  
18 gold will be present in a river, stream or lake. This is a function of the underlying geology.  
19 Figure 4.2-2 shows the locations of historic gold mines in California. In watersheds with  
20 historic gold mining, the probability of suction dredging is likely to be higher. Similarly, the  
21 Socioeconomic Report prepared for this Program provides information from suction  
22 dredgers on locations of suction dredge mining in 2008 (see Chapter 3 for further details).  
23 This information, while useful, is not conclusive since some rivers, streams and lakes were  
24 closed in 2008 – some of those previously closed waters would be available and utilized for  
25 suction dredging under the Proposed Program.

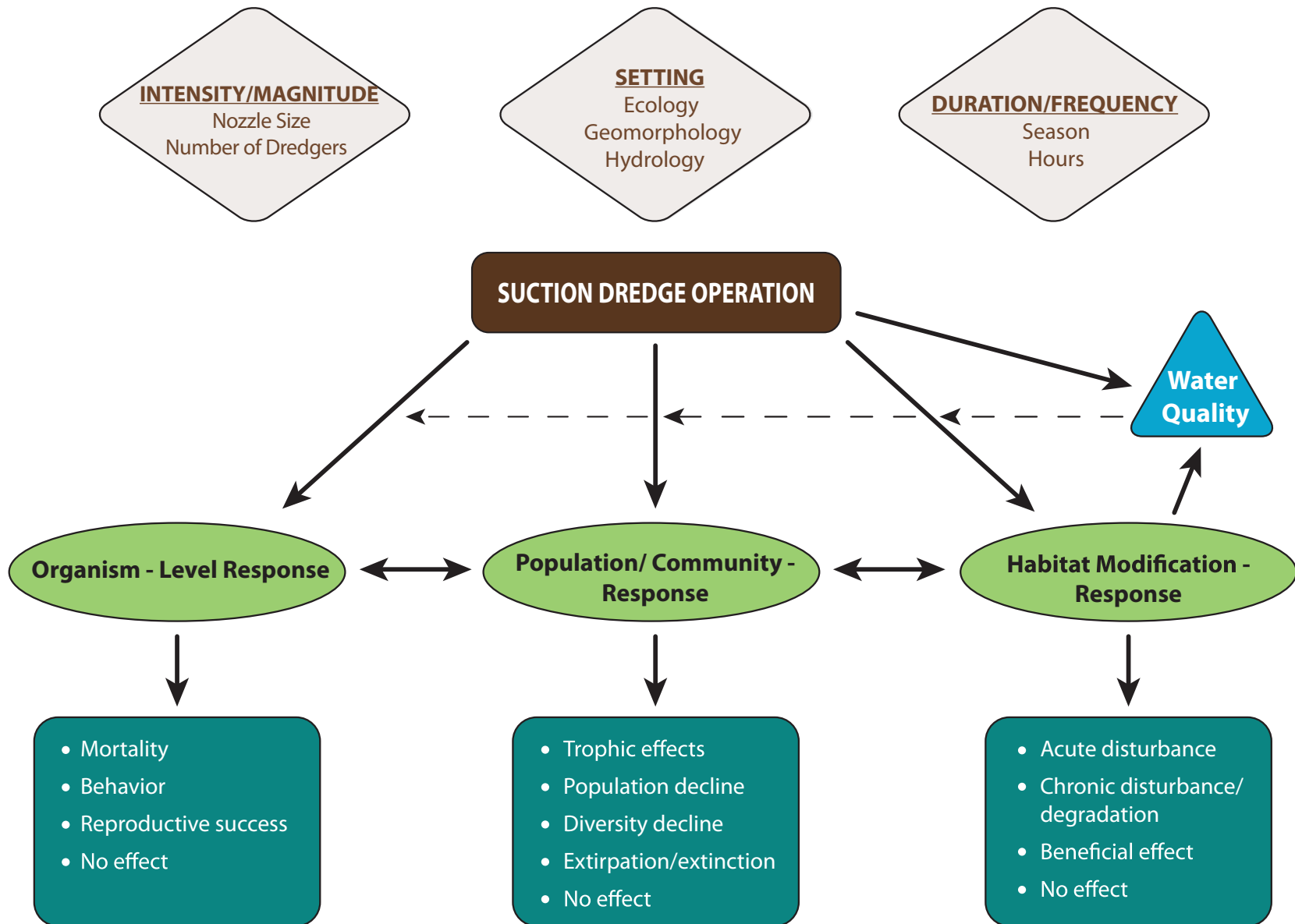
26 Further, the analysis of the Proposed Program's impact on biological resources is  
27 considered at multiple spatial scales. Site specific examples are provided, where  
28 appropriate, to demonstrate the range of potential outcomes and illustrate the complexity  
29 of determining the effects of one or many suction dredging events. CDFG believes that the  
30 level of detail and related analysis is appropriate to the scale of the Proposed Program (i.e.,  
31 statewide), and is sufficient to ensure meaningful analysis and disclosure of the potential  
32 impacts of the Proposed Program.

### 33 **Criteria for Determining Significance**

34 For the purposes of this analysis, the Proposed Program would result in a significant impact  
35 to biological resources if it would meet one or more of the following criteria

- 36  
37  
38  
39
- **Criterion A:** Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFG, USFWS, or NMFS;

# GOVERNING VARIABLES



Project 09.005 (Sept. 2010) JMS

- 1           ■ **Criterion B:** Have a substantial adverse effect on any riparian habitat or other  
2 sensitive natural community identified in local or regional plans, policies,  
3 regulations or by CDFG, USFWS, or NMFS;
- 4           ■ **Criterion C:** Have a substantial adverse effect on federally protected wetlands  
5 as defined by Section 404 of the Clean Water Act (including, but not limited to,  
6 marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological  
7 interruption, or other means; or
- 8           ■ **Criterion D:** Interfere substantially with the movement of any native resident or  
9 migratory fish or wildlife species or with established native resident or  
10 migratory wildlife corridors, or impede the use of native wildlife nursery sites.

11           The analysis, in evaluating the potentially significant impacts of suction dredging activities  
12 to biological resources, considers both species and their habitats. These impacts are  
13 considered in the context of the Proposed Program, which incorporates spatial and  
14 temporal restrictions on suction dredging activities that are based on life history,  
15 distribution and abundance of action species. A determination is provided which evaluates  
16 if the regulations are sufficient to ensure that the impacts can be considered "less than  
17 significant." A *less than significant* impact generally refers to a situation where there is a  
18 measureable impact, but the impact is not likely to result in an adverse population-level  
19 effect on a particular species, or a wide-spread or long-lasting adverse effect on a natural  
20 community. For example, a suction dredge operation may disturb benthic habitat, an  
21 impact which can be measured, but this impact may not be substantial when considered in  
22 the overall context of the affected benthic species.

23           If an impact remains "potentially significant" following the evaluation, then mitigation  
24 strategies are discussed and considered. Any impact that remains significant even after  
25 mitigation is considered significant and unavoidable.

26           Note that in the context of the above, CDFG did not consider impacts to individual members  
27 of a population to be significant, unless the species was extremely rare. While a more  
28 conservative approach was contemplated, it was determined to be inappropriate because it  
29 would not be an effect that would be considered "substantial," especially given the  
30 statewide scope of the Proposed Program. For these reasons, the analysis focuses instead  
31 on population- and range-level effects.

32           Impacts related to turbidity, temperature, and toxicity/water quality contaminants are  
33 discussed in Chapter 4.2, *Water Quality and Toxicology*.

### 34 **4.3.5 Environmental Impacts**

#### 35 ***Impact BIO-FISH-1: Direct Effects on Spawning Fish and their Habitat (Less than*** 36 ***Significant)***

##### 37 Discussion

38           Among the possible effects of suction dredging is the potential impact on *Fish* (specifically,  
39 fin fish and amphibian) reproduction. Spawning is a stressful period, and *Fish* are highly  
40 vulnerable to disturbance during this period (Mazeaud et al., 1977). High levels of human  
41 activity, including swimming, wading, boating and equipment noise, have the ability to

1 cause reduced success in egg deposition or completion of the redd (i.e., nest of fish eggs)  
2 (Murphy et al., 1995). In some cases *Fish* may abandon redd construction (Mueller, 1980).  
3 Human activity such as wading on shallow, salmonid-spawning habitats during the period  
4 before hatching can kill eggs and fry (Roberts and White, 1992).

5 Many *Fish* species, including salmonids (*Oncorhynchus* spp.) such as Chinook and coho  
6 salmon, steelhead, cutthroat trout, golden trout, several lamprey species (*Lampetra* spp.),  
7 suckers (*Catostoma* spp.), sculpin (*Cottus* spp.), stream-dwelling speckled dace (*Rhinichthys*  
8 *osculus*), and minnows such as hardhead utilize small gravel to cobble substrates for  
9 spawning. In addition, unlike salmonids, lamprey larvae may also emerge from the redd  
10 and find backwater or low gradient areas of sand and silt to continue development for up to  
11 seven years, filtering substrates to feed on detritus (Moyle, 2002). Therefore, for lamprey,  
12 many areas of the channel may be considered sensitive to disturbance.

13 The act of dredging has the potential to reduce substrate embeddedness in areas impacted  
14 by other human activities such as stream regulation and input of fine sediments associated  
15 with watershed development. Although dredge tailings may be attractive to spawning *Fish*,  
16 they may be potentially less suitable for spawning than natural gravels. The loose substrate  
17 often found in dredge tailings may be too unstable; embryos may experience reduced  
18 survival under these conditions due to increased scouring (Thomas, 1985; Harvey and Lisle,  
19 1999), which can be exacerbated as embryo development frequently coincides with periods  
20 of high flow which mobilizes streambeds (Holtby and Healey, 1986; Lisle and Lewis, 1992).  
21 Hence, loose tailings could have a substantial adverse effect on eggs and developing *Fish*  
22 unless this material is allowed to disperse before spawning commences.

### 23 Findings

24 If left unrestricted, impacts of suction dredging on spawning of *Fish* would be potentially  
25 significant with respect to Significance Criteria A and D. However, the Proposed Program  
26 incorporates spatial and temporal restrictions on suction dredging activities that are based  
27 on life history, distribution and abundance of *Fish* action species. This includes restrictions  
28 on suction dredging in the period immediately before spawning and during critical early life  
29 stages (i.e., spawning, incubation, and early emergence) of *Fish* action species (Table 4.3-1).  
30 Streams within the state that provide habitat for *Fish* species that are either very limited in  
31 number and/or distribution are proposed to be closed to suction dredging (Class A), or  
32 closed during critical spawning periods. Therefore, the disturbance of spawning *Fish* and  
33 crushing of embryos and larvae by the act of suction dredging is not likely to occur for *Fish*  
34 action species. Impacts of dredging to other *Fish* species (i.e., those listed in Table 4.3-2, as  
35 well as more common or widespread native and non-native *Fishes*) are also not likely to  
36 result in impacts that would be considered significant.

37 The following Proposed Program regulations would further minimize the potential for  
38 disturbance to all spawning *Fishes* and their habitats:

- 39 ■ Section 228(c)(2): requires dredgers to provide CDFG with information  
40 regarding the location of their dredging operation(s). This will allow CDFG to  
41 monitor and manage areas with high dredging use, and potentially modify  
42 regulations if deleterious effects are identified.

- 1           ■ Section 228(k)(15): requires dredgers to level all tailing piles prior to working  
2           another excavation site or abandoning the excavation site. This will minimize  
3           the potential for *Fish* to spawn on unstable substrate.
- 4           ■ Section 228(k)(16): requires dredgers to avoid the disturbance of redds and  
5           adult fish.

6           Thus, with respect to Significance Criteria A and D, the impacts on spawning *Fish* and their  
7           habitat would be less than significant. (See Chapter 4.1, Impact GEO-1 for additional  
8           discussion on the physical effects of dredging on stream substrate).

9           ***Impact BIO-FISH-2: Direct Entrainment, Displacement or Burial of Eggs, Larvae and***  
10           ***Mollusks (Less than Significant)***

11           Discussion

12           *Entrainment of Fish Eggs, Fry and Larvae*

13           Suction dredging can cause excavation and subsequent displacement of eggs, fry and larvae  
14           (Harvey and Lisle, 1998). Harvey and Lisle (1998) state that entrainment in a dredge (i.e.,  
15           being drawn into the dredge hose by suction) would likely kill larvae of several fishes.  
16           Sculpins, suckers, and minnows (Cyprinidae) all produce small larvae (commonly 5 to 7 mm  
17           at hatching) easily damaged by mechanical disturbance. Eggs of non-salmonid fishes, which  
18           often adhere to rocks in the substrate, also are unlikely to survive entrainment. Fish eggs,  
19           larvae, and fry removed from the streambed by entrainment that survived passage through  
20           a dredge would likely suffer high mortality from subsequent predation and unfavorable  
21           physio-chemical conditions. This includes direct mortality due to sunlight (ultra-violet)  
22           exposure (Flamarique and Harrower, 1999). While little research has been performed to  
23           explore the direct effects of entrainment on eggs and larvae of fish species, the work that  
24           has been done suggests that these impacts can be severe. Suction dredging has been shown  
25           to cause high mortality among eggs and developing fishes through the direct effects of  
26           entrainment (until trout reach approximately 4 inches, at which point they can generally  
27           avoid entrainment) (Griffith and Andrews, 1981), or by predation following entrainment  
28           (Gerstung, pers comm., as cited in the CDFG 1994 EIR).

29           *Entrainment of Mollusks (Bivalves and Gastropods)*

30           Mollusks, such as bivalves (clams and mussels) and gastropods (snails and limpets), are an  
31           important component of stream ecology. However, in California, little is known about them  
32           and many have yet to be described (Taylor, 1981; Frest and Johannes, 1999). According to  
33           the USFS (2001), mollusks could suffer mortality during suction dredging entrainment. In a  
34           study on the effects of suction dredging on freshwater mussels' short-term survival in  
35           Washington, Krueger et al. (2007) found no obvious physical damage to mussels due to  
36           entrainment by suction dredge; entrainment had no effect on mussel survival up to six  
37           weeks. While no direct studies have been conducted on the effects of suction dredging on  
38           gastropods, it is presumable that similar to mussels, adult gastropods, protected by their  
39           shells could survive entrainment. However, many mollusks go through earlier larval  
40           lifestages (e.g. trochophore; veliger) that may not provide the protection of an outer shell  
41           and might be more susceptible to entrainment injury or mortality.



### 1        *Displacement and Burial of Mollusks (Bivalves and Gastropods)*

2        Disturbance of the substrate by suction dredging could have a variety of other effects on  
3        mollusks, including direct effects via displacement of individuals or indirect effects through  
4        alteration of their food source. Change or reduction in food, such as reduction in submerged  
5        macrophytes or algae, could negatively affect some snail species (Lodge and Kelly, 1985).  
6        Harvey and Lisle (1998) state that re-colonization would take longer where dredging moves  
7        substantial amounts of substrate occupied by aquatic mollusks. In general, freshwater  
8        bivalves have low dispersal rates and limited distribution. Many mollusks are not broadly  
9        abundant in river streams, may not have high dispersal rates, and may be influenced by  
10       local events such as suction dredging.

11  
12       In a study by Marking and Bills (1979), 50% of mussels buried in sand and silt to depths of  
13       10 to 17.5 cm or more were prevented from emergence and eventually resulted in death.  
14       The disorientation of mussels (manually positioned on their sides during burial) also  
15       reduced their ability to emerge (Marking and Bills, 1979). Burial by dredge tailings resulted  
16       in the death of a substantial percentage of the two mussel species studied, and no mussels  
17       were able to excavate from experimental dredge tailings. While no such work has been  
18       carried out on gastropods, many pulmonate snails must come to the surface to access air or  
19       at least remain in water with dissolved oxygen levels above 1.5 to 1.8 ppm (Pennak, 1989),  
20       suggesting that burial within dredger tailings could have a negative effect.

### 21       *Entrapment of Amphibian Eggs and Tadpoles*

22       When substrate is sucked through a dredge, amphibian eggs and larvae can be entrained,  
23       potentially resulting in mortality or injury of some individuals. For amphibians, the outer  
24       capsule of an anuran (frogs and toads) egg surrounding the ovum, perivitelline chamber  
25       and the vitelline membrane is composed of soft gelatinous envelopes and would not likely  
26       be able to withstand the mechanical action of transport through a suction dredge.

27       One amphibian species with habitat requirements similar to the conditions found in suction  
28       dredging streams is the foothill yellow-legged frog (*Rana boylei*). The foothill yellow-legged  
29       frog is one of a few obligate stream breeding ranid frogs in the United States (Wheeler and  
30       Welsh, 2008). Breeding/spawning areas of foothill yellow-legged frog typically occur along  
31       the shallow margin of run habitat and on the shallow upstream end of a cobble bar. Eggs  
32       attach to substrates that range from small cobbles in the run to large cobble and small  
33       boulders on the bar, to bedrock along portions of the streambanks and in pools (Kupferberg  
34       et al., 2009).

35       Foothill yellow-legged frog tadpoles typically escape predators using a "dash and hide"  
36       behavior. This behavior is used when the environment changes. For example, when water  
37       velocity increased, foothill yellow-legged frog tadpoles sought refuge in the substrate  
38       (Kupferberg et al., 2009). Increased water velocities (as low as 10 cm/sec) caused negative  
39       reactions from foothill yellow-legged frog, and caused 25% of the tadpoles studied to be  
40       displaced, with recently hatched tadpoles lethally affected (Kupferberg et al., 2009).

41       Research from Australia on spatial variation in flow regime of tadpoles that occur in rapidly  
42       flowing and turbulent riffle habitats showed that at 50 cm/s all tadpoles were dislodged  
43       irrespective of size (Richards, 2002). Critical swimming velocity, maximum current velocity  
44       at which a tadpole can swim or maintain its position, is related to tadpole size, with large

1 tadpoles having significantly lower critical velocities than small tadpoles, and vulnerability  
2 increased as tadpoles reached metamorphosis (Kupferberg et al., 2009). A burst of activity  
3 requires only a few seconds of energy; longer continuous energy use can result in lactate  
4 accumulation (Ultsch et al., 1999).

5 Flow velocity at the intake of a suction dredge nozzle can be compared with tadpole escape  
6 speeds to characterize the potential for entrainment. A mass balance approach was used to  
7 estimate flow velocity at the intake of a suction dredge nozzle. The mass balance utilized  
8 the values estimated for suction dredge production (Chapter 3, Table 3-2) to estimate flow  
9 velocities for various nozzle sizes (Table 4.3-7).

10 **TABLE 4.3-7. ESTIMATE FLOW VELOCITIES FOR VARIOUS SUCTION DREDGE NOZZLE SIZES**

Dredge Nozzle Size (inches)	Velocity	
	(ft/s)	(cm/s)
2	4.1	125
2.5	3.3	100
3	4.5	138
4	3.8	117
5	4.9	149
6	4.0	121
8	4.8	146

11 Velocity values estimated in the Table 4.3-7 range from approximately 3.3 to 4.9 ft/s (100 to  
12 149 cm/s). It is important to note that these values are estimates for velocity at the nozzle  
13 intake; velocity decreases as distance from the nozzle intake increases. In the case of  
14 tadpoles, the fastest steady velocity a tadpole can swim is 12 body lengths/sec (Hoff et al.,  
15 1999), but this cannot be sustained. Kupferberg et al. (2009) found that tadpoles swimming  
16 against a 5 cm/s current quickly leads to exhaustion and impingement (impact). Foothill  
17 yellow-legged frog tadpoles measure less than 0.8 cm total length at emergence, and reach a  
18 maximum total length of approximately 5.5 cm (Nussbaum et al. 1983; Zeiner et al., 1988).  
19 Assuming an escape velocity of 12 body lengths/sec, a foothill yellow-legged frog tadpole  
20 would be capable of a maximum swim velocity of approximately 10 to 66 cm/sec. Thus, if  
21 subjected to the near-field velocity of a suction dredge, neither behavior nor speed would  
22 allow a tadpole to escape. Therefore, in the case of foothill yellow-legged frog tadpoles, the  
23 animal would likely be entrained, flushed downstream, and displaced from its natal area.

24 Although focused on fisheries, Harvey and Lisle (1998) report that if young were to survive  
25 the passage through the dredge they would most likely suffer from predation and  
26 physiological stressors. Research conducted in Holland revealed that dredging had a  
27 temporary negative effect on the presence of the caddisfly larvae, regardless of the method  
28 of dredging; and dredging between April and August had a negative effect on the presence  
29 of amphibian larvae due to the fact that amphibian larvae are only present during spring  
30 and early summer (Twisk et al., 2000). Disturbance during the larval developmental period  
31 apparently has a considerable negative impact on the presence of amphibian larvae (Twisk  
32 et al., 2000).

## 1        Findings

2        If left unrestricted, direct entrainment, displacement or burial of eggs, larvae and mollusks  
3        by suction dredging would be potentially significant with respect to Significance Criteria A  
4        and D. However, the Proposed Program incorporates spatial and temporal restrictions to  
5        protect the most vulnerable early life stages of *Fish* action species (Table 4.3-1).

6        CDFG has utilized a broad range of scientific data and management tools to develop  
7        dredging regulations that ensure a deleterious effect and/or significant impact to *Fish*  
8        species is not likely to occur. For example, for foothill yellow-legged frog, Class E  
9        restrictions are proposed for select watersheds in CDFG Region 2. These watersheds are  
10       generally tributaries of mainstem streams that have hydrology altered by hydropower  
11       operations. In these watersheds, the tributaries provide important refugia for the species,  
12       and therefore Class E restrictions are proposed to avoid or minimize impacts to early  
13       lifestages. To provide additional protection for this species, streams within the known range  
14       of foothill yellow-legged frog, which encompasses a significant portion of the state, are  
15       designated Class D. The Class D restriction would protect egg masses from entrainment;  
16       while tadpoles may still be present at the times that streams are open to suction dredging,  
17       sufficient refugia are believed to exist such that significant impacts would not result.  
18       Further, year-round closures(Class A) have been identified for other action species which  
19       in many cases would provide surrogate protection for foothill yellow-legged frog tadpoles  
20       Similarly, surrogate protection may result from land use designations (e.g., National Parks,  
21       Wilderness Areas). Finally, Section 228(k)16 of the regulations requires dredgers to avoid  
22       disturbance of eggs, redds, tadpoles and mollusks. In summary, for the example of the  
23       foothill yellow-legged frog, the Proposed Program's use of spatial, temporal and operational  
24       restrictions would ensure that suction dredging activities would not have a significant  
25       impact on the species as a whole, and therefore the potential impacts are considered to be  
26       less than significant.

27       The following regulations would further minimize the potential for entrainment,  
28       displacement, or burial of eggs, larvae and mollusks in areas open to suction dredging:

- 29       ■ Section 228(c)(2): requires dredgers to provide CDFG with information  
30       regarding the location of their dredging operation(s). This will allow CDFG to  
31       monitor and manage areas with high dredging use, and potentially modify  
32       regulations if deleterious effects are identified.
- 33       ■ Section 228(k)(13): prohibits dredging in mussel beds.
- 34       ■ Section 228(k)(14): requires dredgers to take reasonable care to avoid dredging  
35       silt and clay materials that may result in increased turbidity and deposition of  
36       fines on the gravels.
- 37       ■ Section 228(k)(15): requires dredgers to level all tailing piles prior to working  
38       another excavation site or abandoning the excavation site.
- 39       ■ Section 228(k)(16): requires dredgers to avoid the disturbance of eggs, redds,  
40       tadpoles and mollusks.

41       With these regulations in place the direct entrainment of eggs and larvae of *Fish* species by a  
42       suction dredge would be less than significant with respect to Significance Criteria A and D.  
43       The amount of burial of mollusks that is likely to occur is also considered less than

1 significant based on the restriction on dredging in mussel beds, and the historical and  
2 projected level of suction dredging activity.

### 3 ***Impact BIO-FISH-3: Effects on Early Life Stage Development (Less than Significant)***

#### 4 Discussion

##### 5 *Effects on Fish*

6 To produce viable young, several fish species (including salmonids and lampreys) require  
7 uncompacted gravels with high permeability that consists of unclogged interstices which  
8 allow for the removal of metabolic wastes (Hausle and Coble, 1976). The availability of  
9 intragravel water flow (Vaux, 1962; Cooper, 1965) and dissolved oxygen are also critical for  
10 the survival of developing salmonid eggs (Cooper, 1965; Daykin, 1965). Reduced flow and  
11 oxygen concentrations (e.g., from higher levels of fine particles [fines] or increased organic  
12 matter) can result in a number of negative effects, including the reduced size of embryos at  
13 various developmental stages, premature emergence of alevins (newly hatched salmon still  
14 attached to the yolk sac), increased alevin development time, and higher pre - and post-  
15 hatching mortality (Silver et al., 1963; Shumway et al., 1964; Brannon, 1965; Spence et al.,  
16 1996; Merz et al., 2006). Dredging has potential to release fine materials which can clog  
17 interstitial spaces and cause such effects. Increased fines in dredged areas may also delay  
18 emergence of fry; this may result in smaller fry that are less able to compete for resources  
19 than their larger counterparts (e.g., those that have experienced normal emergence)  
20 (Everest et al., 1987). While the severity of these effects would likely vary depending on the  
21 species or the hydrologic conditions of the watershed, dredging may have a substantial  
22 negative effect on the spawning grounds and on the developing eggs and larvae of many fish  
23 species. Excessive sedimentation from a variety of activities, including mining and road  
24 construction may also smother substrates and impair egg-laying or survivorship of eggs or  
25 young mollusks (Duncan, 2005).

##### 26 *Effects on Amphibians*

27 Increased suspension of solids in the water column can affect the development of  
28 amphibian embryos and tadpoles in several ways. First, suspended solids can result in  
29 decreased amounts of dissolved oxygen in the water column. Dissolved oxygen is critical  
30 for the survival of developing amphibian eggs (McDiarmid and Altig, 1999), which may  
31 suffocate when waters become oxygen-depleted. Pre - metamorphic larvae (i.e., those that  
32 are at the hatchling development stage [Gosner stage 21 through 24]), are also at risk for  
33 suffocation during this period as they are respiring aquatically (McDiarmid and Altig, 1999).

34 Because of their tendency to inhabit the areas in between loose, coarse substrates that  
35 comprise a typical streambed, increased siltation within a stream can also affect  
36 populations of stream amphibians (Welsh and Ollivier, 1998). Gillespie (2002) found that  
37 spotted tree frog (*Litoria spenceri*) tadpole growth and development were reduced by  
38 increases of sediment and activities in catchments that increase sediment loads in streams.  
39 Disturbance processes that increase stream sediment loads may have contributed to the  
40 observed declines of spotted tree frog and other lotic anurans (frogs living in flowing water)  
41 in south - eastern Australia (Gillespie, 2002).

1 In California, several amphibian species have been identified as being directly impacted by  
2 the increase in sedimentation that results from suction dredging. Sweet (2007) cites a USFS  
3 file report (Sweet, 1992) in which the direct effect of mortality on the eggs and larvae of  
4 arroyo toad was described. The USFWS's recovery plan for arroyo toad identifies suction  
5 dredging as a current threat to recovery of the species (USFWS, 1999). The recovery plan  
6 notes that suction dredge mining occurring in or adjacent to arroyo toad breeding pools can  
7 result in destruction or degradation of breeding habitat (USFWS, 1999). The USFWS (2002)  
8 predicts that suction dredge mining may threaten California red - legged frog, based on  
9 evidence observed in red - legged frog occupied Piru Creek, Ventura County, where heavy  
10 siltation caused by upstream suction dredging was documented. USFWS (2002) states that  
11 disturbance to streambed substrates and water quality resulting from extensive suction  
12 dredging activity at or near a Mountain (Sierra Madre) yellow-legged frog (*Rana muscosa*)  
13 breeding site could have harmful effects on eggs and developing larvae. Changes to  
14 hydrologic conditions and associated sediment loads during the spring breeding and  
15 summer larval rearing season are the principal threat to the conservation of foothill yellow-  
16 legged frog (Kuperfberg et al., 2009).

17 Sediment increases in a stream in northern California caused significantly lower densities of  
18 amphibians (Welsh and Ollivier, 1998). Although the sediment effects were  
19 species - specific, reflecting differential use of stream microhabitats, the reflected decrease  
20 in densities by these species (such as tailed frog, *Ascaphus truei*) due to increased fine  
21 sediments on the streambed matrix is probably the result of their common reliance on the  
22 interstitial spaces in the streambed matrix for critical life requisites, such as cover and  
23 foraging (Welsh and Ollivier, 1998). Other species that may be subject to similar effects and  
24 present in locations of suction dredging include Arroyo toad (*Bufo californicus*), as  
25 described above, and foothill yellow-legged frog.

26 Finally, tadpole growth and development can be significantly reduced by increases of  
27 sediment and activities in catchments that increase sediment loads in streams. It has been  
28 reported that some species, such as American bullfrog (*Lithobates catesbeiana*), are able to  
29 breathe air while aquatically respiring; however, this is for buoyancy rather than gas  
30 exchange from the lungs (Ultsch et al., 1999). Sedimentation downstream of the dredging  
31 area coats the sand and gravel supporting interstitial algae, bacteria and diatoms upon  
32 which tadpoles feed. In addition, suction dredging may reduce the abundance of tadpole  
33 prey resources through the direct scour or entrainment of periphyton (i.e., algae, microbes,  
34 and detritus) in the vicinity of the dredging activity. Although this may be a temporary  
35 effect, it may occur at a critical developmental stage, and therefore, have negative impacts  
36 on the organisms.

### 37 Findings

38 If left unrestricted, impacts of suction dredging early life stages of *Fish* would be potentially  
39 significant under Significance Criteria A and D. However, the Proposed Program  
40 incorporates spatial and temporal restrictions on suction dredging where necessary to  
41 protect the development of critical early life stages of *Fish* action species (Table 4.3-1).  
42 Spatial and temporal closures of streams for *Fish* action species provides surrogate  
43 protection for many other species of aquatic fauna with life histories similar to the action  
44 species. In addition, the following regulations would further minimize the potential impacts  
45 to critical early life stages:

- 1           ■ Section 228(k)(3): prohibits dredgers from dredging within 3 feet of the lateral  
2           edge of the current water level. This regulation would protect against  
3           streambank destabilization that could result in release of fine sediment.
- 4           ■ Section 228(k)(4): prohibits dredgers from damaging or removing streamside  
5           vegetation. This regulation would protect against streambank destabilization  
6           that could result in release of fine sediment.
- 7           ■ Section 228(k)(14): requires dredgers to take reasonable care to avoid dredging  
8           silt and clay materials that may result in increased turbidity and deposition of  
9           fines on the gravels. This will reduce the potential for eggs and larvae to be  
10          impacted by increased turbidity and fine sediment.
- 11          ■ Section 228(k)(15): requires dredgers to level all tailing piles prior to working  
12          another excavation site or abandoning the excavation site. This regulation will  
13          ensure that large piles of fines are not left in the stream that could later blanket  
14          embryos.
- 15          ■ Section 228(k)(16): requires dredgers to avoid the disturbance of redds and  
16          tadpoles.

17           With the Proposed Program regulations in place, substantial impacts by a suction dredge(s)  
18           to development of early life stages of *Fish* species would be less than significant with respect  
19           to Significance Criteria A and D.

20           ***Impact BIO-FISH-4: Direct Entrainment of Juvenile or Adult Fish in a Suction Dredge***  
21           ***(Less than Significant)***

22           Discussion

23           While the long term impacts of entrainment (e.g., disorientation, abrasions, and secondary  
24           infections) have not been assessed in the literature, it has been shown that juvenile and  
25           adult fish avoid or survive entrainment by suction dredging (North, 1993) and a high  
26           percentage of benthic invertebrates survive entrainment (Griffith and Andrews, 1981).  
27           Krueger et al. (2007) found no obvious physical damage to mussels due to entrainment, and  
28           entrainment had no significant effect on mussel survival.

29           The vulnerability of fish to entrainment by a suction dredge was assessed by comparing  
30           estimated flow velocity at the suction dredge intake (Table 4.3-7) with swimming speeds of  
31           fish. It is assumed that fish will not be able to avoid entrainment if flow velocity exceeds a  
32           fish's burst swimming speed. Burst swimming speed (or darting speed) is the maximum  
33           velocity a fish can execute for a few seconds by exclusive utilization of white muscle tissue  
34           (Webb 1978). This can only be maintained for a matter of seconds and is typically used to  
35           escape predation and/or for feeding (Powers and Orsborn, 1985; Bell, 1986; Mitchell,  
36           1989). A fish that reaches burst/darting speed will require a period of rest before  
37           continued movement to reduce muscle tissue damage and recover from the activity (Webb  
38           1978). This means that a fish that is put in a position to use burst speed may be more  
39           vulnerable to entrainment in subsequent encounters and/or predation thereafter  
40           (Ingólfsson et al., 2007).

The lengths of fish vulnerable to entrainment by suction dredge velocities were calculated using methods described by Reiser and Peacock (1985) and Gallagher (1999) (as cited in Meixler, 2009):

$$\text{Dart Speed (m/s)} = 9L$$

where: L is the total length of a typical fish species

Fish darting speed is calculated as 8 to 12 times the average fish length with higher numbers indicating healthier fish. A conservative estimate of 9 was used given a general lack of knowledge of individual fish health and relative broad application to numerous species (Meixler 2009).

As shown in Table 4.3-8, adults of large fish species, such as the salmonids, would generally be able to easily avoid entrainment unless habituated to equipment or actively pursued by an operator. Some resident adult salmonids such as golden trout may be much smaller (5 inches) and would be vulnerable to most of the nozzle sizes if surprised or acclimated to the hose (Knapp and Dudley, 1990). However, the greatest likelihood of entrainment would occur with young fish (e.g. lamprey ammocoetes) and adults of smaller species (e.g., sculpins and sticklebacks) that either use cover (e.g., substrate and/or vegetation) as a defense mechanism or defend territories. In this situation, damage to fish entrained with substrate or debris could be via crushing or otherwise impacting with sediment within the hose and subsequent increased vulnerability to predation, disease or other physiological stress.

**TABLE 4.3-8. ESTIMATED LENGTH OF FISH VULNERABLE TO ENTRAINMENT FOR VARIOUS SUCTION DREDGE INTAKE NOZZLE DIAMETERS**

Dredge Nozzle Size (inches)	Intake Velocity		Estimated Fish Length Vulnerable	
	(ft/s)	(cm/s)	(inches)	(mm)
2	4.1	125	5.4	138
2.5	3.3	100	4.4	111
3	4.5	138	6.1	154
4	3.8	117	5.1	130
5	4.9	149	6.5	166
6	4.0	121	5.3	135
8	4.8	146	6.4	162

**Findings**

If left unrestricted, direct entrainment of juvenile and adult fish by suction dredging would be potentially significant with respect to Significance Criteria A and D. This impact would only be significant for those species who are not able to escape velocities at the dredge intake, and whose populations are severely limited in size or distribution. Streams within the state that provide habitat for species that are very limited in number and distribution are proposed to be closed to suction dredging (Class A), thus avoiding potential for impacts. These closures are necessary to maintain the viability of these species, as direct impacts or degradation of habitat could have a substantial effect on the population or range of the species. In addition, the following Proposed Program regulations would further minimize the potential for entrainment of juvenile and adult Fish:

- 1           ■ Section 228(j)(3): requires that the intake for the suction dredge pump be  
2           covered with screening mesh, which effectively eliminates the potential for  
3           entrainment of juvenile salmonids into the pump intake.
- 4           ■ Section 228(k)(16): requires dredgers to avoid the disturbance of fish.

5           While some entrainment of juveniles and adult *Fish* species is likely to occur, it is avoided or  
6           minimized based on spatial and temporal restrictions on dredging, and the operational  
7           requirements outlined above. Thus, with respect to Significance Criteria A and D, the impact  
8           is considered less than significant.

9           ***Impact BIO-FISH-5: Behavioral Effects on Juvenile or Adults (Less than Significant)***

10          Discussion

11          *Effects on Fish*

12          Fish behavior can be altered as a result of numerous environmental changes and stimuli. Silt  
13          deposition as a result of mechanized activities, such as suction dredging, can have adverse  
14          effects on invertebrates and fish, including clogging of respiratory structures, reduced  
15          feeding rates, increased invertebrate drift, disruption of courtship displays and spawning  
16          behavior, and reduced hatching rates in fish (see Murphy et al., 1995 for review).

17          Fish behavioral responses to noises and vibrations generated by dredging have not directly  
18          been quantified, but observations have shown a range of fish behavior changes to  
19          anthropogenic noises and human activity. Fish as well as other vertebrates are capable of  
20          detecting a wide range of stimuli in the external environment (Feist and Anderson, 1991).  
21          The modalities most often detected include sound, light, chemicals, temperature, and  
22          pressure. The response of fish to sounds in their environment is varied. The classic fright  
23          response of salmonids to sound is the “startle” or “start” behavior (Moore and Newman,  
24          1956; Burner and Moore, 1962; VanDerwalker, 1967). These behaviors involve sudden  
25          bursts of swimming that are short in duration and distance traveled (usually <60 cm; Feist  
26          et al., 1992). Responses of other fish to sound include packing or balling, polarizing,  
27          increases in swimming speed, diving, or avoidance (Hering, 1968; Olsen, 1976). Few  
28          studies have shown that sound can attract or repel salmonids over great distances or for  
29          long periods of time (McKinley and Patrick, 1986).

30          Mueller et al. (1998) subjected 30-70 mm rainbow trout (*O. mykiss*) and Chinook salmon (*O.*  
31          *tshawytscha*) fry to low (7-14 Hz) and higher frequency 150, 180, and 200 Hz (similar to  
32          small combustion engines) sound fields to assess the possibility of using underwater sound  
33          as a behavioral barrier for enhancing fish screening facilities. Both species responded to  
34          infrasound by an initial startle response followed by a flight path away from the source and  
35          to deeper water. These observations indicate that juvenile salmonids, as small as 30 mm  
36          long, have infrasound detection capability. They also observed a startle response in wild  
37          Chinook salmon when exposed to high-intensity (162 dB //mPa), 150-Hz pure tone sound;  
38          but no observable effects were noted on hatchery Chinook salmon or rainbow trout fry  
39          when exposed to 150, 180, or 200 Hz high-intensity sound. Therefore, the noise generated  
40          by a suction dredging motor may have mixed behavioral effects on juvenile salmonids,  
41          depending on species, age and origin.



1 Very little work has been done on the effects of diving and other human activity on the  
2 behavior of stream fishes. Hassler et al., (1986) observed trout actively feeding behind  
3 suction dredging operations. However, this was a qualitative assessment and did not  
4 directly measure changes in individual fish behavior or the overall effects on the fish  
5 population. More recent work has been done on the effects of tourist diving on marine reef  
6 fishes. Ilarri et al. (2008) observed that diversity, equitability and species richness were  
7 significantly higher at a Brazilian coral reef when divers were absent. How well these  
8 results translate to California streams is unclear, but it is reasonable to assume based on the  
9 available literature that diving activity in association with equipment operation can affect  
10 fish behavior.

11 While some work suggests that adult spring-run Chinook salmon behavior is unaffected by  
12 suction dredging (Stern, 1988), other studies suggest that different disturbances (e.g.,  
13 recreational activity) increased salmon movement in pools, and may increase adult stress  
14 (Campbell and Moyle, 1992). Even minor disturbances during the summer may harm adult  
15 anadromous salmonids because their energy supply is limited, and the streams they occupy  
16 can be near lethal temperatures (Nielsen et al., 1994). The USFS (2001; 2009 states that  
17 suction dredging can disturb spring Chinook salmon holding in deep pools during the  
18 summer, particularly if numerous dredges are operating, or if water temperatures are  
19 elevated. Suction dredging dislocates and can kill aquatic insects used as a food source by a  
20 variety of fish species in a variety of life stages. If animals avoid a refuge area as a result of  
21 disturbance or perceived predation (Frid and Dill, 2002), these animals may experience  
22 greater predation by other predators (Crowder et al., 1997; Sih et al., 1998; De Goeij et al.,  
23 2001). If forced to relocate to new feeding areas, fish may experience increased stress due  
24 to predation, exposure to sub-optimal conditions, and increased competition with other fish  
25 for food and space, as well as stress from agonistic behavior (i.e., contests for dominance).

#### 26 *Effects on Amphibians*

27 Responses by adults and metamorph amphibians to noise and vibrations have not been  
28 quantified; however, avoidance by individuals of disturbances is likely. Research shows  
29 that abundance of Iberian frogs (*Rana iberica*) has been reported to decrease with  
30 proximity to recreational areas (Rodríguez - Prieto and Fernández - Juricic, 2005). Human  
31 visitation along streambanks resulted in 80 to 100 percent decrease in frog use with a  
32 five - fold and 12 - fold increase in direct disturbance (Rodríguez - Prieto and  
33 Fernández - Juricic, 2005). Avoidance behaviors by frogs to humans, including suction  
34 dredgers, could remove individuals from an existing established territory, and push them  
35 into either marginal or unsuitable habitat or into a new, already occupied territory,  
36 potentially impacting the relocated individual and the defending individual, expending  
37 critical energy reserves.

#### 38 Findings

39 If left unrestricted, impacts of suction dredging on the behavior of juvenile and adult *Fish*  
40 would be potentially significant with respect to Significance Criteria A and D. Behavioral  
41 impacts are of particular concern during mating, spawning and early life stages. The  
42 Proposed Program regulations incorporate spatial and temporal restrictions on suction  
43 dredging in the period immediately before spawning/breeding and during critical early life  
44 stages of *Fish* action species (i.e., incubation, development, early emergence) (Table 4.3-1).  
45 The Proposed Program regulations also include specific closures of areas within streams

1 that are known to provide thermal refugia (i.e., cold water holding pools) for Chinook and  
2 coho salmon in the Klamath River basin (Appendix L). Closures of these areas provide for  
3 protection of organisms and maintenance of stream features that serve as habitat during  
4 stressful periods (e.g. over-summer habitat for juveniles). Therefore, the potential to stress  
5 holding adults and/or juveniles of these species from actions associated with suction  
6 dredging is not likely to commonly occur. In addition, the following regulations would  
7 further minimize the potential for suction dredging to result in behavioral effects on fish  
8 and amphibians:

- 9 ■ Section 228(k)(16): requires dredgers to avoid the disturbance of fish.

10 With the Proposed Program regulations in place, impacts related to behavioral effects  
11 would be avoided and/or minimized. Thus, with respect to Significance Criteria A and D, the  
12 impact is considered less than significant.

### 13 ***Impact BIO-FISH-6: Effects on Movement/Migration (Less than Significant)***

#### 14 Discussion

##### 15 *Effects on Fish and Invertebrates*

16 Aquatic organisms such as fish and invertebrates migrate or move to spawn, feed, seek  
17 refuge from predators, and escape harmful environmental conditions or access more  
18 productive areas (see Fausch et al., 2002). The success of migration, whether upstream,  
19 downstream or laterally (to floodplain and off channel habitat) is limited by the presence of  
20 barriers that can impede passage (Meixler et al., 2009). Barriers to movement can either be  
21 physical (e.g. water that is too shallow, fast or hot) or behavioral (perceived or real danger)  
22 in nature. Direct and indirect impacts related to creating passage issues for migrating fish  
23 include:

- 24 ■ Blockage: Both complete and partial
- 25 ■ Fatigue: Can't complete immediate passage or reduced ability to complete  
26 migration or life strategy
- 27 ■ Vulnerability: Predation and disease
- 28 ■ Injury: Impact, scrapes and abrasions
- 29 ■ Desiccation: tissue damage or reduction in gill function due to being out of water  
30 for prolonged periods
- 31 ■ Disorientation: Fish cannot find pathway or access to passage, impeding or  
32 reducing migration success

33 Whether human activity or a change to the channel is a barrier to fish movement depends  
34 on the several factors including: the amount or frequency of noise generated by the activity;  
35 the physical and hydraulic features of the channel alteration and the physiology; and life  
36 stage and behavior of the fish (Bell, 1990; Webb, 1995). This can change with species and  
37 age of fish and acclimation of the organism over time (Davidson et al., 2009). Such activities  
38 may create velocity, depth, and slope conditions that fish cannot physically overcome, may  
39 disorient fish, or fish may avoid such conditions.

### 1        *Effects on Amphibians*

2        For most amphibians, the metapopulation concept of population biology applies, which is  
3        defined as populations that are spatially structured in assemblages of local breeding  
4        populations, with their own independent dynamics, and migration among the local  
5        populations has some effect on local dynamics, including the possibility of population  
6        reestablishment following extinction of any one of the local populations (Whittaker, 1998).

7        Movement per generation is of a lower rate in amphibians than in invertebrates, mammals  
8        or reptiles, and low recruitment of dispersing individuals probably plays an important role  
9        in decline and extinction in amphibian populations in fragmented landscapes (Cushman,  
10       2006). A number of studies have indicated that populations may decline if immigration is  
11       prevented and may not be recolonized following a local extinction (Cushman, 2006).

12       For the smaller vertebrates, such as amphibians, movement could be impeded if suction  
13       dredgers are densely active or consistently active within a season within a stream corridor.  
14       Movement from the main channel into small tributaries, or vice versa, may be impeded by  
15       suction dredging. Suction dredging could also result in the sterilization of a once viable and  
16       active movement corridor along the littoral area, thus barring movement.

17       Interruption of movement or dispersal corridors can be detrimental to small populations of  
18       amphibians. The viability of a population is dependent on movements between populations,  
19       and without such movements, populations become susceptible to loss of genetic diversity  
20       by random drift and, ultimately falling to the effects of inbreeding (Beebee and Griffiths,  
21       2005). Connectivity appears to be of particular importance even in unfragmented  
22       landscapes, as amphibian populations experience relatively frequent local extinction and  
23       turnover (Cushman, 2006). Thus movements and dispersal are critical for recolonization of  
24       local populations and maintenance of regional populations.

### 25       Findings

26       If left unrestricted, impacts of suction dredging on movement would be potentially  
27       significant with respect to Significance Criterion D. However, the Proposed Program  
28       incorporates spatial and temporal restrictions on suction dredging activities within the  
29       range of *Fish* action species. Streams within the state that provide habitat for species that  
30       are either very limited in number and/or distribution are proposed to be closed to suction  
31       dredging (Class A), thus avoiding the potential for impacts. These restrictions are intended  
32       to maintain the viability of these species, as disruptions of migration or movement may  
33       have a substantial effect on the population or range of the species. Areas of the state  
34       designated Class B through G similarly provide direct protection for *Fish* action species and  
35       surrogate protection for the movement and migration of many other species (Appendix J,  
36       Tables J-1 and J-2). In addition, the following Proposed Program regulations would further  
37       minimize the potential for impacts to migration and movement of *Fish*:

- 38            ■ Section 228(c)(2): requires dredgers to provide CDFG with information  
39            regarding the location of their dredging operation(s). This will allow CDFG to  
40            monitor and manage areas with high dredging use, and potentially modify  
41            regulations if deleterious effects are identified.
- 42            ■ Section 228(k)(6): Prohibits the diversion of a stream into the bank.

- 1           ■ Section 228(k)(7): Prohibits:
  - 2               – Construction of permanent or temporary dams
  - 3               – Concentrating flow in a way that reduces the total wetted area of the stream.
  - 4               – Obstructing a stream or lake in such a manner that fish passage is impeded.
- 5           ■ Section 228(k)(16): requires dredgers to avoid the disturbance of fish.

6           With the Proposed Program regulations in place, impacts related to movement and  
7           migration would be sufficiently avoided and/or minimized. Thus, with respect to  
8           Significance Criterion D, the impact is considered less than significant.

9           ***Impact BIO-FISH-7: Effects on the Benthic Community/Prey Base (Less than Significant)***

10          Discussion

11          Benthic and epibenthic (i.e., stream bottom) communities, such as diatoms, periphyton, and  
12          invertebrate organisms, are important components of the stream ecosystem because they  
13          help form the foundation of the stream food web. Changes in benthic community  
14          composition and productivity can affect higher trophic levels (e.g., fish and amphibian  
15          production) and other stream processes (e.g., organic matter processing).

16          *Disturbance and Distance from Dredging Activity*

17          Thomas (1985) and Harvey (1986) measured statistically significant reductions in some  
18          benthic invertebrate taxa within 10 m of dredges that disturbed the substrate. Harvey  
19          (1986) found that large-bodied insect taxa that avoid sand (e.g., hydropsychid caddisflies  
20          and perlid stoneflies) were most affected. In a study of dredging effects in an Alaska stream,  
21          Royer et al. (1999) found that the density of benthic invertebrates was greatly reduced in  
22          the first 10 meters downstream of the activity. Values returned to upstream composition  
23          within 80 to 160 meters.

24          Frequent disturbance may keep assemblages in an early stage of development, affecting the  
25          composition of benthic and epibenthic invertebrates on and within the stream substrate.  
26          Robinson and Rushforth (1987) observed that disturbance frequency had no effect on  
27          diatom species diversity in open canopy sections of a 3rd order tributary. However, species  
28          diversity significantly decreased as disturbance frequency increased in closed canopy areas.  
29          Robinson and Minshall (1986) examined the effects of disturbance frequency on  
30          invertebrates and periphyton. Invertebrate species richness and density were reduced as  
31          disturbance frequency increased. These trends were evident for both seasons (summer and  
32          fall) and sites (open vs. closed canopy). Invertebrate species diversity was not affected  
33          during the fall experiment; however, diversity was reduced at high frequencies of  
34          disturbance during the summer. Colonization of the benthos by less common species is  
35          impaired by increased disturbance. Periphyton biomass is negatively correlated to  
36          increased disturbance frequency in open canopy areas and frequently disturbed areas  
37          maintained low standing crops at an open canopy site. These data suggest that disturbance  
38          frequency can directly influence the benthic community at local scales by reducing  
39          invertebrate richness, total animal density, and periphyton biomass. Seasonality also plays  
40          a role in the effect of disturbance on species diversity.

### 1           *Mortality and Population Recovery*

2           Griffith and Andrews (1981) found that benthic invertebrates in four Idaho streams  
3           suffered low mortality (<1% of over 3,600 individuals) following entrainment in a dredge.  
4           Rapid recovery (within 4-6 weeks) occurred, both in terms of numbers and species  
5           composition. In contrast, Bernell et al. (2003) stated that invertebrate colonies situated in  
6           riverbeds are almost entirely destroyed by suction dredging.

7           In general, benthic invertebrates (Mackay, 1992), hyporheic<sup>2</sup> invertebrates (Boulton et al.,  
8           1991), and periphyton (e.g., Stevenson, 1991; Stevenson and Peterson, 1991) all rapidly re-  
9           colonize small patches of new or disturbed substrate in streams. Abundance and general  
10          taxonomic composition of benthic invertebrates can be restored on dredge tailings four to  
11          six weeks after dredging (Griffith and Andrews 1981; Thomas 1985; Harvey 1986). Boulton  
12          et al. (1991) argued that recolonization of tailings by hyporheic invertebrates (those living  
13          beneath the surface of the substrate) is probably also rapid. Griffith and Andrews (1981)  
14          studied the effects of a small suction dredge on fishes and invertebrates in Idaho streams  
15          and found that most of the recolonization of dredged plots by benthic invertebrates was  
16          completed after 38 days. Hall and Harding (1997), who observed a suction dredge  
17          experiment in a marine environment, found that it revealed some statistically significant  
18          effects; taken as a whole the results indicated that the faunal structure in disturbed plots  
19          recovered (i.e., approached that of the un-disturbed controls) by 56 days. A U.S.  
20          Department of the Interior (Prussian et al., 1999) study of three Alaska streams found short  
21          term decreases (during dredge operation) in numbers and diversity, with minimal long  
22          term (1 year later) impacts. Impacts depended on substrate size; harsh winters in Alaska  
23          were also an added factor for recovery.

24          The effects of suction dredging on rare, long-lived macroinvertebrate species have not been  
25          well documented. Fore et al. (1996) discusses the importance of assessing rare or long-  
26          lived organisms (for instance the presence or absence of a long-lived stonefly genus such as  
27          *Pteronarcys* spp. with a 2-3 year life cycle) as important tools for assessing anthropogenic  
28          impacts. Wright and Li (1998) found that chronic recreational impacts on caddisfly  
29          (*Dicosmoecus gilvipes*) densities within the riparian zone were apparent for instars 3-5 (the  
30          latter three of five development stages), but effects were greater on earlier instars than  
31          later instars. In 1995, sites with low human use had statistically significant densities of  
32          caddisfly which were higher than sites exposed to intense recreation (Wright and Li 1998).

33          There are several limitations to the studies above as they apply to the Proposed Program.  
34          Identified studies did not take into account the effects of the sediment plume or that tailings  
35          may be more susceptible to erosion. Growth and development of aquatic organisms can be  
36          significantly reduced by increases of fine sediment and activities in catchments that  
37          increase stream sediment loads (Suttle et al., 2004). Sedimentation downstream of the  
38          dredging area coats the sand and gravel supporting interstitial algae, bacteria and diatoms  
39          which are important prey resources. Although this effect may be temporary, it can occur at  
40          a critical developmental stage, and therefore, have negative impacts on certain organisms.

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<sup>2</sup> The hyporheic zone is the area beneath and/or beside the stream channel or floodplain where surface and groundwater exchange regularly occurs.

1 Many of these studies have been performed on streams where human impact is already  
2 present, utilized very general assessments of “similarity” and were somewhat short in  
3 duration. The use of such terms as “minimal” and “rapid” in studies may be considered  
4 subjective. Some juvenile salmonids may spend 1 – 12 months in natal streams before  
5 emigrating. This would suggest that food and habitat within the dredging area may be  
6 affected from 8 – 100% of the residence time of an individual fish. Parameters such as food  
7 and cover quantity and quality can greatly influence energy reserves and hence, growth,  
8 behavior and metabolic processes such as smoltification (the process by which juvenile  
9 salmonids prepare for living in salt water).

10 Suction dredging may benefit species by temporarily improving the availability of prey  
11 resources through mobilization of the benthic invertebrate community. Many studies have  
12 observed increased feeding by juvenile anadromous, resident juvenile and adult salmonids  
13 below active suction dredging operations due to invertebrates becoming dislodged and  
14 floating downstream (Stern, 1988; Thomas, 1985; Hassler et al., 1986; Harvey, 1986). The  
15 action of stirring up the stream bottom by suction dredgers can temporarily expose  
16 invertebrates, making them readily available as forage for fish. Conversely, the studies  
17 identified above suggest that availability of prey to fish and other resources may actually be  
18 reduced during periods immediately after dredging would cease.

19 In conclusion, suction dredging can have substantial short-term and localized adverse  
20 impacts on local benthic invertebrate abundance and community composition. Benthic  
21 communities seem to recover over time frames of 30-60 days after the disturbance ceases  
22 and the adverse impacts of suction dredging are not evident after one year (unless there is a  
23 very small population that is threatened or endangered). However, when considering the  
24 extent of benthic disturbance and its recovery, the extent to which it affects a juvenile  
25 salmonid’s reliance on the natal stream before emigrating is important, as is larval  
26 development of other native species that depend on a healthy benthic invertebrate  
27 community.

## 28 Findings

29 If left unrestricted, the impacts of suction dredging on stream benthic communities would  
30 be less than significant with respect to all significance criteria. Less than significant  
31 temporal impacts to benthic and epibenthic communities would be reduced by the Program  
32 regulations that incorporate spatial and temporal restrictions for streams within the state  
33 that provide habitat for *Fish* species. These restrictions would either completely avoid  
34 impacts to benthic and epibenthic communities (i.e., in streams designated Class A) or allow  
35 for recovery of the benthic community (i.e., in streams designated Class B through G). In  
36 addition, the following Proposed Program regulations would further minimize the potential  
37 for impacts to benthic and epibenthic communities:

- 38 ■ Section 228(c)(2): requires dredgers to provide CDFG with information  
39 regarding the location of their dredging operation(s). This will allow CDFG to  
40 monitor and manage areas with high dredging use, and potentially modify  
41 regulations if it identifies deleterious effects.
- 42 ■ Section 228(j)(1): limits the nozzle size of dredging equipment, which effectively  
43 reduces the potential area disturbed by an individual dredger.

- 1           ■ Section 228(k)(4): prohibits the removal or damage of streamside vegetation.  
2           Terrestrial invertebrates can make up a significant portion of a fish's diet during  
3           some periods (Nakano and Murakami, 2001; Garman, 1991). Riparian trees and  
4           other vegetation are the source of these organisms. Prohibiting the removal of  
5           riparian vegetation will help maintain this component of the prey base.
- 6           ■ Section 228(k)(5): prohibits the cutting, movement or destabilization of woody  
7           debris, which is important for macroinvertebrate habitat and production.

8           Thus, with respect to all significance criteria, this impact is considered less than significant.

9           ***Impact BIO-FISH-8: Creation and Alteration of Pools and other Thermal Refugia (Less***  
10          ***than Significant)***

11          Discussion

12          Stream pools provide important habitat for aquatic organisms such as amphibians (Wilkins  
13          and Peterson, 2000) and fish, including refuge from bird and mammal predation (Harvey  
14          and Stewart, 1991). Pools that provide coldwater (or thermal) refugia are important to  
15          salmonids and other fishes as both over-summering juvenile and adult holding habitat. For  
16          instance, adult spring Chinook salmon returning from the ocean in late spring migrate  
17          upstream, hold in cooler river reaches during the summer months, and then spawn in the  
18          fall when stream temperatures become more tolerable. Adult salmon cease to feed upon  
19          entering freshwater and, therefore, function on energy reserves until spawning. Because  
20          salmon metabolic rates increase directly with temperature, high water temperatures prior  
21          to spawning compromise energy necessary to insure reproductive success. Therefore,  
22          coldwater refugia are important stream components (Torgersen et al., 1995). These sites  
23          also provide refuge for macroinvertebrates, herpetofauna and other fish species.

24          Suction dredging activities have the potential to result in creation, alteration or destruction  
25          of pool habitat. The act of dredging often creates pools locally, but these features may not  
26          be persistent, nor function hydrologically in a manner similar to naturally formed pools.  
27          Suction dredging can alter or destroy pools by redistributing stream substrate in a manner  
28          that would destabilize bed form, or simply by filling a pool with dredge tailings (See Chapter  
29          4.1, *Hydrology and Geomorphology* for a more detailed discussion of dredging impacts to  
30          channel form and function).

31          Temperatures within streams may be affected by surface discharge, but a primary effect is  
32          connectivity with the hyporheic environment (i.e. beneath and lateral to the streambed)  
33          (Ebersole et al., 2001). Other effects on temperature include solar radiation and ambient air  
34          temperature. This is further influenced by solar declination, length of day and shading.  
35          Pool depth and water residence time will affect mixing, how much energy is stored in the  
36          water and therefore the temperature within the area. In-stream structures such as log jams,  
37          riffles, and gravel bars are common in natural streams and stream restoration projects, and  
38          are also known to enhance hyporheic exchange (Kasahara and Wondzell, 2003) affecting  
39          channel temperatures (Hester et al., 2009). Suction dredging may affect the ability of a  
40          section of stream to provide thermal refuge in several ways; dredging a hole that allows the  
41          connection of surface water to the hyporheic zone is one aspect. Another is affecting the  
42          porosity of the substrate that in turn affects hyporheic flow.

1 Filling of pore spaces between coarse gravel and cobble at the bottom of pools can reduce  
2 the use of such habitat by amphibians (Welsh and Olliver, 1998). Suction dredging can lead  
3 to sedimentation of pools downstream of the dredging site, thus filling in pool habitat. For  
4 example, after one year of dredging activity on Gold Creek in Missoula County, Montana, all  
5 of the gravel deposited at the dredged area had moved downstream and completely filled in  
6 a downstream pool (Thomas, 1985). However, the authors of this study found, overall, that  
7 the creation of a pool at the dredged site led to no net loss of pool habitat in the stream.

8 It is unclear how sustainable pools created by dredging activity are compared to those that  
9 develop under more natural conditions. Where pools form, their size and how they are  
10 maintained is dictated by gradient, sediment source, substrate size, channel width, flow and  
11 the presence of forcing features (e.g., bedrock outcropping, boulders, wood material)  
12 (MacWilliams et al., 2006). These factors are rarely, if ever, considered by suction dredgers  
13 when creating pools.

#### 14 Findings

15 If left unrestricted, impacts of suction dredging on thermal refugia would be potentially  
16 significant with respect to Significance Criteria A, B and D. More specifically, unrestricted  
17 dredging of thermal refugia utilized by Chinook salmon in the Klamath and Salmon River  
18 watersheds could result in a substantial decline of the species, alteration of thermal refugia  
19 habitat, and affect movement of the species within summer holding areas. However, the  
20 Proposed Program regulations include specific year-round closures of areas within streams  
21 that are known to provide thermal refugia for this species (Appendix L). Closures of these  
22 areas, and appropriate buffers in the upstream direction, will provide protection for this  
23 type of habitat. In addition, the following Proposed Program regulations would further  
24 minimize the potential for suction dredging to alter or otherwise degrade pool habitat:

- 25 ■ Section 228(k)(5): prohibits the cutting, movement or destabilization of woody  
26 debris, which is important for pool habitat formation and maintenance.
- 27 ■ Section 228(k)(15): requires dredgers to level all tailing piles prior to working  
28 another excavation site or abandoning the excavation site. This regulation  
29 would limit the potential for dredgers to leave tailings that could be easily  
30 transported downstream and fill pools, and plug or reduce hyporheic flow in  
31 critical areas.

32 With the Proposed Program regulations in place, impacts related to alteration of pool and  
33 thermal refugia habitat would be sufficiently avoided and/or minimized. Thus, with respect  
34 to Significance Criteria A, B and D, the impact is considered less than significant.

#### 35 ***Impact BIO-FISH-9: Destabilization/Removal of Instream Habitat Elements (e.g.,*** 36 ***Coarse Woody Debris, Boulders, Riffles) (Less than Significant)***

#### 37 Discussion

38 This section primarily discusses the biological effects of destabilization/removal of  
39 instream habitat elements. The effects on channel form and function are discussed in  
40 Chapter 4.1, *Hydrology and Geomorphology*. For the purposes of this discussion coarse  
41 woody debris (CWD), also commonly referred to as large woody debris or LWD, refers to



1 instream wood greater than 12 inches in diameter (measured at any point) and 6 feet in  
2 length, and root wads of any size.

### 3 *Woody Debris and Large Boulders*

4 Suction dredgers sometimes remove CWD and large boulders from stream channels or  
5 reduce the stability of these elements by removing surrounding material (Harvey and Lisle,  
6 1998). The importance of these features for aquatic habitat and stream structure is well  
7 documented. Many pools are formed by scour around large roughness elements (Keller and  
8 Swanson, 1979; Lisle, 1986; Montgomery et al., 1995; Merz et al., 2006) and therefore, the  
9 stability and maintenance of these structures are important to the long-term maintenance  
10 of such habitat. CWD, especially in smaller streams, increases flow complexity and water  
11 retention (Gurnell et al., 2002). When the flow of the water is backed up by CWD or  
12 boulders, pools may form, which are an important habitat for many species of fish  
13 (McIntosh et al., 2000). This can become especially important during dry periods to  
14 maintain stream biota (Lisle, 1986). Instream structure provides important habitat for  
15 juvenile and adult salmonids (House and Boehne, 1985; Flebbe and Dolloff, 1995; Merz,  
16 2001).

17 Woody debris is also an important energy source for benthic invertebrates (Anderson et al.,  
18 1978; Bisson et al., 1987), which are a principal food of juvenile salmonids (Mundie, 1974).  
19 Woody debris provides cover for adult salmonids (Bjornn and Reiser, 1991) and low  
20 gradient sediment deposits upstream of debris accumulation can provide suitable spawning  
21 substrate in sediment-poor drainages (Everest and Meehan, 1981). Large pieces and  
22 conglomerations of CWD are especially important because they induce scour of larger pools  
23 with tail-outs appropriate for redd construction in sediment-rich streams and can be more  
24 stable than smaller pieces (Sedell et al., 1982; Bilby 1984).

25 Many studies provide evidence that CWD and other large elements affect various ecological  
26 processes and conditions in streams, including the microbial uptake and transfer of organic  
27 matter (Tank and Winterbourn, 1996), the species composition and productivity of benthic  
28 invertebrates (Benke et al., 1984), and the density of fish (e.g., Fausch and Northcote, 1992;  
29 Crispin et al., 1993). CWD and snags are important habitat components for benthic  
30 macroinvertebrate communities (Brown and May, 2000). Woody debris is an important  
31 refuge and source of macroinvertebrate recolonizers. Loss of wood structure can have a  
32 negative effect on macroinvertebrate diversity and production in streams (Hax and  
33 Golladay, 1998). Sundbaum and Näslund (1998) demonstrated that the presence of woody  
34 debris decreases intraspecific competition through visual isolation, allowing fish to reduce  
35 aggressive interactions and energy expenditure.

36 Harvey and Lisle (1998) state that suction dredging likely only affects the presence of CWD  
37 locally; thus, it has a limited effect on a stream's aquatic biota. However, many western  
38 streams may be particularly vulnerable to CWD removal or disturbance because other  
39 human activities have already depleted them of CWD (Bilby and Ward, 1991; Ralph et al.,  
40 1994).

41 Removal or reduction of CWD retention in river channels can have variable and substantial  
42 impacts on the stream environment. Warren and Kraft (2006) found that in a New York  
43 stream, substrates did not change significantly in response to wood removal. However, the  
44 relative proportion of macroinvertebrate grazers increased upstream and downstream

1 from removed woody debris dams in all streams. Bilby (1984) found that the removal of  
2 CWD resulted in reduced numbers of pools and scouring and lowering of the bed in several  
3 Washington streams. Smith et al. (1993) found that wood removal from a gravel-bed  
4 stream resulted in dramatic redistribution of bed sediment and changes in bed topography.  
5 Removal of CWD changed the primary flow path, thereby altering the size and location of  
6 bars and pools, and causing local bank erosion and channel widening. Increased bed  
7 material mobility was attributable to destabilization of sediment storage sites by removal of  
8 debris buttresses, elimination of low-energy, backwater environments related to debris, and  
9 an inferred increase in boundary shear stress resulting from the removal of debris-related  
10 flow resistance. Sediment deposition was favored by the elimination of debris-related  
11 scouring turbulence and by increased flow resistance from a developing sequence of  
12 alternate bars. Mean spacing of thalweg (i.e., the low point in the stream) cross-overs and  
13 pools did not change measurably following debris removal, although variability of spacing  
14 between thalweg cross-overs tended to decrease with time as the location of bars stabilized.  
15 However, Smith et al. (1993) found no consistent pattern of change in mean residual depth  
16 of pools or in distribution of depths occurred within the first 4 years following debris  
17 removal.

18 Wondzell et al. (2009) found that in the first few years after CWD was removed from a  
19 stream, hyporheic exchange flow was reduced by smoothing of the streambed and water  
20 surface elevation profiles due to streambed scour and sediment deposition. Also, large  
21 contiguous patches of downwelling or upwelling were fragmented. These flows are  
22 important to the production of benthic invertebrates and the survival and development of  
23 developing fish embryos (Fowler and Death, 2001; Merz et al., 2006; Bilski, 2008).

#### 24 *Riffles*

25 Pool-riffle channels have an undulating bed that defines a sequence of pools and bars. Pools  
26 are topographic depressions within the channel and bars are corresponding high points  
27 that form riffles. Therefore, the two are defined relative to each other (see Montgomery and  
28 Buffington, 1997). Pools are rhythmically spaced about every five to seven channel widths  
29 in self-formed, pool-riffle channels (Leopold et al., 1964; Keller and Mellhorn, 1978),  
30 however the frequency of pool-riffle sequencing is also affected by stream gradient,  
31 substrate size, and the amount and frequency of structure, such as CWD (Montgomery et al.,  
32 1995). Riffles represent storage locations for bed material and are generally utilized for fish  
33 spawning. The particle sizes and distributions of bed material influence channel  
34 characteristics, bedload transport, food supplies for fish and other organisms, spawning  
35 conditions, cover, and rearing habitat (see Beschta and Platts, 1986). The riffle bed is  
36 typically comprised of gravel and cobble substrate and the interstitial spaces between the  
37 rock particles provide places for plants to resist the current, and can trap organic matter  
38 such as sticks, leaves and detritus which are an important component of the stream's food  
39 web. These areas also provide refuge habitat for aquatic macroinvertebrates and  
40 incubation habitat for many organisms including salmonids (Shumway et al., 1964; Hose et  
41 al., 2005). The rapid movement of water over a coarse riffle substrate results in complex  
42 flow, a turbulent water surface and high dissolved oxygen levels (Kim, 2006). Constriction  
43 of the water flow at the interface between pools and riffles increases downwelling,  
44 upwelling, hyporheic flow and filtration of water through the riffle's coarse bed material  
45 which maintains the physical requirements for numerous organisms that utilize this habitat  
46 (Geist et al., 2002).

1 Riffle-pool complexes enhance the heterogeneity of the river channel which is particularly  
2 valuable for fish and wildlife habitat (Lind et al., 1996; Welsh and Ollivier, 1998). The  
3 creation and maintenance of riffles in relationship to pools has a significant effect on the life  
4 history of numerous aquatic species, including spawning and embryo development in  
5 salmonids (Montgomery et al., 1999; Malcolm et al., 2004). Riffle habitats and the hyporheic  
6 environment they provide, even in intermittent streams, may support greater numbers of  
7 invertebrate taxa and individuals than other areas of the stream (Hose et al., 2005).

8 Because natural channel form, including pool-riffle morphology, is created by complex  
9 actions such as flow convergence and divergence of flow, it is often difficult to re-create  
10 these features without considerable engineering and design (Frissell and Nawa, 1992;  
11 Kondolf et al., 1996; Pasternack et al., 2008; Sawyer et al., 2010). Potential impacts from  
12 suction dredging may include the discharge of dredged material to pools and riffles, or the  
13 elimination of riffles directly through the action of dredging or indirectly through the  
14 destabilization of CWD features. Activities that reduce riffle-pool ratios or alter the  
15 substrate matrix in these habitats may reduce aeration and filtration of the water column  
16 and reduce habitat diversity. Activities that shift or change channel morphology may alter  
17 stream hydrology, increase mobility of bed sediments, increase fine sediments, reduce  
18 habitat complexity and alter water quality, both at the surface and within the hyporheic  
19 zone having negative connotations for fish and wildlife resources (Kaufmann and Hughes,  
20 2006).

21 Dredge tailings may be attractive to spawning salmonids as sites for redd construction  
22 because tailings are often located near riffle crests where fish frequently spawn, and they  
23 provide relatively loose, appropriately sized substrate. However, dredge tailings may  
24 reduce embryo survival because they tend to be less stable than natural spawning gravels.  
25 Embryos in tailings may suffer high mortality if high flows scour the tailings, thereby  
26 destroying redds (Harvey and Lisle, 1998).

### 27 Findings

28 The importance of CWD and large boulders on the formation and maintenance of aquatic  
29 habitat structure is well documented in the preceding discussion. If left unrestricted,  
30 impacts of suction dredging on the abundance and distribution of CWD in sensitive habitats,  
31 including but not limited to USFWS/NMFS designated critical habitat, would be potentially  
32 significant with respect to Significance Criterion B. Likewise, displacement of large boulders  
33 that are important for formation and maintenance of aquatic habitat and stream structure  
34 would be potentially significant with respect to Significance Criterion B. However, the  
35 following Proposed Regulations would minimize the potential for suction dredging to  
36 destabilize or remove instream habitat features:

- 37 ■ Section 228(k)(1): prohibits the use of motorized winches or other motorized  
38 equipment to move boulders or logs without prior approval and section 1602  
39 notification. This regulation would limit the potential for dredgers to destabilize  
40 or alter instream habitat by moving large objects.
- 41 ■ Section 228(k)(5): prohibits the cutting, movement or destabilization of woody  
42 debris including root wads and stumps or logs.

- 1           ■ Section 228(k)(15): requires dredgers to level all tailing piles prior to working  
2           another excavation site or abandoning the excavation site. This regulation  
3           would limit the potential for dredgers to destabilize or alter riffle and pool  
4           habitat.

5           With the Proposed Program regulations in place, the potential for key stream elements to be  
6           destabilized or removed by suction dredging would not commonly occur. Thus, with respect  
7           to Significance Criteria B, the impact is considered less than significant.

#### 8           ***Impact BIO-FISH-10: Destabilization of the Streambank (Less than Significant)***

9           This section discusses the biological effects of destabilization of streambanks. The effects  
10          on channel form and function are discussed in Chapter 4.1, *Hydrology and Geomorphology*.

#### 11          Discussion

12          Physical habitat quality, including streambanks dynamics, plays a vital role in the biological  
13          condition of aquatic habitat (Barbour, 1991). Streambanks support riparian vegetation,  
14          which is important to aquatic food web dynamics, regulation of stream hydraulics (e.g.,  
15          velocity) and temperature, and storage of alluvial sediment. Destabilization of streambanks  
16          can have adverse effects on aquatic and riparian habitats including sedimentation,  
17          increased flow velocity, increased water temperatures, reduced cover habitat (e.g., undercut  
18          banks), and reductions in allochthonous (originating from outside the stream) organic  
19          matter inputs.

20          Streambank erosion is one of the primary non-point sources of sediment in a watershed  
21          (U.S. EPA, 1999). While streambank erosion is a natural process, excessive erosion caused  
22          by human activity can substantially degrade aquatic habitat downstream of the erosion site.  
23          Simon et al., (2006) estimated that streambank erosion accounts for about 25% of the total  
24          fine sediment load entering Lake Tahoe. The USFWS has identified sedimentation of aquatic  
25          habitat as a threat to the recovery of listed amphibian species including arroyo toad and  
26          California red-legged frog (USFWS, 1999; USFWS, 2002). Excessive sedimentation from a  
27          variety of activities may also smother substrates and impair egg-laying or survivorship of  
28          eggs (Duncan, 2005).

#### 29          Findings

30          If left unrestricted, impacts of suction dredging on streambank stability would be  
31          potentially significant with respect to Significance Criteria A, B and C. Specifically,  
32          streambank destabilization may result in excessive sedimentation in habitat utilized by *Fish*  
33          species; degradation of sensitive habitat such as riparian areas; and result in adverse effects  
34          on federally protected wetlands in or adjacent to streams through direct modification or  
35          sedimentation. The following Proposed Program regulations would reduce the potential for  
36          suction dredgers to destabilize streambanks:

- 37               ■ Section 228(c)(2): requires dredgers to provide CDFG with information  
38               regarding the location of their dredging operation(s). This will allow CDFG to  
39               monitor and manage areas with high dredging use, and potentially modify  
40               regulations if it identifies deleterious effects.

- 1           ■ Section 228(k)(2): Prohibits dredging within 3 feet of the current water  
2           level at the time of dredging. This would greatly reduce the likelihood that a  
3           dredger would destabilize a streambank.
- 4           ■ Section 228(k)(4): prohibits the removal of streamside vegetation.

5           While the Proposed Regulations prohibit suction dredge activities into streambanks, similar  
6           regulations were previously in place and it has been observed that some illegal activity  
7           occurred that caused bank erosion and instability (McCleneghan and Johnson, 1983; USFS,  
8           2007); this is also likely to occur under the Proposed Program. This potential for bank  
9           erosion and instability as an outcome of suction dredge activities is considered a departure  
10          from the current baseline condition whereby no suction dredging occurs because it is  
11          prohibited by statute and court order. It is anticipated that with the Proposed Program  
12          regulations in place, the extent of bank destabilization caused by dredging activity would be  
13          minimal and would not substantially degrade the biological function of rivers and streams of  
14          the state. Thus, with respect to Significance Criteria A, B and C, the impact is considered less  
15          than significant.

16           ***Impact BIO-FISH-11: Effects on Habitat and Flow Rates Through Dewatering, Damming***  
17           ***or Diversions (Less than Significant)***

18          This section discusses the biological effects of dewatering, damming and diversions. The  
19          effects on channel form and function are discussed in Chapter 4.1, *Hydrology and*  
20          *Geomorphology*.

21           Discussion

22          Channel flow manipulations, such as damming, dewatering and diversions, may adversely  
23          impact *Fish*. Changes in flow patterns and properties (e.g., depth, velocity) can affect fish  
24          behavior and migration patterns. Changes to hydrologic conditions (primarily unnatural  
25          flow fluctuations from dam releases) and associated sediment loads during the spring  
26          breeding and summer larval rearing season are the principal threat to the conservation of  
27          foothill yellow-legged frog (Kupferberg et al., 2009). Dewatering or diversion of the  
28          stream channel may strand fish and expose tadpoles to unnatural conditions and increase  
29          predation. Increased water velocities as a result of diversions can create barriers to fish  
30          movement and displace tadpoles. Damming a waterway to increase the level of water to  
31          float dredges may also create barriers to fish movement and could flood suitable amphibian  
32          breeding habitat. Damming in some cases may temporarily create/improve pools, providing  
33          an extension of habitat for embryonic forms and rearing habitat.

34           Findings

35          If left unrestricted, impacts of modification of flow regimes by suction dredgers would be  
36          considered potentially significant with respect to Significance Criteria A and D. More  
37          specifically, diversion or dewatering caused by dredgers may strand or impede the  
38          movement or migration of *Fish* species. Section 228(k)(7) of the Proposed Regulations  
39          prohibits: construction of permanent or temporary dams; concentrating flow in a way that  
40          reduces the total wetted area of the stream; and obstructing a stream or lake in such a  
41          manner that fish passage is impeded. Such activities would require compliance with Fish  
42          and Game Code section 1602, which may require a project-specific CEQA analysis. In  
43          addition, the Proposed Program regulations incorporate restrictions to protect the

1 development of critical early life stages of *Fish* action species such that unauthorized  
2 diversion, dewatering or damming are not likely to cause significant impacts. Section  
3 228(c)(2) of the Proposed Program regulations, which requires dredgers to provide CDFG  
4 with information regarding the location of their dredging operation(s), would enable CDFG  
5 to monitor dredging activities and enforce Program regulations that prohibit diversion,  
6 dewatering or damming of streams. While some unauthorized channel manipulations are  
7 likely to occur in spite of these restrictions, these are not anticipated to be widespread  
8 because of the Proposed Regulations which prohibit this type of activity. Thus, with respect  
9 to Significance Criteria A and D, the impact is considered less than significant.

## 10 **TERRESTRIAL WILDLIFE & NON-RIVERINE AQUATIC INVERTEBRATES**

### 11 ***Impact BIO-WILD-1: Effects on Special-Status Terrestrial and Non-Riverine Aquatic*** 12 ***Invertebrates (e.g., Fairy Shrimp) (Less than Significant)***

#### 13 Discussion

14 Suction dredging access points and encampments may occur in close proximity to, or within  
15 areas that provide habitat for special-status terrestrial and non-riverine aquatic  
16 invertebrate species. Special-status terrestrial and non-riverine aquatic invertebrates  
17 species are listed in Tables 4.3-2 through 4.3-4., and include species such as fairy shrimp  
18 (*Branchinecta* spp.), vernal pool tadpole shrimp (*Lepidurus packardii*), Trinity bristle snail  
19 (*Monadenia infumata setosa*) and valley elderberry longhorn beetle (*Desmocerus*  
20 *californicus dimorphus*). Special-status terrestrial and non-riverine aquatic invertebrate  
21 species and their habitats may be trampled or otherwise disturbed by suction dredgers,  
22 their equipment or vehicles as they access/egress streams or establish encampments. The  
23 potential severity of such effects depends on the type of habitat, the intensity of use, time of  
24 year and relative disturbance prior to use by dredgers. The sensitivity to disturbance of an  
25 area prior to use by a suction dredger would in part determine the severity of impact.  
26 Highly trafficked or developed areas (e.g., bridges, boat ramps, improved camp sites) are  
27 less likely to support these species, and would be less sensitive to disturbance. In general,  
28 pristine habitats with little human traffic are more likely to support sensitive species;  
29 however, fairy shrimp are known to inhabit highly disturbed vernal pool habitats.

#### 30 Findings

31 Suction dredging itself is not likely to adversely affect special-status terrestrial and non-  
32 riverine aquatic invertebrate species; ancillary activities such as encampments have a  
33 higher potential to impact these organisms and their habitats. However, the Proposed  
34 Program regulations solely address the suction dredging activity itself, and not related  
35 activities such as deployment of suction dredge equipment and camping. Therefore, even  
36 with the Proposed Program regulations in place, ancillary activities associated with suction  
37 dredging may still result in impacts to one or more special-status terrestrial/non-riverine  
38 aquatic invertebrates species, some of which are protected under ESA or CESA.

39 With respect to fairy shrimp, vernal pools that support listed species are not common  
40 habitat features in the landscapes where dredging activities most commonly occur (see  
41 Chapter 3 for a description and maps of suction dredging locations). Furthermore, vernal  
42 pools that do occur adjacent to streams would often be dry and organisms would be in the  
43 dormant embryonated cysts form when dredgers would be present (typically the summer

1 and fall months due to seasonal restrictions for other species). Thus, the potential for  
2 substantial disturbance to fairy shrimp and their habitat would be minimized because when  
3 vernal pools are dry the organisms are in a life stage that is relatively resilient to  
4 disturbance (i.e., cyst form), and (2) the habitat would be less prone to  
5 disturbance/degradation that may be caused by ancillary suction dredge activities (e.g.,  
6 encampments).

7 In the case of Trinity bristle snail and valley elderberry longhorn beetle, there would be a  
8 somewhat higher potential for impacts due to dredging because their life cycles are not  
9 timed such that they enjoy surrogate protection from disturbance by activities that are  
10 ancillary to dredging. Thus, it is likely that some level of disturbance to terrestrial/non-  
11 riverine aquatic invertebrates would occur. However, the level of impact associated with  
12 activities that are ancillary to dredging (e.g., camping, access and egress) is not likely to  
13 result in a substantial adverse effect to any special-status terrestrial/non-riverine aquatic  
14 invertebrate species. Thus, with respect to Significance Criteria A, B and C, the impact is  
15 considered less than significant.

16 ***Impact BIO-WILD-2: Effects on Special-Status Passerines Associated with Riparian***  
17 ***Habitat (Significant and Unavoidable)***

18 Discussion

19 Recreational activities, such as suction dredging, may impact special-status passerine<sup>3</sup>  
20 species by altering behavior, movements and distributions, which may lead to nesting  
21 failure and expenditure of critical energy reserves (Knight and Skagen, 1986). Human  
22 activity, including mechanical noise, can alter bird species composition associated with the  
23 activity area, causing nest abandonment, increased nest predation, and discouragement of  
24 late-nesting birds from settling in disturbed areas (Ellison and Cleary, 1978; LaGory et al.,  
25 2001).

26 Specific disturbance mechanisms include noise associated with dredge rigs, dredgers  
27 accessing streams, direct disturbance of riparian habitat, alteration of prey resource base,  
28 and suction dredging encampment activities at night (e.g., lights and noise). Suction  
29 dredging activities that occur during the passerine breeding season (typically March  
30 through August) may alter behavioral patterns of special-status passerines species such as  
31 Bank Swallow (*Riparia riparia*), Western Yellow-billed Cuckoo (*Coccyzus americanus*  
32 *occidentalis*), Least Bell's Vireo (*Vireo bellii pusillus*) and Willow Flycatcher (*Empidonax*  
33 *traillii*) (Table 4.3-3). In some cases this may prevent individuals from continued nesting in  
34 a section of their territory or result in nest abandonment (even temporary), causing  
35 mortality to eggs or nestlings.

36 Findings

37 Suction dredging and associated activities may cause impacts to special-status passerines  
38 species and their habitats that would be considered potentially significant with respect to  
39 Significance Criteria A, B and D. Table 4.3-3 list the special-status passerines species for

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<sup>3</sup> Passerines are birds belonging to the order Passeriformes, a large subset of birds that have evolutionary traits adapted for perching.

1 which a potentially significant impact may occur in the absence of regulations. As discussed  
2 in Table 4.3-3, the Proposed Program regulations incorporate spatial and temporal  
3 restrictions based on *Fish* action species that would provide partial or full surrogate  
4 protection for nesting passerines within portions of these species' ranges. The following  
5 Proposed Program regulations, though not specifically intended to do so, would further  
6 minimize the potential for suction dredgers to impact nesting passerines species and their  
7 habitats:

- 8 ■ Section 228(k)(3): prohibits dredging within 3 feet of the lateral edge of the  
9 current water level. This will minimize potential disturbance to nesting habitat  
10 for a variety of passerines including Bank Swallow.
- 11 ■ Section 228(k)(4): prohibits the removal of streamside vegetation. This will  
12 minimize potential disturbance to nesting habitat for a variety of passerines  
13 including federally protected passerine species such as Willow Flycatcher and  
14 Least Bell's Vireo.

15 Potential for impacts to special-status passerine species would largely be minimized with  
16 incorporation of the Proposed Regulations, but not completely avoided. The potential for  
17 direct disturbance of nests or adverse behavior modifications due to human activity would  
18 remain. For several of these species (e.g., Least Bell's Vireo), even a small disturbance could  
19 be substantial considering the restricted population and/or range of the species in question.  
20 Thus, for those passerine species listed in Table 4.3-3, the level of impacts would remain  
21 potentially significant with respect to Significance Criterion A.

22 Mitigation measures are available to reduce impacts to a less-than-significant level for  
23 passerines that may be affected by a project. These mitigation measures include research  
24 using the CNDDDB and other sources to identify potential locations of species, field surveys  
25 by qualified biologists to determine the location of sensitive passerines prior to dredging  
26 activities, and implementation of seasonal avoidance measures (e.g., buffers around known  
27 nests during the breeding season). Despite the advisory information that will be contained  
28 in the "Best Management Practices" packets to avoid such adverse effects, CDFG does not  
29 have the jurisdictional authority to adopt or enforce mitigation for impacts to non-*Fish*  
30 species under this program. Therefore, impacts to these passerine species are considered  
31 significant and unavoidable.

### 32 ***Impact BIO-WILD-3: Effects on Special-Status Raptors Associated with Riparian*** 33 ***Habitat (Less than Significant)***

#### 34 Discussion

35 Recreational activities, such as suction dredging, may impact raptor species by altering  
36 behavior, movements and distributions, which may lead to nesting failure and expenditure  
37 of critical energy reserves (Knight and Skagen, 1986). Human activity and associated noise  
38 can increase nest desertion by adults and reduce success in fledging young (White and  
39 Thurow, 1985). Specific disturbance mechanisms include noise associated with dredge rigs,  
40 dredgers accessing streams, and direct disturbance of suitable riparian habitat. Suction  
41 dredging activities that occur during the raptor breeding season (typically March through  
42 August) may alter behavioral patterns of individual birds and potentially prevent special-



1 status raptors species from continued nesting in a section of their territory. This may result  
2 in nest abandonment (even temporary), causing mortality to eggs or nestlings.

### 3 Findings

4 Suction dredging and associated activities may cause impacts to special-status raptor  
5 species and their habitats. Impacts to special-status raptor species listed in Table 4.3-4 are  
6 not likely to result in significant impacts with respect to Significance Criteria A, B and D. In  
7 the absence of the Proposed Regulations, impacts to raptor species listed in Table 4.3-3  
8 would be considered potentially significant with respect to Significance Criteria A, B and D  
9 (Table 4.3-3). The Proposed Regulations incorporate spatial and temporal restrictions  
10 based on *Fish* action species that will provide surrogate protection for some nesting raptors  
11 within portions of these species ranges. The following Proposed Program regulations,  
12 though not specifically intended to do so, would further minimize the potential for suction  
13 dredgers to impact nesting special-status raptor species and their habitats:

- 14 ■ Section 228(k)(3): prohibits dredging within 3 feet of the lateral edge of the  
15 current water level. This will minimize potential disturbance to nesting raptors  
16 and their habitat.
- 17 ■ Section 228(k)(4): prohibits the removal of streamside vegetation. This will  
18 minimize potential disturbance to nesting raptors and their habitat.

19 While it is likely that some level of disturbance to raptors would occur, it is not likely to  
20 result in a substantial adverse effect on special-status raptor species or their habitats. Thus,  
21 with respect to Significance Criteria A, B and D, the impact is considered less than  
22 significant.

### 23 ***Impact BIO-WILD-4: Effects on other Special-Status and Non-listed Terrestrial Wildlife*** 24 ***Species (Less Than Significant)***

### 25 Discussion

26 Suction dredging and ancillary upland activities can alter the habitat of an animal, which can  
27 affect behavior, survival, reproduction, and distribution of individuals. Actions that can  
28 affect riparian associated wildlife species include dumping of waste materials, nocturnal  
29 light sources, ground disturbance, and noise from encampments. Collection of firewood and  
30 clearing areas for encampment can have negative consequences for wildlife species (Garton  
31 et al., 1977). Disruption of breeding and/or rearing activities can reduce fecundity and  
32 recruitment (Goodrich and Berger, 1994; Linnell et al., 2000; Mullner et al., 2004; Johnson  
33 et al. 2005). The nutritional or hormonal costs of avoiding or responding to a disturbance  
34 may have cumulative and important implications for individual fitness and population  
35 productivity (MacArthur et al., 1979; Fowler, 1999; Kerley et al., 2002). More directly,  
36 human access can increase mortality through non-monitored and controlled hunting,  
37 vehicle collisions, or the removal or destruction of problem animals (Johnson and Todd,  
38 1977; Johnson, 1985; Del Frate and Spraker, 1991; Wilkie et al., 2000). Human presence and  
39 activities can also alter interspecific interactions, namely rates of predation (Bergerud et al.,  
40 1984; Rich et al., 1994; James and Stuart-Smith, 2000; Marchand and Litvaitis, 2004).  
41 Riparian associated species may be impacted by off-road vehicle use, which may result in  
42 collision, displacement or avoidance, habitat loss and fragmentation, snag or downed log

1 reduction, increasing routes for predators/competitors, and disturbance at a specific  
2 location. Wildlife movement for small vertebrates could be impeded if suction dredgers are  
3 densely or consistently active within a stream corridor. This could displace animals utilizing  
4 movement corridors along the littoral areas.

### 5 Findings

6 Activities associated with suction dredging have the potential to impact other special-status  
7 and non-listed terrestrial wildlife species and their habitats. The Proposed Regulations that  
8 incorporate spatial and temporal restrictions on suction dredging activities for *Fish* species  
9 will provide surrogate protection for other special-status and non-listed terrestrial wildlife  
10 species within the same geographical areas. The following regulations, though not  
11 specifically intended to do so, would further minimize the potential for suction dredgers to  
12 impact other special-status and non-listed terrestrial wildlife species and their habitats:

- 13 ■ Section 228(c)(2): requires dredgers to provide CDFG with information  
14 regarding the location of their dredging operation(s). This will allow CDFG to  
15 monitor and manage areas with high dredging use, and potentially modify  
16 regulations if it identifies deleterious effects.
- 17 ■ Section 228(k)(3): prohibits dredging within three feet of the lateral edge of the  
18 current water level . This regulation would limit the potential for bank  
19 destabilization, and the subsequent impact to adjacent habitats that may  
20 support other special-status and non-listed terrestrial species.
- 21 ■ Section 228(k)(4): prohibits the removal of streamside vegetation. This will  
22 limit the potential for disturbance to areas that provide habitat for other special-  
23 status and non-listed terrestrial species.
- 24 ■ Section 228(k)(19): requires that all equipment be cleaned of mud, oil, grease,  
25 debris, and plant and animal material before accessing riparian areas or use in  
26 streams. This regulation will limit the dispersal of potentially harmful chemicals,  
27 invasive species, and other noxious materials.

28 While it is likely that some level of disturbance to other special-status and non-listed  
29 terrestrial wildlife species would occur, it is not likely to result in a substantial adverse  
30 effect of any species listed in Table 4.3-4. Thus, with respect to Significance Criteria A, B and  
31 D, impacts related to Proposed Program activities are considered less than significant.

### 32 VEGETATION

#### 33 ***Impact BIO-PLANT-1: Effects on Aquatic and Wetland-Associated Special-Status Plant*** 34 ***Species and their Habitat (Less than Significant)***

### 35 Discussion

36 Aquatic and wetland-associated plant species range from those species that grow in  
37 permanently inundated conditions (i.e., aquatic vegetation), to those that are likely to occur  
38 in wetlands. CDFG recognizes 293 special-status aquatic and wetland-associated plant  
39 species with the potential to be affected by the Proposed Program (Table 4.3-5). Special-  
40 status aquatic and wetland associated plant species have the potential to be adversely

1 affected by suction dredging through: access to and egress from streams; establishment of  
2 encampments in riparian areas; the dispersal of non-native or invasive species; and  
3 unauthorized dredging-associated activities such as direct removal of aquatic or riparian  
4 vegetation, destabilization of streambanks, or release of noxious materials (e.g., fuel).

## 5 Findings

6 Activities associated with the Proposed Program may cause impacts to special status  
7 aquatic and wetland-associated plant species and their habitats that would be considered  
8 potentially significant with respect to Significance Criteria A and D. Table 4.3-5 provides a  
9 determination with regard to the potential for suction dredging to impact special-status  
10 aquatic and wetland associated plant species and their habitats in the absence of the  
11 Proposed Regulations. Species associated with vernal pools, freshwater marshes, bogs,  
12 seeps, and fens are considered to have a “Low” potential for adverse impacts, since these  
13 are areas where suction dredgers are unlikely to be dredging or conducting related  
14 activities (e.g., staging, camping). Therefore, while these habitats may occur adjacent to, or  
15 in the vicinity of, streams, the potential for significant adverse impacts to these habitats is  
16 low. Species that only occupy areas where suction dredging is not likely to occur (e.g.,  
17 Mojave Desert endemics such as Mojave tarplant [*Deinandra mohavensis*]) are also  
18 considered to have a low potential for adverse impacts. In general, species associated with  
19 lotic aquatic habitat, riparian areas, wet meadows and streambanks are considered to have  
20 a “Moderate” potential to be impacted by suction dredging activities, since they have a  
21 higher potential to be co-located with suction dredging and related activities.

22 Of the 293 special-status aquatic and wetland associated plant species with the potential to  
23 occur in the Program Area, 48 were considered to have a moderate potential to be impacted  
24 by the dredging in the absence of the Proposed Regulations. None of the 48 species have  
25 federal or state listing status; 22 of the species are RPR list 1.b status, and 26 are RPR List 2  
26 status (Table 4.3-5).

27 While RPR List 1.b and 2 species are believed to occur in the vicinity of suction dredging  
28 activities, the precise locations of these species relative to specific suction dredging  
29 activities is not known. Where they do occur in proximity to one another, there is the  
30 potential for suction dredgers to trample, disturb or otherwise destroy individuals of these  
31 species. The following regulations, though not specifically intended to do so, would  
32 minimize the potential for suction dredgers to impact special-status aquatic and wetland-  
33 associated plant species and their habitats:

- 34 ■ Section 228(c)(2): requires dredgers to provide CDFG with information  
35 regarding the location of their dredging operation(s). This will allow CDFG to  
36 monitor and manage areas with high dredging use, and potentially modify  
37 regulations if it identifies deleterious effects.
- 38 ■ Section 228(k)(3): restricts dredging within 3 feet of the lateral edge of the  
39 current water level.
- 40 ■ Section 228(k)(4): prohibits the removal of streamside vegetation.
- 41 ■ Section 228(k)(19): requires that all equipment be cleaned of mud, oil, grease,  
42 debris, and plant and animal material before accessing riparian areas or use in

1 streams. This regulation will limit the dispersal of potentially harmful chemicals,  
2 invasive species, and other noxious materials.

3 With the Proposed Program regulations in place, impacts related to special-status aquatic  
4 and wetland-associated plant species would be avoided or minimized. It is reasonably  
5 foreseeable that some disturbance to special-status aquatic and wetland-associated plant  
6 species would occur, particularly RPR List 1.b and 2 species; however, with the Proposed  
7 Regulations in place, there is a low probability that activities authorized under the Proposed  
8 Program would result in a substantial adverse effect to special-status aquatic or wetland  
9 plant species. Thus, with respect to Significance Criteria A and B, the impact is considered  
10 less than significant.

11 ***Impact BIO-PLANT-2: Effects on Upland Special-Status Plant Species and their Habitat***  
12 ***(Less than Significant)***

13 Discussion

14 Upland plant species include those that grow in a broad range of habitats throughout the  
15 state including chaparral, coastal scrub, grasslands, woodlands, coniferous forest, etc. CDFG  
16 recognizes 912 special-status upland plant species with the potential to be affected by the  
17 Proposed Program activities (Table 4.3-6). Special-status upland plant species have the  
18 potential to be adversely affected by suction dredging activities through: access to and  
19 egress from streams; establishment of encampments in upland areas; the dispersal of non-  
20 native or invasive species; and activities such as direct removal of vegetation, or release of  
21 noxious materials (e.g., fuel).

22 Findings

23 Of the 912 special-status upland plant species with the potential to occur in the Program  
24 Area, 14 were considered to have a moderate potential to be impacted by the dredging in  
25 the absence of the Proposed Regulations. These 14 are generally associated with streams,  
26 alluvial floodplains and/or riparian habitats. One of these species, slender-horned  
27 spineflower (*Dodecahema leptoceras*), is list as endangered under the federal and state  
28 ESAs. Eight of the species are RPR list 1.b status, and 6 are RPR List 2 status (Table 4.3-6).

29 While special-status upland plant species are believed to occur in the vicinity of suction  
30 dredging activities, the precise locations of these species relative to specific suction  
31 dredging activities is not known. Where they do occur in proximity to one another, there is  
32 the potential for suction dredgers to trample, disturb or otherwise destroy individuals of  
33 these species. That said, activities associated with suction dredging that may affect upland  
34 plants, such as camping and access to streams, are most likely to occur in previously  
35 disturbed areas that have a low potential to support special-status upland plant species  
36 (e.g., campgrounds). Furthermore, the disturbance mechanisms associated with these  
37 activities are not likely to substantially alter sub-surface plant or soil structure, though  
38 some moderate compaction and erosion may occur. Complete destruction of suitable  
39 habitat or a local population is highly unlikely to occur. The following regulations, though  
40 not specifically intended to do so, would further minimize the potential for suction dredgers  
41 to impact upland plant species and their habitats:

- 1           ■ Section 228(k)(3): prohibits dredging within 3 feet of the lateral edge of the  
2           current water level. This would minimize the potential for disturbance of upland  
3           vegetation located at the top of bank.
- 4           ■ Section 228(k)(4): prohibits the removal of streamside vegetation (including  
5           upland species).
- 6           ■ Section 228(k)(19): requires that all equipment be cleaned of mud, oil, grease,  
7           debris, and plant and animal material before accessing riparian areas or use in  
8           streams. This regulation will limit the dispersal of potentially harmful chemicals,  
9           invasive species, and other noxious materials.

10           With the Proposed Program regulations in place, impacts related to special-status upland  
11           plant species would be minimized. While the above regulations would reduce the potential  
12           for suction dredging itself to affect these species, it is reasonably foreseeable that some  
13           disturbance to special-status upland species would occur as a result of related activities  
14           (e.g., camping). However, there is a low probability that these activities would result in a  
15           substantial adverse effect to special-status upland plant species. Thus, with respect to  
16           Significance Criteria A and B, the impact is considered less than significant.

## 17           WETLANDS, RIPARIAN HABITAT AND OTHER SENSITIVE NATURAL COMMUNITIES

### 18           *Impact BIO-HAB-1: Effects on Federal and State Protected Wetlands (Less than* 19           *Significant)*

#### 20           Discussion

21           Federally protected wetlands defined by Section 404 of the CWA include (1) wetlands  
22           adjacent to traditionally navigable waters, (2) and wetlands that abut non-navigable  
23           tributaries of traditional navigable waters that are relatively permanent where the  
24           tributaries typically flow year-round or have continuous flow at least seasonally (USEPA-  
25           USACE, 2008). Wetlands protected by the state include federally protected wetlands as well  
26           as waters of the state as defined under Water Code Section 13050(e), which include  
27           wetlands that are often considered isolated such as vernal pools.

28           Federally and state protected wetlands have the potential to be adversely affected by  
29           suction dredging activities through: access to and egress from streams; direct dredging in  
30           wetlands; the dispersal of non-native or invasive species; and unauthorized activities such  
31           as filling of wetlands, direct removal of vegetation, destabilization of streambanks, or  
32           release of noxious materials (e.g., fuel spills).

#### 33           Findings

34           The Proposed Regulations (Chapter 2) were developed to prevent suction dredging  
35           activities from being deleterious to *Fish*. The regulations include measures to protect  
36           habitats that *Fish* are dependent upon, such as wetlands within and adjacent to streams.  
37           The following regulations would minimize the potential for suction dredgers adversely  
38           affect federally and state protected wetlands:

- 39           ■ Section 228(c)(2): requires dredgers to provide CDFG with information  
40           regarding the location of their dredging operation(s). This will allow CDFG to

- 1 monitor and manage areas with high dredging use, and potentially modify  
2 regulations if it identifies deleterious effects.
- 3 ■ Section 228(k)(1): prohibits the use of motorized winches or other motorized  
4 equipment to move boulders or logs without prior authorization and section  
5 1602 notification. This regulation would limit the potential for dredgers to  
6 destabilize or alter wetland habitat by moving large objects.
  - 7 ■ Section 228(k)(3): prohibits dredging within three feet of the lateral edge of the  
8 current water level. This would minimize the potential for disturbance to off-  
9 channel wetlands such as vernal pools.
  - 10 ■ Section 228(k)(4): prohibits the removal of streamside vegetation. This  
11 regulation would limit the potential for disturbance of wetland, riparian and  
12 upland vegetation.
  - 13 ■ Section 228(k)(6): Prohibits the diversion of a stream into the bank.
  - 14 ■ Section 228(k)(7): Prohibits:
    - 15 – Construction of permanent or temporary dams,
    - 16 – Concentrating flow in a way that reduces the total wetted area of the stream,
    - 17 – Obstructing a stream or lake in such a manner that fish passage is impeded.18 These measures would limit the potential for wetlands to be dewatered.
  - 19 ■ Section 228(k)(8): prohibits the import of any earthen or fill material into a  
20 stream, river or lake. This regulation would limit the potential for dredgers to fill  
21 wetlands.
  - 22 ■ Section 228(k)(9): requires that all fueling and servicing of dredging equipment  
23 must be done in a manner such that petroleum products are not leaked, spilled  
24 or otherwise released into waters of the state.
  - 25 ■ Section 228(k)(11): requires that stream substrates may only be moved within  
26 the current water level. This regulation would limit the potential for disturbance  
27 of aquatic and wetland vegetation.
  - 28 ■ Section 228(k)(19): requires that all equipment be cleaned of mud, oil, grease,  
29 debris, and plant and animal material before accessing riparian areas or use in  
30 streams. This regulation will limit the dispersal of potentially harmful chemicals,  
31 invasive species, and other noxious materials.

32 While it is likely that some level of disturbance associated with the Proposed Program  
33 activities would occur, with the above regulations in place, it is not likely to result in  
34 substantial adverse effects to federal and state protected wetlands when considered  
35 statewide. Thus, with respect to Significance Criteria B and C, the impact is considered less  
36 than significant.

1           ***Impact BIO-HAB-2: A Fundamental Change to the Structure of a Community or Stream***  
2           ***Ecosystem, Including Substantial Reductions in Biodiversity or Resiliency to***  
3           ***Disturbance (Less than Significant)***

4           Discussion

5           Stream ecosystem composition, diversity and resiliency have the potential to be adversely  
6           affected by dredging activities. Suction dredging can have substantial short-term and  
7           localized adverse impacts on benthic invertebrate abundance and community composition.  
8           Persistent or repeated dredging may cause the benthic community to remain in an early  
9           state of succession, which could reduce resiliency to disturbance. Dredging can also disrupt  
10          the stream ecosystem by: displacing large volumes of material; changing substrate  
11          characteristics; dispersing non-native or invasive species; and unauthorized releases of  
12          noxious materials (e.g., fuel spills).

13          Findings

14          The Proposed Program regulations were developed to prevent suction dredging activities  
15          from being deleterious to *Fish*. These regulations include measures designed to maintain  
16          stream ecosystem function so that substantial reductions in biodiversity or resiliency do not  
17          occur. The following regulations would minimize the potential for suction dredgers to  
18          adversely impact community or ecosystem level structure and function:

- 19                   ■ Seasonal closures of streams, which allows for recovery from disturbance  
20                   caused by Program activities, and permanent closures of other streams, which  
21                   would prevent disturbance caused by Program activities.
- 22                   ■ Section 228(c)(2): requires dredgers to provide CDFG with information  
23                   regarding the location of their dredging operation(s). This will allow CDFG to  
24                   monitor and manage areas with high dredging use, and potentially modify  
25                   regulations if it identifies deleterious effects.
- 26                   ■ Section 228(j)(1): limits the nozzle size of dredging equipment, which effectively  
27                   reduces the potential area disturbed and the amount of material displaced by an  
28                   individual dredger.
- 29                   ■ Section 228(k)(1): prohibits the use of motorized winches or other motorized  
30                   equipment to move boulders or logs without prior authorization and section  
31                   1602 notification. This regulation would limit the potential for dredgers to  
32                   destabilize or alter habitat by moving large objects.
- 33                   ■ Section 228(k)(5): prohibits the cutting, movement or destabilization of woody  
34                   debris, which is important for macroinvertebrate habitat and production.
- 35                   ■ Section 228(k)(6): Prohibits the diversion of a stream into the bank.
- 36                   ■ Section 228(k)(7): Prohibits:
- 37                   – Construction of permanent or temporary dams,  
38                   – Concentrating flow in a way that reduces the total wetted area of the stream,  
39                   – Obstructing a stream or lake in such a manner that fish passage is impeded,  
40                   These measures would limit the potential for alteration of the channel structure.

- 1           ■ Section 228(k)(15): requires dredgers to level all tailing piles prior to working  
2           another excavation site or abandoning the excavation site.

3           Activities associated with the Proposed Program are likely to cause noticeable temporary  
4           reductions in biodiversity and/or resiliency at the dredging site and potentially at the reach  
5           scale. However, the Program activities, when viewed at the state-wide scale, are unlikely to  
6           cause a measureable departure from the baseline condition with respect to stream  
7           community and ecosystem structure and function, or a measureable reduction in  
8           biodiversity or resiliency. Moreover, most reductions in biodiversity and/or resiliency at  
9           dredging sites are likely to be only temporary; the relevant literature indicates that most  
10          sites will largely recover their structure and function within a few months to a year  
11          following disturbances. Thus, with respect to Significance Criterion B, the impact is  
12          considered less than significant.

13           ***Impact BIO-HAB-3: Direct Disturbance to Riparian and Aquatic Habitats, and Other***  
14           ***Sensitive Natural Communities (Less than Significant)***

15           Discussion

16          Suction dredging, by definition, takes place in aquatic habitats. Suction dredging and  
17          ancillary activities also have the potential to impact sensitive ecotone and upland natural  
18          communities identified in the “*List of California Terrestrial Natural Communities Recognized*  
19          *by the California Natural Diversity Database, September 2003 Edition*” (CDFG, 2003), such as  
20          Mixed Conifer – Tanoak / Mountain Dogwood (88.600.11), Douglas-fir - Bigleaf Maple /  
21          Hazel (82.200.01), White Fir - Douglas-fir - Black Oak (82.200.29), and Jeffrey Pine / Idaho  
22          Fescue (87.020.03). Sensitive natural communities have the potential to be adversely  
23          affected by suction dredging activities through: access to and egress from streams;  
24          establishment of encampments; direct dredging in aquatic and riparian areas; the dispersal  
25          of non-native or invasive species; and unauthorized activities such as direct removal of  
26          vegetation, destabilization of streambanks, or release of noxious materials (e.g., fuel spills).

27          Findings

28          CDFG regulates activities that occur in aquatic and riparian habitats through Fish and Game  
29          Code section 1602, which states that no person shall “substantially divert or obstruct the  
30          natural flow of, or substantially change or use any material from the bed, channel, or bank  
31          of, any river, stream, or lake” without first notifying CDFG of that activity. The Proposed  
32          Program regulations include provisions which may allow suction dredgers to use  
33          equipment (e.g., larger nozzle size dredges, motorized winches) which has the potential to  
34          substantially alter aquatic and riparian habitat, after CDFG conducts an on-site inspection  
35          and notification to CDFG as specified in Fish and Game Code section 1602 subdivision (a)(1)  
36          and the provisions of Fish and Game Code section 1602 subdivision (a)(4)(A) or section  
37          1602 subdivision (a)(4)(B) have been completed.

38          The Proposed Regulations were developed to prevent suction dredging activities from being  
39          deleterious to *Fish*. The regulations include measures to protect habitats that *Fish* are  
40          dependent upon, such as aquatic and riparian habitats. The following Proposed Program  
41          regulations would minimize the potential for suction dredgers to adversely affect aquatic  
42          and riparian habitats.



- 1           ■ Seasonal closures of streams which allows for recovery from disturbance caused  
2           by Program activities.
- 3           ■ Section 228(c)(2): requires dredgers to provide CDFG with information  
4           regarding the location of their dredging operation(s). This will allow CDFG to  
5           monitor and manage areas with high dredging use, and potentially modify  
6           regulations if it identifies deleterious effects.
- 7           ■ Section 228(j)(1): limits the nozzle size of dredging equipment, which effectively  
8           reduces the potential area disturbed and the amount of material displaced by an  
9           individual dredger.
- 10          ■ Section 228(k)(1): prohibits the use of motorized winches or other motorized  
11          equipment to move boulders or logs without prior authorization and section  
12          1602 notification. This regulation would limit the potential for dredgers to  
13          destabilize or alter aquatic habitat by moving large objects.
- 14          ■ Section 228(k)(5): prohibits the cutting, movement or destabilization of woody  
15          debris.
- 16          ■ Section 228(k)(15): requires dredgers to level all tailing piles prior to working  
17          another excavation site or abandoning the excavation site. This regulation  
18          would limit the potential for dredging to impact the aquatic habitat by not filling  
19          pools, destroying riffles, or removing and destabilizing structural components.

20          Though not specifically intended to do so, many these regulations would also minimize the  
21          potential for suction dredgers to impact sensitive upland natural communities. While it is  
22          likely that some level of disturbance associated with Proposed Program activities will occur,  
23          it is unlikely to cause a substantial departure from the baseline condition with respect to the  
24          integrity, function and quality sensitive natural communities throughout the state. Thus,  
25          with respect to Significance Criterion B, the impact is considered less than significant.

26          ***Impact BIO-HAB-4: Introduction and/or Dispersal of Aquatic Invasive Species and***  
27          ***Pathogens (Less than Significant)***

28          Discussion

29          Suction dredging equipment including intake nozzles, pumps, pontoons, sluice boxes,  
30          masks, wetsuits and other items, moved from one waterbody to another may transport  
31          aquatic invasive species (AIS). The California Aquatic Invasive Species Management Plan  
32          does not specifically identify suction dredging as a vector for aquatic invasive species  
33          dispersal, but it is clear that dredging activities share numerous similarities to other  
34          recreational activities that are considered primary AIS vectors such as boating, fishing, and  
35          other water sports (see Appendix M). Aquatic invasive species that may be transported by  
36          dredging activities include, but are not limited to, New Zealand mud snail (*Potamopyrgus*  
37          *antipodarum*), quagga mussel (*Dreissena rostriformis bugensis*), zebra mussel (*Dreissena*  
38          *polymorpha*), hydrilla (*Hydrilla verticillata*), and creeping water-primrose (*Ludwigia*  
39          *peploides ssp. montevidensis*).

40          It is widely thought that some diseases of fish and amphibians may be transmitted on  
41          recreational equipment. Diseases implicated by this mechanism include whirling disease  
42          (Gates et al., 2008), didymo (*Didymosphenia geminata*) (Pennsylvania Fish and Boat

1 Commission, 2009), and amphibian chytridiomycosis (Padgett-Flohr, 2009), which are  
2 currently present and causing harm to trout and amphibian populations in California.  
3 Amphibian chytridiomycosis has been detected in California populations of California red-  
4 legged frogs, foothill yellow-legged frogs, mountain yellow-legged frogs, Yosemite toads,  
5 California tiger salamanders, and several other species not of conservation concern  
6 (Padgett-Flohr, 2007); a few localized didymo infestations have been reported (e.g. on the  
7 South Fork of the American River [Elwell, 2009]); and whirling disease is now widespread  
8 in California's trout streams (Modin, 1998). The introduction of any of these diseases has  
9 potential to result in substantial declines or even extirpation of local populations of special-  
10 status species.

### 11 Findings

12 Currently, CDFG has an active program to educate boaters, anglers and other recreationists  
13 such as suction dredgers concerning the risks of AIS and the methods available to address  
14 those risks. The Proposed Regulations require that all dredging equipment be cleaned of  
15 mud, oil, grease, debris, and plant and animal material before accessing riparian areas or  
16 used in streams. While this regulation will minimize the potential dispersal of AIS and  
17 pathogens, suction dredging equipment is still likely to serve as a vector for AIS. However,  
18 most waters accessed by dredgers are also used by other recreationists such as anglers,  
19 kayakers, and rafters. Thus, it is likely that introductions would occur regardless of  
20 Proposed Program activities because dredgers constitute only a very small fraction of all  
21 recreational water users, averaging 3,650 permits annually for the 15 years prior to the  
22 moratorium established in July 2009. In addition, because dredging equipment is heavy and  
23 cumbersome, dredgers cannot change locations as readily as other recreationists; dredgers  
24 typically only occupy several waterbodies in a given season. Finally, the Proposed Program  
25 requires dredgers to provide CDFG with information regarding the location of their  
26 dredging operation(s). This will allow CDFG to monitor Program activities, and inform  
27 dredgers of the AIS status and risks in the areas they are accessing. While it is likely that  
28 some dispersal of AIS and pathogens will be associated with Proposed Program activities, it  
29 is not likely a major source of dispersal when considered among other user groups and  
30 vector mechanisms. Thus, with respect to Significance Criteria A and B, the impact is  
31 considered less than significant.

### 32 ***Impact BIO-HAB-5: Introduction and/or Dispersal of Non-native Invasive (terrestrial)*** 33 ***Plant Species (Less than Significant)***

### 34 Discussion

35 Non-native species are those that have been introduced to California after European contact  
36 or as a result of human activity. Non-native invasive plants are those species that (1) are  
37 not native to, yet can spread into, wildland ecosystems, and that also (2) displace native  
38 species, hybridize with native species, alter biological communities, or alter ecosystem  
39 processes (Cal-IPC, 2010). Examples of these species include giant reed (*Arundo donax*),  
40 yellow starthistle (*Centaurea solstitialis*), Himalayan blackberry (*Rubus discolor*), tree of  
41 heaven (*Ailanthus altissima*), and many others. Suction dredging equipment including  
42 dredging rigs, vehicle trailers, camping gear and clothing have the potential to disperse non-  
43 native invasive terrestrial plant species.

## Findings

The Proposed Regulations require that all dredging equipment be cleaned of mud, oil, grease, debris, and plant and animal material before accessing riparian areas or used in streams. While this regulation will reduce the potential dispersal of non-native invasive terrestrial plants, suction dredging activities are still likely to serve as a vector. However, dredgers constitute only a very small fraction of all recreational wildland users. While it is likely that some dispersal of non-native invasive terrestrial plants will be associated with Proposed Program activities, it is not likely a major source of dispersal when considered among other user groups and vector mechanisms. Thus, with respect to Significance Criteria A and B, the impact is considered less than significant.

### ***Impact BIO-HAB-6: Effects of Encampments and Other Activities Associated with Suction Dredging (Less than Significant)***

## Discussion

Recreational impacts, such as suction dredging encampments, can have long-lasting damaging effects on habitat. Streambank erosion and channel widening have been found to be more common around areas of concentrated use, such as extended use campgrounds. Other impacts associated with encampments include the trampling of vegetation and compaction of soils. These impacts can affect plant communities, wildlife habitat quality, and a variety of species that are sensitive to habitat structure (e.g., rodents, reptiles, amphibians, and invertebrates). Impacts known to be associated with dredging encampments include improper disposal of trash and chemicals, unsanitary disposal of human waste, and use of off-road vehicles.

## Findings

There is the potential for suction dredgers' encampments to have an adverse affect on the environment. As with any user group, it is possible that unauthorized activities will occur that could substantially harm the environment. Issuance of a suction dredge permit does not authorize the permittee to violate any local, state or federal laws that address public health and safety, hazardous materials, protection of the environment, or any other statute. Encampments of permittees that adhere to local, state and federal laws are not likely to pose a significant threat to the environment or cause lasting degradation of functional wildlife habitats. Thus, with respect to Significance Criteria B and D, the impact is considered less than significant.

### ***Activities Requiring Fish and Game Code Section 1602 Notification***

Activities which require notification under Fish and Game Code section 1602 may increase the potential for adverse effects on biological resources. Suction dredging with larger nozzle sizes and use of power winches has the potential to result in substantial adverse effects to instream and riparian habitat or other sensitive natural communities, as well as impacts to federally protected wetlands. Larger nozzle sizes, by increasing the area of disturbance, could further deplete the prey base, have greater effects on pools and thermal refugia, and increase potential for destabilizing streambanks. The physical and noise disturbance associated with larger nozzles and power winches may also have additional behavioral effects on fish and/or result in impeding migration and movement. Similarly, the creation of dams or diversions could create physical barriers to migration or movement of

1 aquatic species. Finally, suction dredging in lakes and reservoirs has potential for impacts  
2 in locations, and related species and habitats, which have not otherwise been considered in  
3 this impact analysis. Such issues, to the extent to which they could be significant, would be  
4 evaluated in a CEQA analysis.

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
<b>Riverine Aquatic Invertebrates</b>						
California freshwater shrimp	<i>Syncaris pacifica</i>	FE	SE	A	Distribution per USFWS 5-year review <sup>1</sup>	Species abundance and distribution is limited. Minor impacts to organisms or suitable habitat could result in a deleterious effect. Suitable habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed.
Shasta crayfish	<i>Pacifastacus fortis</i>	FE	SE	A	Distribution per USFWS 5-year review <sup>2</sup>	Species abundance and distribution is limited. Minor impacts to organisms or suitable habitat could result in a deleterious effect. Habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed.
<b>Anadromous or Estuarine Non-Salmonid Fishes</b>						
eulachon	<i>Thaleichthys pacificus</i>	FT	SSC	D	Species range per Moyle 2002 <sup>3</sup>	Impacts to spawning adults and early lifestages could result in a deleterious effect. Spawning season usually occurs between December and May and peaks between February and March; incubation lasts about 2-3 weeks and larvae are washed out to sea after

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						hatching (Moyle 2002). Seasonal restriction on dredging would avoid potential impacts to spawning adults and early lifestages. Class D restriction is proposed.
green sturgeon (southern DPS)	<i>Acipenser medirostris</i>	FT	SSC	D	NOAA critical habitat for southern DPS Green Sturgeon <sup>4</sup>	Impacts to spawning adults and early lifestages could result in a deleterious effect. Klamath River spawning period is March through July, and peaks between mid-April to mid-June; Sacramento River spawning times are likely similar (Moyle, 2002). Seasonal restriction on dredging would avoid or minimize potential impacts to spawning adults and early lifestages. Class D restriction is proposed.
green sturgeon (northern DPS)	<i>Acipenser medirostris</i>	FSC	SSC	D	Species range per Moyle 2002 and Benson et al. 2006 <sup>5</sup>	
white sturgeon	<i>Acipenser transmontanus</i>	None	None	D	NOAA critical habitat for southern DPS Green Sturgeon	Impacts to spawning adults and early lifestages could result in a deleterious effect. Spawning period is late February through early June. Sacramento River spawning times are likely similar (Moyle, 2002). Seasonal restriction on dredging would avoid or minimize potential impacts to spawning adults and early lifestages. Class D restriction is proposed.
<b>Salmonids</b>						
Coho salmon (central California coast ESU)	<i>Oncorhynchus kisutch</i>	FE	SE	A	Species range per CDFG-CalFish	Species abundance has declined 90-95% in the past 50 years. Habitat degradation is a major factor in species

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
					Distribution <sup>6</sup> dataset	decline (Moyle 2002; NMFS, 2010 <sup>7</sup> ). Species is believed to have entered onto an "extinction vortex" (NMFS, 2010). Minor impacts to organisms or designated Critical Habitat could result in a deleterious effect. Suitable habitat has the potential to be degraded by suction dredging; entrainment of juveniles could also occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed.
Coho salmon (southern Oregon/northern California coast ESU)	<i>Oncorhynchus kisutch</i>	FT	ST	C; select spawning and juvenile rearing streams Class A or B	Species range per CDFG-CalFish Distribution <sup>6</sup> and Abundance <sup>8</sup> datasets	Impacts to spawning adults and early lifestages (i.e., incubation and sac fry periods) could result in a deleterious effect. Spawning period is generally November through January, with egg incubation and emergence of fry (young juveniles) occurring up to June. Juveniles rear in freshwater for about 1 year (NMFS, 2010). A Class C seasonal restriction on dredging would avoid or minimize potential impacts to spawning adults, egg incubation and emergence. Select streams and thermal refugia known to provide important juvenile rearing habitat are proposed to be designated Class A. Streams in the Smith River drainage are proposed to be designated Class B.

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
Chinook salmon (Sacramento River winter-run ESU)	<i>Oncorhynchus tshawytscha</i>	FE	SE	A	Sacramento River from Thomes Creek upstream to Keswick Dam	Abundance has declined substantially since construction of Shasta Dam on the 1940s. Winter-run Chinook enter freshwater in the winter months (January to March) and migrate to the upper Sacramento River, spawning in April through August. Class A restriction is proposed to avoid impacts to holding/spawning adults, early life stages and important spawning/rearing habitat.
Chinook salmon (Central Valley spring-run ESU)	<i>Oncorhynchus tshawytscha</i>	FT	ST	A	Portions of Butte, Mill, and Deer creeks and the Feather River (Adapted from USBR, 2008 <sup>9</sup> ).	Estimates of historic abundance indicate about 700,000 spawners, which has declined to a current level of and 500 to 4,500 spawners (NMFS, 2009 <sup>10</sup> ). Migration extends from March to September, peaking in May-June; spawning occurs in August through October. Class A restriction is proposed to avoid impacts to spawning adults, early life stages and important spawning/rearing habitat on select Central Valley streams.
Chinook salmon (California coastal ESU)	<i>Oncorhynchus tshawytscha</i>	FT	None	C	Species range per NOAA Distribution <sup>11</sup> dataset	Impacts to spawning adults and early lifestages (i.e., incubation and sac fry periods) could result in a deleterious effect. Spawning period is generally November through January, with egg incubation and emergence of fry occurring through May. A Class C seasonal restriction on dredging would



**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						avoid or minimize potential impacts to spawning adults, egg incubation and emergence.
Chinook salmon (Klamath-Trinity rivers spring-run ESU)	<i>Oncorhynchus tshawytscha</i>	None	SSC	A / C	Class C: Species range per CDFG-CalFish Abundance <sup>12</sup> dataset. Class A thermal refugia: Klamath River per North Coast RWQCB; Salmon River per CDFG internal (unpublished) data	Impacts to spawning adults and early lifestages (i.e., incubation and sac fry periods) could result in a deleterious effect. Spawning period typically begins in mid-September in the Salmon River and early October in the Trinity basin. A Class C seasonal restriction on dredging is proposed. Thermal refugia known to provide important holding habitat are proposed to be designated Class A.
Chinook salmon (Central Valley fall-/late fall-run ESU)	<i>Oncorhynchus tshawytscha</i>	None	SSC	C	Species range per CDFG-CalFish Abundance <sup>12</sup> dataset	Impacts to spawning adults and early lifestages could result in a deleterious effect. Peak spawning period is generally October to November, but can continue through January. Fry typically emerge December through March. A Class C seasonal restriction on dredging is proposed to avoid or minimize potential impacts to spawning adults, egg incubation and emergence.
steelhead (southern California DPS)	<i>Oncorhynchus mykiss irideus</i>	FE	SSC	A	NOAA Critical Habitat for southern California DPS steelhead <sup>13</sup>	Runs have declined from 55,000 fish in historical time to fewer than 500 fish now, and the DPS has been extirpated from more than half of its historic range (NMFS, 2010 <sup>14</sup> ). Alteration of streamflow and habitat has contributed to species decline (NMFS, 2007 <sup>15</sup> ).

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						Impacts to organisms or designated Critical Habitat could result in a deleterious effect. Suitable habitat has the potential to be degraded by suction dredging; entrainment of juveniles could also occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed.
steelhead (south/central California coast DPS)	<i>Oncorhynchus mykiss irideus</i>	FT	SSC	A	Species range per NOAA Distribution <sup>11</sup>	Species abundance has declined substantially throughout its historic range. Alteration of streamflow and habitat are a major factors in species decline (NOAA 2007 <sup>15</sup> ). Impacts to organisms or their habitat could result in a deleterious effect. Suitable habitat has the potential to be degraded by suction dredging; entrainment of juveniles could also occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed.
steelhead (central California coast DPS)	<i>Oncorhynchus mykiss irideus</i>	FT	None	A	Species range per NOAA Distribution <sup>11</sup>	
steelhead (northern California DPS)	<i>Oncorhynchus mykiss irideus</i>	FT	SSC	C	Species range per NOAA Distribution <sup>11</sup>	Impacts to spawning adults and early lifestages could result in a deleterious effect. Peak spawning period is generally December through April, but can continue through May. Embryos incubate for 18 to 80 days depending on water temperatures and emergence from the gravel occurs after 2 to 6 weeks (Moyle 2002). A Class C seasonal

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						restriction on dredging for the species distribution is proposed to avoid impacts to adults and early lifestages.
steelhead (Central Valley DPS)	<i>Oncorhynchus mykiss irideus</i>	FT	None	C	NOAA Critical Habitat for Central Valley DPS steelhead <sup>13</sup> (with minor modification to correct mapping accuracy)	Adults begin to enter freshwater in August, peaking in late-September to October. Adults hold in mainstem drainages until flows in tributaries are high enough to enter for spawning (Moyle, 2002). Peak spawning period is generally December through April. Impacts to spawning adults and early lifestages could result in a deleterious effect. A Class C seasonal restriction on dredging in NOAA Critical Habitat is proposed to avoid impacts to adults and early lifestages.
steelhead (Klamath Mountains Province DPS)	<i>Oncorhynchus mykiss irideus</i>	None	SSC	C	CDFG-CalFish winter-run Distribution <sup>16</sup> and Abundance <sup>17</sup> datasets	Impacts to spawning adults and early lifestages could result in a deleterious effect. Summer-run steelhead spawning begins in late December and peaks in January, except in the Trinity River, where peak spawning occurs in February. Spawning of winter-run steelhead in the Trinity River peaks in March; fry emerge starting in April and migrate downstream beginning in May. A Class C seasonal restriction on dredging is proposed to avoid impacts to adults and early lifestages.
rainbow trout	<i>Oncorhynchus</i>	None	None	Class C for the North Fork of	North Fork American	Rainbow trout are the native trout in the Pacific drainages of California. At

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
	<i>mykiss irideus</i>			the American River and tributaries	River and tributaries	<p>present two groups of rainbow trout are recognized as native to California: coastal rainbow trout (<i>Oncorhynchus mykiss irideus</i>) and redband trout of the Upper Kern and Upper Sacramento rivers. In California, the coastal rainbow trout are recognized by six groups of "steelhead" all of which have non-migratory populations in their watersheds (Moyle 2002). Steelhead are the anadromous or migratory form of the coastal rainbow trout.</p> <p>Results of genetic analysis conducted by Garza et al. (2004<sup>18</sup>) showed that all naturally-spawned steelhead populations within the Central Valley basin were closely related, regardless of whether they were sampled above or below a known barrier to anadromy. Lower genetic diversity in above-barrier populations indicated a lack of substantial genetic input upstream, highlights lower effective population sizes for above-barrier populations, and additionally suggests little ingression with planted hatchery raised trout. Genetic analysis further indicates that above barrier populations are likely to most accurately represent the ancestral population genetic structure of</p>

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						<p>steelhead in the Central Valley.</p> <p>Wild coastal rainbow trout are spring spawners. Spawning can occur between February and June depending on local water temperatures. At high elevations spawning can be delayed until July or August (Moyle, 2002). Eggs and sac fry of coastal rainbow trout could suffer significant mortality during passage through a suction dredge.</p> <p>As a result protecting above-barrier populations of coastal rainbow trout during spawning periods is of vital importance. This applies to the wild populations of coastal rainbow trout in the North Fork American River and all its tributaries; the wild populations in the other forks of the American River are protected through closures for other species.</p>
Lahontan cutthroat trout	<i>Oncorhynchus clarkii henshawi</i>	FT	None	Class A for occupied streams; Class D for recovery habitat	CDFG Program-specific dataset	Species abundance and distribution is limited. Minor impacts to organisms or suitable habitat could result in a deleterious effect. Many restoration projects are underway to restore habitat and distribution. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed for occupied habitat. Class D restriction is proposed for "recovery habitat" including the Truckee River below Lake Tahoe, East (below Carson Falls) and West Fork Carson River, and East and West Fork Walker River.
Little Kern golden trout	<i>Oncorhynchus mykiss whitei</i>	FT	None	A	Occupied habitat per CDFG internal (unpublished) data	Species distribution is limited. Minor impacts to organisms or suitable habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed for occupied habitat.
Paiute cutthroat trout	<i>Oncorhynchus clarkii seleniris</i>	FT	None	A	CDFG Program-specific dataset	Species abundance and distribution is limited. Minor impacts to organisms or suitable habitat could result in a deleterious effect. Many restoration projects are underway to restore habitat and distribution. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential impacts to organisms or

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						their habitat. Thus, Class A restriction is proposed for occupied habitat.
California (Volcano Creek) golden trout	<i>Oncorhynchus mykiss aguabonita</i>	None	SSC	A	Occupied habitat per CDFG internal (unpublished) data	Species distribution is limited. Minor impacts to organisms or suitable habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed for occupied habitat.
Eagle Lake rainbow trout	<i>Oncorhynchus mykiss aquilarum</i>	None	SSC	A	Pine Creek (tributary to Eagle Lake)	Species distribution is limited. Minor impacts to organisms or suitable habitat could result in a deleterious effect. Principle spawning drainage (Pine Creek) has the potential to be impacted by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed for principal spawning drainage.
Goose Lake redband trout	<i>Oncorhynchus mykiss ssp. 1</i>	None	SSC	A	Tributaries to Goose Lake	Species distribution is limited. Minor impacts to organisms or suitable habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						could also occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed for occupied habitat.
Kern River rainbow trout	<i>Oncorhynchus mykiss gilberti</i>	None	SSC	A	Occupied habitat per CDFG internal (unpublished) data	Species distribution is limited. Minor impacts to organisms or suitable habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed for occupied habitat.
McCloud River redband trout	<i>Oncorhynchus mykiss ssp. 2</i>	None	SSC	A	Upper McCloud River	Species distribution is limited. Minor impacts to organisms or suitable habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed for occupied habitat.
mountain whitefish	<i>Prosopium williamsoni</i>	None	None	C	Species range per Moyle 2002	Impacts to migrating and spawning adults and early lifestages could result in a deleterious effect. Spawning period is generally October to early December;



**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						spawning is preceded by migration to suitable spawning habitat (Moyle, 2002). A Class C seasonal restriction on dredging is proposed to avoid or minimize potential impacts to migrating and spawning adults, egg incubation and emergence.
<b>Freshwater Fishes</b>						
Modoc sucker	<i>Catostomus microps</i>	FE	SE, FP	A	USFWS Critical Habitat for the Modoc Sucker <sup>19</sup>	Species abundance and distribution is limited. Habitat degradation has historically been a factor in the species decline; habitat conditions are on an upward trend due to improved land management (USFWS, 2009 <sup>20</sup> ). Impacts to organisms or suitable habitat could result in a deleterious effect. Suitable habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would sufficiently avoid potential impacts to suitable habitat. Thus, Class A restriction is proposed.
razorback sucker	<i>Xyrauchen texanus</i>	FE	SE, FP	A	Mainstem Colorado River	Wild populations have been extirpated from California. Recovery efforts are on-going in the lower Colorado River. Class A restriction is proposed for recovery habitat.

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
Lost River sucker	<i>Deltistes luxatus</i>	FE	SE, FP	A	Species range per Moyle 2002	Species distribution extremely limited in California. Habitat degradation in Upper Klamath Basin is noted as a major factor in the decline of the Lost River and shortnose sucker (USFWS, 1993 <sup>21</sup> ). Habitat restoration, including control of sedimentation, is principal component of USFWS Species Action Plan (USFWS, 2009 <sup>22</sup> ). Impacts to organisms or suitable habitat could result in a deleterious effect. Suitable habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would sufficiently avoid potential impacts to suitable habitat. Thus, Class A restriction is proposed.
shortnose sucker	<i>Chasmistes brevirostris</i>	FE	SE, FP	A	Species range per Moyle 2002	
Santa Ana sucker	<i>Catostomus santaanae</i>	FT	SSC	E (with select streams/ reaches Class A)	USFWS Critical Habitat for the Santa Ana sucker <sup>23</sup>	Species distribution is limited. Impacts to spawning adults and early lifestages could result in a deleterious effect. Spawning period is March to July with a peak in April (Feeney and Swift, 2008 <sup>24</sup> ). Seasonal restriction on dredging would avoid or minimize potential impacts to spawning adults and early lifestages. Class E restriction is proposed, with Class A restriction for refugia sites on the East Fork of the Gabriel River above Cattle Canyon and the entire West Fork of the San Gabriel

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						River.
Owens sucker	<i>Catostomus fumeiventris</i>	(-)	SSC	E	CDFG Program-specific dataset	Species distribution is limited. Impacts to spawning adults and early lifestages could result in a deleterious effect. Spawning period is May to early July (Moyle, 2002). Seasonal restriction on dredging would avoid potential impacts to spawning adults and early lifestages. Class E restriction is proposed.
Jenny Creek sucker	<i>Catostomus rimiculus ssp. 1</i>	None	None	A	Jenny Creek	Species distribution is extremely limited in California. Class A restriction for species range in California is proposed to protect potential spawning and rearing habitat.
Klamath largescale sucker	<i>Catostomus snyderi</i>	None	SSC	C	Lost River drainage	Species distribution is limited. Impacts to spawning adults and early lifestages could result in a deleterious effect. Spawning period is generally March to early May (Moyle, 2002). Seasonal restriction on dredging would avoid potential impacts to spawning adults and early lifestages. Class C restriction is proposed.
mountain sucker	<i>Catostomus platyrhynchus</i>	None	SSC	E	Species range per Moyle 2002	Species populations are in general decline due to dam construction resulting in isolated populations (Moyle, 2002). Impacts to spawning adults and early lifestages could result in a deleterious effect. Spawning takes place in gravelly riffles immediately

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						upstream of deep pools from June through early August. Seasonal restriction on dredging would avoid potential impacts to spawning adults and early lifestages. Class E restriction is proposed.
hardhead	<i>Mylopharodon conocephalus</i>	None	SSC	C	Species range per Moyle 2002	Species relatively widespread, but populations in foothill streams are increasingly becoming isolated making them vulnerable to localized extinctions (Moyle, 2002). Hence, impacts to spawning adults and early lifestages could result in a deleterious effect. Spawning mainly occurs in April and May; some evidence suggests spawning may occur into August (Moyle, 2002). Seasonal restriction on dredging would avoid or minimize potential impacts to spawning adults and early lifestages. Class C restriction is proposed.
desert pupfish	<i>Cyprinodon macularius</i>	FE	SE	A	Current distribution per USFWS 5-year review <sup>25</sup>	Species has extremely limited distribution, and small population size. Impacts to organisms or occupied habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would sufficiently avoid potential impacts to occupied habitat.

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						Thus, Class A restriction is proposed.
Owens pupfish	<i>Cyprinodon radiosus</i>	FE	SE	A	Current distribution per USFWS 5-year review <sup>26</sup>	Species has extremely limited distribution, and small population size. Impacts to organisms or occupied habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would sufficiently avoid potential impacts to occupied habitat. Thus, Class A restriction is proposed.
Amargosa pupfish	<i>Cyprinodon nevadensis amargosae</i>	None	SSC	A	Species range per Moyle 2002	Species has extremely limited distribution. Impacts to organisms or occupied habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would sufficiently avoid potential impacts to occupied habitat. Thus, Class A restriction is proposed.
unarmored three-spined stickleback [includes Santa Ana (=Shay Creek) threespine stickleback]	<i>Gasterosteus aculeatus williamsoni [santaeannae]</i>	FE	SE, FP (SSC for <i>G.a. santaeannae</i> )	A	Current distribution per USFWS 5-year review <sup>27</sup>	Species has limited distribution and isolated populations. Species reproduces year-round. Impacts to organisms or occupied habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						avoid potential impacts to spawning and early lifestages, or sufficiently avoid potential impacts to occupied habitat. Thus, Class A restriction is proposed.
Owens speckled dace	<i>Rhinichthys osculus ssp</i>	None	SSC	A	Species range per Moyle 2002	Species has extremely limited distribution, and is in danger of extinction (Moyle, 2002). Impacts to organisms or occupied habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential impacts to spawning and early lifestages, or sufficiently avoid potential impacts to occupied habitat. Thus, Class A restriction is proposed.
Santa Ana Speckled dace	<i>Rhinichthys osculus ssp</i>	None	SSC	E	Limited information available regarding distribution; assumed to overlap with Santa Ana sucker	Species range has diminished primarily due to development/habitat alteration (Moyle, 2002). Current information on distribution is limited; assumed to be similar to Santa Ana sucker. Impacts to spawning adults and early lifestages could result in a deleterious effect. Seasonal restriction on dredging would avoid potential impacts to spawning adults and early lifestages. Class E restriction is proposed.

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
rough sculpin	<i>Cottus asperimus</i>	FSC	FP, ST	A	Fall River and major tributaries; Hat Creek (Shasta County)	Species has limited distribution and occurs in sensitive habitat. Impacts to organisms or occupied habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential impacts to spawning and early lifestages, or sufficiently avoid potential impacts to occupied habitat. Thus, Class A restriction is proposed.
reticulate sculpin	<i>Cottus perplexus</i>	None	SSC	C	Species range per Moyle 2002	Species distribution extremely limited in California, but is common in Oregon (Moyle, 2002). Impacts to spawning adults and early lifestages could result in a deleterious effect. Spawning takes place in March through May. Seasonal restriction on dredging would avoid or minimize potential impacts to spawning adults and early lifestages. Class C restriction is proposed.
Mohave tui chub	<i>Gila bicolor mohavensis</i>	FE	SE, FP	A	Species range per CNDDDB	Species has extremely limited distribution. Impacts to organisms or occupied habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						impacts to spawning and early lifestages, or sufficiently avoid potential impacts to occupied habitat. Thus, Class A restriction is proposed.
bonytail	<i>Gila elegans</i>	FE	SE	A	Mainstem Colorado River	Wild populations have been extirpated from California. Recovery efforts are on-going in the lower Colorado River. Class A restriction is proposed for recovery habitat.
Owens tui chub	<i>Gila bicolor snyderi</i>	FE	SE, FP	A	USFWS Critical Habitat for Owens tui chub <sup>28</sup>	Species has extremely limited distribution. Impacts to organisms or occupied habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. No seasonal restrictions would avoid potential impacts to spawning and early lifestages, or sufficiently avoid potential impacts to occupied habitat. Thus, Class A restriction is proposed.
arroyo chub	<i>Gila orcuttii</i>	None	SSC	E	Species range per Moyle 2002	Species has been extirpated through much of its native range (Moyle, 2002). Impacts to spawning adults and early lifestages could result in a deleterious effect. Spawning period is February to August. Seasonal restriction on dredging would avoid or minimize potential impacts to spawning adults and early lifestages. Class E restriction is proposed. Class A restriction for



**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						Santa Ana sucker on West Fork of the San Gabriel River would provide additional protection for species.
Clear Lake hitch	<i>Lavinia exilicauda chi</i>	None	SSC	E	Tributaries to Clear Lake	Species has limited range and appears to be in decline (Moyle, 2002). Impacts to spawning adults and early lifestages could result in a deleterious effect. Spawning period is generally March to May and may extend into June. Seasonal restriction on dredging would avoid or minimize potential impacts to spawning adults and early lifestages. Class E restriction is proposed.
Red Hills roach	<i>Lavinia symmetricus</i>	None	None	E	Tributaries to Six Bit Gulch including Horton, Amber and Roach Creeks	Species has extremely limited distribution. Impacts to organisms and habitat must be carefully managed to avoid deleterious effect. Occupied habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. Class E restriction is proposed to minimize potential impacts to spawning adults, early lifestages, and occupied habitat.
Pit roach	<i>Lavinia symmetricus mitrulus</i>	None	SSC	E	Species range per Moyle 2002	Species has been extirpated through much of its native range. Populations are locally at risk of extinction (Moyle, 2002). Impacts to spawning adults and early lifestages could result in a deleterious effect. Spawning period is March to early July. Seasonal restriction

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						on dredging would avoid or minimize potential impacts to spawning adults and early lifestages. Class E restriction is proposed. Class A restriction for Santa Ana sucker on West Fork of the San Gabriel River would provide additional protection for species.
<b>Amphibians</b>						
Sierra Madre (Mountain) yellow-legged frog (southern DPS)	<i>Rana muscosa</i>	FE	SCE	A	USFWS Critical Habitat <sup>29</sup> for Transverse Range populations of species. CWHR range <sup>30</sup> for southern Sierra Nevada populations.	Species abundance and distribution is limited. Approximately 95% of populations in historic range have been extirpated (CDFG, 2010 <sup>31</sup> ). Minor impacts to organisms or suitable habitat could result in a deleterious effect. Suitable habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. Tadpoles are present in streams year-round. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed. USFWS critical habitat represents the most accurate data source for species distribution in Transverse Range. CWHR range represents the most accurate data source for species distribution in southern Sierra Nevada populations.

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
Sierra Nevada (Mountain) yellow-legged frog	<i>Rana sierra</i>	FC	SCE	A	Species range per CWHR <sup>32</sup> except for portions of CDFG Region 2. For CDFG Region 2, occupied streams in CDFG High Mountain Lakes database and USFS data (unpublished).	Species abundance and distribution is limited. Approximately 93% of populations in historic range have been extirpated (CDFG, 2010 <sup>31</sup> ). Minor impacts to organisms or suitable habitat could result in a deleterious effect. Suitable habitat has the potential to be degraded by suction dredging; entrainment of organisms could also occur. Tadpoles are present in streams year-round. No seasonal restrictions would avoid potential impacts to organisms or their habitat. Thus, Class A restriction is proposed.
California red-legged frog	<i>Rana draytonii</i>	FT	SSC	A	Known stream-breeding populations in CDFG Regions 2, 3 and 5.	Populations largely breed in lentic or off-channel habitats; these habitats are not likely to be significantly impacted by suction dredging activities. Select populations are known to breed in streams, particularly in southern portions. These populations in southern California are fragmented, and the species has been extirpated throughout significant portions of its historical range. Impacts to organisms or suitable habitat could result in a deleterious effect. No seasonal restrictions would avoid potential impacts to occupied habitat. Thus, Class A restriction is proposed for known stream-breeding populations in CDFG

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						Regions 2, 3, and 5.
foothill yellow-legged frog	<i>Rana boylei</i>	None	SSC	Class D for species range per CWHR. Class E for select watersheds in CDFG Region 2.	Class D for species range per CWHR <sup>33</sup> (except CDFG Region 2). Class E for select watersheds in CDFG Region 2.	Impacts to early lifestages could result in a deleterious effect. Class D restriction for species range would avoid or minimize impacts to egg masses. Operation restrictions that prohibit dredging within three feet of the lateral edge of the current water level [Section 228(k)3] and disturbance of egg masses or tadpoles [Section 228(k)16] would further minimize impacts to early lifestages and breeding habitat. Class E restrictions are proposed for select watersheds in CDFG Region 2. These watersheds are generally tributaries of mainstem streams that have hydrology altered by hydropower operations. In these watersheds tributaries are important refugia for the species, and therefore Class E restrictions are proposed to avoid or minimize impacts to early lifestages.
arroyo toad	<i>Bufo</i> (= <i>Anaxyrus</i> ) <i>californicus</i>	FE	SSC	A	USFWS Critical Habitat <sup>34</sup> and two additional known occurrences in the San Bernardino National Forest	Species has isolated populations and limited distribution. Species habitat requirements are complex and varied (i.e., sandy benches, low flow streams and back waters, adjacent riparian habitat, braided main channel, and no interaction with non-native predators). Impacts to organisms or occupied

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging through increased sedimentation, creation of features that harbor non-native predators, and physical disturbance of beaches/bars. No seasonal restrictions would avoid potential impacts to spawning and early lifestages, or sufficiently avoid potential impacts to occupied habitat. Thus, Class A restriction is proposed.
black toad	<i>Anaxyrus exsul</i>	None	ST, FP	A	Occupied streams in Inyo County	Species has isolated populations and limited distribution. Impacts to organisms or occupied habitat could result in a deleterious effect. Occupied habitat has the potential to be degraded by suction dredging. No seasonal restrictions would avoid potential impacts to spawning and early lifestages, or sufficiently avoid potential impacts to occupied habitat. Thus, Class A restriction is proposed.
Cascades frog	<i>Rana cascadae</i>	None	SSC	A	Select streams in Shasta/Lassen region per Fellers et al., 2007 <sup>35</sup>	Species breeds from May through July with incubation, larvae development and metamorphosis occurring through October (Garwood, 2009 <sup>36</sup> ). Species breeds in lentic waterbodies in Klamath/Trinity region, but egg masses have been observed in slow flowing streams in the Lassen region (Garwood

**TABLE 4.3-1. ACTION SPECIES**

Common Name	Scientific Name	Federal listing status*	State listing status*	Proposed Temporal Dredging Restriction	Spatial Data Guiding Dredging Restriction	General Rationale for Proposed Regulations*
						and Welsh, 2007 <sup>37</sup> ). Species is relatively abundant in the Klamath/Trinity portion of its range, but populations in the Lassen region are at risk of extirpation (Fellers et al, 2007). Class A restriction is proposed for occupied streams in Lassen region.

\* See Appendix K for detailed life history accounts

\* List of Abbreviations for Federal and State Species Status follow below:

- FC* Federal candidate for listing
- FE* Federal endangered
- FP* State fully protected species
- FPT* Federal proposed: threatened
- SSC* State species of special concern
- FSC* Federal species of concern (per NOAA or USFWS website)
- SCE* State candidate: endangered
- SE* State endangered
- SSC* State species of special concern
- ST* State threatened

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**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
<b>Amphibians</b>						
California tiger salamander	<i>Ambystoma californiense</i>	FT	ST	Central Valley DPS federally listed as threatened. Santa Barbara & Sonoma counties DPS federally listed as endangered.	Need underground refuges, especially ground squirrel burrows & vernal pools or other seasonal water sources for breeding	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable breeding habitat.
Santa Cruz long-toed salamander	<i>Ambystoma macrodactylum croceum</i>	FE	SE, FP	Wet meadows near sea level in a few restricted locales in Santa Cruz and Monterey counties.	Aquatic larvae prefer shallow (<12 inches) water, using clumps of vegetation or debris for cover. Adults use mammal burrows.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable breeding habitat.
Pacific tailed frog	<i>Ascaphus truei</i>	None	SSC	Occurs in montane hardwood-conifer, redwood, Douglas-fir & ponderosa pine habitats.	Restricted to perennial montane streams. Tadpoles require water below 15 degrees C.	<b>Less than Significant.</b> Proposed restrictions for foothill yellow-legged frog would minimize potential impacts to species. Restrictions on dredging within 3 feet of a streambank would further minimize impacts by limiting dredging on margins of channel where eggs and tadpoles commonly occur, and setting a minimum width of stream (6 ft) in which dredging may occur. Residual impacts are not likely to result in a deleterious effect to species.
Inyo Mountains slender	<i>Batrachoseps campi</i>	None	SSC	Moist canyons on the west & east slopes of the Inyo Mountains, where surface	Takes cover under rocks on moist sandy loam in steep-walled canyons	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
salamander				water is present.	with permanent springs. Also in underground crevices.	activities are not likely to impact reproduction or dispersal of species.
San Gabriel slender salamander	<i>Batrachoseps gabrieli</i>	None	None	Known only from the San Gabriel Mountains. Found under rocks, wood, fern fronds & on soil at the base of talus slopes.	Most active on the surface in winter and early spring.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Kings River slender salamander	<i>Batrachoseps regius</i>	None	None	Mixed chaparral with buckeye, laurel, canyon and blue oak, ponderosa and lowland pine.	Found under rocks in areas of talus.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
relictual slender salamander	<i>Batrachoseps relictus</i>	None	SSC	Mixed coniferous forest on the western slope of southern Sierra Nevada between Kings River drainage & Kern River Canyon.	Usually found under boards, rotting logs, rocks & surface litter. Surface activity limited to rainy winter months.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Kern Plateau salamander	<i>Batrachoseps robustus</i>	None	None	Only in the semiarid Kern Plateau & Scodie Mountains. Frequents Jeffery pine/red fir, lodgepole pine & riparian scrub.	Found under rocks, bark fragments, logs and within and under wet logs, especially in spring and seep areas.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Kern Canyon slender salamander	<i>Batrachoseps simatus</i>	None	ST	Only in the lower Kern River Canyon in valley-foothill hardwood, valley-	Found under downed pine, oak & chaparral scrub logs, as well as	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
				foothill hardwood-conifer, & mixed chaparral.	under rocks & talus on steep, north-facing slopes.	activities are not likely to impact reproduction or dispersal of species.
Tehachapi slender salamander	<i>Batrachoseps stebbinsi</i>	None	ST	Valley-foothill hardwood-conifer & valley-foothill riparian in the Piute & Tehachapi Mountains of Kern County.	Prefers wet talus slopes or log-strewn hillsides with a steep, north-facing exposure.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Yosemite toad	<i>Bufo (=Anaxyrus) canorus</i>	FC	SSC	Vicinity of wet meadows in central High Sierra, 6400 to 11,300 feet in elevation.	Primarily montane wet meadows; also in seasonal ponds associated with lodgepole pine and subalpine conifer forest.	<b>Less than Significant.</b> Species breeds in the edges of wet meadows and slow moving streams (Jennings and Hayes, 1994) <sup>1</sup> . Species range is a subset of mountain (Sierra Nevada/Sierra Madre) yellow-legged frog. Therefore, Class A closures for mountain yellow-legged frog provide surrogate protection for species. Moreover, most of the species range is in National Park lands or Wilderness Areas.
yellow-blotched salamander	<i>Ensatina eschscholtzii croceator</i>	None	SSC	Forests and well-shaded canyons, as well as oak woodlands and old chaparral.	Needs surface objects, such as logs, boards, and rocks. Also needs old rodent burrows or other underground retreats.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
large-blotched salamander	<i>Ensatina klauberi</i>	None	SSC	Found in conifer and woodland associations.	Found in leaf litter, decaying logs and shrubs	<b>Less than Significant.</b> Reproduction is terrestrial.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
					in heavily forested areas.	Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
limestone salamander	<i>Hydromantes brunus</i>	None	ST, FP	Limestone outcrops in digger pine-chaparral belt along the Merced River and its tributaries, from 800-2600 feet in elevation.	California buckeye is an indicator of optimal habitat. Seeks cover in limestone caverns, talus, rock fissures, surface objects.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Mount Lyell salamander	<i>Hydromantes platycephalus</i>	None	SSC	Massive rock areas in mixed conifer, red fir, lodgepole pine, and subalpine habitats, 4000 to 11,600 feet in elevation.	Active on the surface only when free water is available, in the form of seeps, drips, or spray.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Shasta salamander	<i>Hydromantes shastae</i>	None	ST	Cool, wet ravines and valleys; dominant vegetation is oak woodland or chaparral, also pine and fir; 100 to 2550 ft elevation.	Seeks cover under surface objects such as logs, rocks, and limestone slabs or talus, near limestone fissures or caves.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Owens Valley web-toed salamander	<i>Hydromantes sp. 1</i>	None	SSC	Oak Creek in Charlie Canyon, Inyo County.	Rocky habitat, including cliff faces and cave walls.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
northern leopard frog	<i>Lithobates pipiens</i>	None	SSC	Native range is east of Sierra Nevada-Cascade	Highly aquatic species. Shoreline cover,	<b>Less than Significant.</b> Suction dredging not likely to occur in

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
				Crest. Near permanent or semi-permanent water in a variety of habitats.	submerged and emergent aquatic vegetation are important habitat characteristics	preferred breeding habitat (i.e., dense emergent vegetation).
Scott Bar salamander	<i>Plethodon asupak</i>	None	ST	Found only in the vicinity of the Scott River in Siskiyou County		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Del Norte salamander	<i>Plethodon elongatus</i>	None	SSC	Old-growth associated species with optimum conditions in the mixed conifer/hardwood ancient forest ecosystem.	Cool, moist, stable microclimate, a deep litter layer, closed multi-storied canopy, dominated by large, old trees.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Siskiyou Mountains salamander	<i>Plethodon stormi</i>	None	ST	Mixed conifer habitat of dense, pole-to-mature size, trees. Active above ground only during spring & fall rains.	Found under loose rock rubble at the base of talus slopes or under surface objects.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
northern red-legged frog	<i>Rana aurora</i>	None	SSC	Humid forests, woodlands, grasslands, & streamsides in northwestern California, usually near dense riparian cover.	Generally near permanent water, but can be found far from water, in damp woods and meadows, during non-breeding season.	<b>Less than Significant.</b> Suction dredging unlikely to occur in suitable breeding habitat.
Oregon spotted frog	<i>Rana pretiosa</i>	FC	SSC	Low swampy areas in mountainous woodlands	Standing water needed for breeding.	<b>Less than Significant.</b> Species is a "pond" or "quiet-water" frog

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
				& wet meadows, springs, small cold streams & lakes in northeastern Calif.		(Stebbins, 2003) <sup>2</sup> reproduces in off-channel aquatic habitat. Suction dredging not likely to significantly impact breeding habitat.
southern torrent salamander	<i>Rhyacotriton variegatus</i>	None	SSC	Coastal redwood, Douglas-fir, mixed conifer, montane riparian, and montane hardwood-conifer habitats. Old growth forest.	Cold, well-shaded, permanent streams and seepages, or within splash zone or on moss-covered rock within trickling water.	<b>Less than Significant.</b> Proposed restrictions for foothill yellow-legged frog would minimize potential impacts to species. Restrictions on dredging within 3 feet of banks would further minimize impacts by limiting dredging on margins of channel where eggs and larvae commonly occur, and setting a minimum width of stream (6 ft) in which dredging may occur. Residual impacts are not likely to result in a deleterious effect to species.
western spadefoot	<i>Spea hammondi</i>	None	SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands.	Vernal pools are essential for breeding and egg-laying.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable breeding habitat.
Coast Range newt	<i>Taricha torosa torosa</i>	None	SSC	Coastal drainages from Mendocino County to San Diego County.	Lives in terrestrial habitats & will migrate over 1 km to breed in ponds, reservoirs & slow moving streams.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
<b>Fish</b>						
Sacramento perch	<i>Archoplites interruptus</i>	None	SSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley.	Prefers warm water. Aquatic vegetation is essential for young. Tolerates wide range of physio-chemical water conditions.	<b>Less than Significant.</b> Proposed restrictions for listed salmonids and sturgeon would provide surrogate protection for species.
flannelmouth sucker	<i>Catostomus latipinnis</i>	None	None	Colorado River bordering California.	Spawns in riffles, usually over a substrate of coarse gravel.	<b>No Impact.</b> Extirpated from California.
Goose Lake sucker	<i>Catostomus occidentalis lacusanserinus</i>	None	SSC	Restricted to the Goose Lake Basin.	Spawns in Goose Lake tributary streams. Adults found in streams & lake all year round. Feeds on algae & diatoms.	<b>Less than Significant.</b> Adults associated with lentic habitat. Dredging in lake habitat prohibited without compliance with Fish and Game Code Section 1602. Approximately two-thirds of Goose Lake watershed is within Oregon (Heck et al., 2008) <sup>3</sup> , suggesting the majority of suitable spawning habitat is outside of California. Additionally, no activity by dredgers was reported in this geographic area (Appendix F).
riffle sculpin	<i>Cottus gulosus</i>	None	None	Present in permanent, cold headwater streams where riffles and rocky substrates predominate (Moyle, 2002)		<b>Less than Significant.</b> Species is locally abundant and widely distributed (Moyle, 2002) <sup>4</sup> . In addition, proposed restrictions for salmonids would provide surrogate protection for species.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
Upper Klamath marbled sculpin	<i>Cottus klamathensis klamathensis</i>	None	None	In California, species is found mainly in Lost River drainage and Klamath River above Iron Gate Reservoir (Moyle, 2002) <sup>5</sup>		<b>Less than Significant.</b> Proposed restrictions for shortnose sucker would provide surrogate protection for species.
bigeye marbled sculpin	<i>Cottus klamathensis macrops</i>	None	SSC	Found in the Pit River system & 3 tributaries - Hat Creek, Burney Creek & the Fall River system.	Large, clear, cool spring-fed streams, but sometimes found in reservoirs. Prefers abundant vegetation & coarse substrates	<b>Less than Significant.</b> Proposed restrictions for rough sculpin and Shasta crayfish would provide surrogate protection for species.
Lower Klamath marbled sculpin	<i>Cottus klamathensis polyporus</i>	None	None	Widely distributed in Trinity River and larger tributaries, and Klamath River and tributaries below Klamath Falls.		<b>Less than Significant.</b> Proposed restrictions for foothill yellow-legged frog would provide surrogate protection for species.
Saratoga Springs pupfish	<i>Cyprinodon nevadensis nevadensis</i>	None	SSC	Only known from Saratoga Springs and its outflow in Death Valley.	A series of marshes and shallow lakes. Water temps vary from 10 to 49 C.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in occupied habitat.
Shoshone pupfish	<i>Cyprinodon nevadensis shoshone</i>	None	SSC	Found in Shoshone Spring and throughout its outlet creek, Inyo Co. Habitat has been drastically altered.	Historically the spring pool had clear water over a mud bottom with overhanging banks. Outflow was probably marshy.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in occupied habitat.
Cottonball Marsh pupfish	<i>Cyprinodon salinus milleri</i>	None	ST	Two joined marshy areas in the northwest portion of Death Valley National	Shallow pools with salinities from 14 to 160 ppt.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in occupied habitat.



**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
				Park.		
tidewater goby	<i>Eucyclogobius newberryi</i>	FE	SSC	Brackish water habitats along the Calif coast from Agua Hedionda Lagoon, San Diego Co. to the mouth of the Smith River.	Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water & high oxygen levels.	<b>Less than Significant.</b> Suction dredging unlikely to occur in suitable habitat. Proposed restrictions for salmonids and sturgeon would provide surrogate protection for species.
resident threespine stickleback	<i>Gasterosteus aculeatus microcephalus</i>	None	None	Populations widely distributed throughout the coastal drainages of California.		<b>Less than Significant.</b> As a whole, species not likely to be adversely affected by dredging. Individual isolated populations may have higher risk of an adverse impacts. However, proposed restrictions for salmonids and other fishes in southern California (e.g., Santa Ana sucker, arroyo chub) would provide surrogate protection for species such that a deleterious effect is not likely to occur.
Lahontan Lake tui chub	<i>Gila bicolor pectinifer</i>	None	SSC	Inhabits large, deep lakes. Tolerates a wide range of physiochemical water conditions.	Spawns in near-shore shallow areas over beds of aquatic vegetation.	<b>Less than Significant.</b> Species is abundant and widely distributed in eastern Sierra Nevada watersheds (Moyle, 2002). Suction dredging not likely to result in deleterious effect.
Goose Lake tui chub	<i>Gila bicolor thalassina</i>	None	SSC	Confined to the Goose Lake Basin of Oregon and California.	Chubs prefer pools & are generally not found in swift water. They've been found in habitats with temps from 9-29 degrees	<b>Less than Significant.</b> Adults associated with lentic habitat. Dredging in lake habitat prohibited without compliance with Fish and Game Code Section

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
					C.	1602. Approximately two-thirds of Goose Lake watershed is within Oregon (Heck et al., 2008), suggesting the majority of suitable spawning habitat is outside of California. Additionally, no activity by dredgers was reported in this geographic area (Appendix F).
Cow Head tui chub	<i>Gila bicolor vaccaceps</i>	None	SSC	Known only from the Cow Head sub-basin of the Warner Basin.	Need sufficient water to maintain the large pools that support the fish, especially during drought years.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in occupied habitat.
blue chub	<i>Gila coerulea</i>	None	SSC	Abundant in lakes, but found in a variety of habitats, from small streams & rivers to shallow reservoirs & deep lakes.	Most abundant in warm, quiet waters with mixed substrates. Spawns over shallow rocky areas.	<b>Less than Significant.</b> Species primarily occurs in warm water lakes. Dredging in lake habitat prohibited without compliance with Fish and Game Code Section 1602. Residual impacts are not likely to result in a deleterious effect to species.
Delta smelt	<i>Hypomesus transpacificus</i>	FT	SE	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait & San Pablo Bay.	Seldom found at salinities > 10 ppt. Most often at salinities < 2ppt.	<b>Less than Significant.</b> Suction dredging unlikely to occur in suitable habitat. Proposed restrictions for salmonids and sturgeon provide surrogate protection for species.
Clear Lake tule perch	<i>Hysteroecarpus traski lagunae</i>	None	None	Inhabits Clear Lake and upper and lower Blue Lakes (Lake County)		<b>Less than Significant.</b> Proposed restrictions for Clear Lake hitch would provide surrogate

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
						protection for species. Dredging in lake habitat would require compliance with Fish and Game Code Section 1602.
Russian River tule perch	<i>Hysterocarpus traski pomo</i>	None	SSC	Low elevation streams of the Russian River system.	Requires clear, flowing water with abundant cover. They also require deep (> 1 m) pool habitat.	<b>Less than Significant.</b> Proposed restrictions for listed salmonids would provide surrogate protection for species.
Sacramento-San Joaquin tule perch	<i>Hysterocarpus traski traski</i>	None	None	Lowland rivers and creeks in the Central Valley up to major canyons or waterfalls.		<b>Less than Significant.</b> Suction dredging not likely to commonly occur in preferred habitat.
Kern brook lamprey	<i>Lampetra hubbsi</i>	None	SSC	San Joaquin River system and Kern River.	Gravel-bottomed areas for spawning and muddy-bottomed areas where ammocoetes can burrow and feed.	<b>Less than Significant.</b> Proposed restrictions for salmonids would provide surrogate protection for spawning adults in portions of species range. Disturbance of ammocoetes not likely to result in deleterious effect to species. Additionally, minimal activity by dredgers was reported within species range (Appendix F).
Pit-Klamath brook lamprey	<i>Lampetra lethophaga</i>	None	None	In California it is found only in the Pit River system.	Low-gradient reaches of clear, cool rivers and streams with sand-mud bottoms or edges.	<b>Less than Significant.</b> Proposed restrictions for Pit roach would provide surrogate protection for spawning adults in portions of species range. Disturbance of ammocoetes not likely to result in deleterious effect to species.
Klamath River	<i>Lampetra similis</i>	None	SSC	Upper Klamath River and	Adults need coarser	<b>Less than Significant.</b> Proposed

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
lamprey				upper Klamath Lake.	gravel-rubble substrate for spawning. Ammocoetes need sand/mud substrate in shallow pools.	restrictions for salmonids and sturgeon provide surrogate protection for spawning adults. Disturbance of ammocoetes not likely to result in deleterious effect to species.
Pacific lamprey	<i>Lampetra tridentata</i>	None	None	Found in Pacific Coast streams north of San Luis Obispo Co., however regular runs in Santa Clara River. Size of runs is declining.	Swift-current gravel bottomed areas for spawning with water temps between 12-18 degrees C. Ammocoetes need soft sand or mud.	<b>Less than Significant.</b> Proposed restrictions for salmonids and sturgeon would provide surrogate protection for spawning adults in portions of species range. Residual impacts, including disturbance of ammocoetes, not likely to result in deleterious effect to species.
Goose Lake lamprey	<i>Lampetra tridentata ssp. 1</i>	None	SSC	Adults live in shallow, alkaline Goose Lake.	Require gravel rifles in streams for spawning. Ammocoetes require muddy backwater habitats downstream of spawning areas.	<b>Less than Significant.</b> Adults associated with lentic habitat. Dredging in lake habitat prohibited without compliance with Fish and Game Code Section 1602. Approximately two-thirds of Goose Lake watershed is within Oregon (Heck et al., 2008), suggesting the majority of suitable spawning habitat is outside of California. Additionally, no activity by dredgers was reported in this geographic area (Appendix F).
Central Valley hitch	<i>Lavinia exilicauda</i>	None	None	Warm, low-elevation lakes, sloughs, and slow		<b>Less than Significant.</b> Suction dredging not likely to commonly

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
	<i>exilicauda</i>			moving stretches of river and in clear low gradient streams (Moyle, 2002).		occur in occupied habitat. Proposed restrictions for salmonids would provide surrogate protection for a portion of the species range. Residual impacts are not likely to result in a deleterious effect to species.
Pajaro/Salinas hitch	<i>Lavinia exilicauda harengus</i>	None	None	Pajaro and Salinas Rivers and larger tributaries		<b>Less than Significant.</b> Proposed restrictions for salmonids would provide surrogate protection for species.
Navarro roach	<i>Lavinia symmetricus navarroensis</i>	None	SSC	Habitat generalists. Found in warm intermittent streams as well as cold, well-aerated streams.		<b>Less than Significant.</b> Suction dredging unlikely to occur in suitable habitat. Proposed restrictions for salmonids would provide surrogate protection for species.
Gualala roach	<i>Lavinia symmetricus parvipinnis</i>	None	SSC	Found only in the Gualala River.		<b>Less than Significant.</b> Proposed restrictions for salmonids provide surrogate protection for species.
Sacramento-San Joaquin roach	<i>Lavinia symmetricus ssp. 1</i>	None	SSC	Sacramento-San Joaquin Valley.		<b>Less than Significant.</b> Proposed restrictions for salmonids would provide surrogate protection for portions of species range. Residual impacts are not likely to result in a deleterious effect to species.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
Tomales roach	<i>Lavinia symmetricus ssp. 2</i>	None	SSC	Tributaries to Tomales Bay.		<b>Less than Significant.</b> Proposed restrictions for listed salmonids would provide surrogate protection for species.
Clear Lake - Russian River roach	<i>Lavinia symmetricus ssp. 4</i>	None	None	Clear Lake drainage and the Russian River		<b>Less than Significant.</b> Proposed restrictions for Clear Lake hitch and salmonids would provide surrogate protection for species.
Monterey roach	<i>Lavinia symmetricus subditus</i>	None	SSC	Tributaries to Monterey Bay, specifically the Salinas, Pajaro, & San Lorenzo drainages.		<b>Less than Significant.</b> Suction dredging unlikely to occur in suitable habitat. Proposed restrictions for salmonids would provide surrogate protection for species.
coast cutthroat trout	<i>Oncorhynchus clarkii clarkii</i>	None	SSC	Small coastal streams from the Eel River to the Oregon border.	Small, low gradient coastal streams & estuaries. Need shaded streams with water temps <18C, & small gravel for spawning	<b>Less than Significant.</b> Proposed restrictions for listed salmonids and sturgeon would provide surrogate protection for species.
pink salmon	<i>Oncorhynchus gorbuscha</i>	None	SSC	Most spawn in intertidal or lower reaches of streams & rivers in Sept & Oct. Move further upstream in Sacramento River.	Optimal temperature is 5.6 to 14.4 C. Embryos & alevins require fast-flowing, well oxygenated water for development & survival.	<b>Less than Significant.</b> Proposed restrictions for listed salmonids and sturgeon would provide surrogate protection for species.
chum salmon	<i>Oncorhynchus keta</i>	None	SSC	Short freshwater & extensive marine life stage. Especially dependent upon estuaries	Select spawning sites where there are good intragravel flows with optimum spawning	<b>Less than Significant.</b> Proposed restrictions for listed salmonids and sturgeon would provide surrogate protection for species.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
				during non-migratory juvenile stage	temps of 7.2 - 12.8 C.	
Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	None	SSC	Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay & associated marshes.	Slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning & foraging for young.	<b>Less than Significant.</b> Proposed restrictions for listed salmonids and sturgeon would provide surrogate protection for species. Dredging not likely to occur in suitable spawning habitat.
Amargosa Canyon speckled dace	<i>Rhinichthys osculus ssp. 1</i>	None	SSC	Found only in Amargosa Canyon and tributaries of the Amargosa River, esp. Willow Creek & Willow Creek Reservoir.	Prefers pools with relatively deep water (0.5 - 0.75 m) and slow water velocity.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat.
Long Valley speckled dace	<i>Rhinichthys osculus ssp. 5</i>	None	None	Found only in Long Valley in the Owens River drainage.	Occurs only in Whitmore Spring and Little Alkali Lake (Moyle, 2002) <sup>5</sup> .	<b>Less than Significant.</b> Suction dredging not likely to occur in occupied habitat. Dredging in lake habitat would require compliance with Fish and Game Code Section 1602.
Eagle Lake tui chub	<i>Siphateles bicolor ssp. 1</i>	None	SSC	Found only in Eagle Lake, Lassen County.	Requires beds of aquatic vegetation in shallow, inshore areas for successful spawning.	<b>Less than Significant.</b> Species associated with lentic habitat. Suction dredging not unlikely to occur in suitable habitat. Dredging in occupied habitat would require compliance with Section 228.(k) of the proposed regulations.
Pit River tui chub	<i>Siphateles bicolor ssp. 3</i>	None	None	Common in reservoirs and some streams in Pit River basin.		<b>Less than Significant.</b> Proposed restrictions for Pit roach would provide surrogate protection for

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
						streams within species range. Dredging in lake habitat would require compliance with Fish and Game Code Section 1602.
longfin smelt	<i>Spirinchus thaleichthys</i>	None	ST	Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column.	Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	<b>Less than Significant.</b> Suction dredging unlikely to occur in suitable spawning habitat. Proposed restrictions for salmonids and sturgeon would provide surrogate protection for species.
<b>Invertebrates</b>						
tight coin (=Yates' snail)	<i>Ammonitella yatesii</i>	None	None	Inhabits limestone caves and outcroppings; favors north-facing slopes.	Found in humus in limestone outcroppings.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
hooded lancetooth	<i>Ancotrema voyanum</i>	None	None	Occurs mostly in the Shasta-Trinity National forests in the northern half of Trinity County. Associated with limestone substrates, mostly in an elevation range of 1680-960 meters.	All known occurrences are near streams or in draws (intermittent stream channel). Needs permanent dampness. Late successional conditions provide suitable habitat conditions.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
California floater	<i>Anodonta californiensis</i>	None	None	Freshwater lakes and slow-moving streams and rivers. Taxonomy under	Generally in shallow water.	<b>Less than Significant.</b> Proposed regulations prohibit disturbance of mussel beds. Residual impacts



**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
				review by specialists.		are not likely to result in a deleterious effect to species.
Mono brine shrimp	<i>Artemia monica</i>	None	None	Endemic to Mono Lake, located in the Great Basin Desert of Mono County.	Mono Lake is permanent, clear-water, carbonate-rich, saline lake with 96-ppt TDS, and a pH around 10; temp 4-24 deg C.	<b>Less than Significant.</b> Dredging in lake habitat prohibited without compliance with Fish and Game Code Section 1602.
Badwater snail	<i>Assiminea infima</i>	None	None	Restricted to saline spring sources in the Death Valley region, Inyo County.	Occurs either under a salt-crust roof fringing the water's edge or on moistened vegetation; often found fully submerged.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in occupied habitat.
pocket pouch fairy shrimp	<i>Branchinecta campestris</i>	None	None	In California it is found in Soda Lake, Carrizo Plains. Active only in El Nino years.	Very salt tolerant	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat.
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	FE	None	Endemic to the grasslands of the northern two-thirds of the Central Valley; found in large, turbid pools.	Inhabit astatic pools located in swales formed by old, braided alluvium; filled by winter/spring rains, last until June.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat. Proposed restrictions on dredging into streambanks would provide protection for species and their habitat.
longhorn fairy shrimp	<i>Branchinecta longiantenna</i>	FE	None	Endemic to the eastern margin of the Central Coast mtns in seasonally astatic grassland vernal pools.	Inhabit small, clear-water depressions in sandstone and clear-to-turbid clay/grass-bottomed pools in shallow swales.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat. Proposed restrictions on dredging into streambanks would provide protection for species and their

TABLE 4.3-2. OTHER FISH SPECIES

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
						habitat.
vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	None	Endemic to the grasslands of the Central Valley, Central Coast mtns, and South Coast mtns, in astatic rain-filled pools.	Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat. Proposed restrictions on dredging into streambanks would provide protection for species and their habitat.
midvalley fairy shrimp	<i>Branchinecta mesovallensis</i>	None	None	Vernal pools in the Central Valley.		<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat. Proposed restrictions on dredging into streambanks would provide protection for species and their habitat.
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	FE	None	Endemic to San Diego and Orange County mesas.	Vernal pools.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat. Proposed restrictions on dredging into streambanks would provide protection for species and their habitat.
Sequoia cave isopod	<i>Caecidotea sequoiae</i>	None	None	Troglophilic.	Collected in caves, and also near outlet of Big Spring by overturning rocks.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Tomales isopod	<i>Caecidotea tomalensis</i>	None	None	Inhabits localized fresh-water ponds or streams		<b>Less than Significant.</b> Known occurrences are from wells and

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
				with still or near-still water in several Bay Area counties.		springs in counties along the Coast Range. Suction dredging not likely to occur in occupied or suitable habitat.
An isopod	<i>Calasellus californicus</i>	None	None	Known from Lake, Napa, Marin, Santa Cruz and Santa Clara counties.		<b>Less than Significant.</b> Known occurrences are from ponds/springs in Bay Area counties (CDFG, no date) <sup>5</sup> . Suction dredging not likely to occur in occupied or suitable habitat.
An isopod	<i>Calasellus longus</i>	None	None	Spring		<b>Less than Significant.</b> Only known population is in Shaver Lake in Fresno County (Lewis, 2001) <sup>6</sup> . Dredging in occupied habitat would require compliance with Section 228.(k) of the proposed regulations.
canary duskysnail	<i>Colligyrus convexus</i>	None	None	Limnocrenes & hyporheic streams in the Pit River basin.	Most abundant on the undersides of cobbles and boulders in shallow to moderate depths.	<b>Less than Significant.</b> Species associated with limnocrenes (spring basins) and hyporheic streams in the Pit River basin. Distribution is not well documented, but species is often found in association with Shasta crayfish (NatureServe, 2010) <sup>7</sup> . Proposed restrictions for Shasta crayfish and other Pit River basin species (e.g., rough sculpin) would provide surrogate protection for species.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
						Restrictions on dredging within 3 feet of banks would further minimize impacts by setting a threshold on the width of stream in which dredging may occur. Furthermore, no activity by dredgers was reported in this geographic area (Appendix F). Anticipated level of activity not likely to result in a deleterious effect.
hairy water flea	<i>Dumontia oregonensis</i>	None	None	Vernal pools. In California, known only from Mather Field.		<b>Less than Significant.</b> Suction dredging highly unlikely to occur in occupied habitat.
Morongo (=Colorado) desertsnailed	<i>Eremarionta morongoana</i>	None	None	Known only from a gulch on the north side of Morongo Pass, San Bernardino County, near Riverside County line.	Found under rocks.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Baker's desertsnailed	<i>Eremarionta rowelli bakerensis</i>	None	None	Inhabits N slope of a small range of limestone hills, 0.5 miles south of Baker, San Bernardino County.	Found in rockslides.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
California McCoy snail	<i>Eremarionta rowelli mccoiana</i>	None	None	Found in various sites in the McCoy Mtns and the Big Maria Mtns.	Inhabits rockslides in gullies.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of

TABLE 4.3-2. OTHER FISH SPECIES

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
						species.
nugget pebblesnail	<i>Fluminicola seminalis</i>	None	None	Originally from near mouth of the Sacramento River upstream into the Pit River. Now extirpated from the Sacramento River.	Prefers gravel-cobble substrate and clear, cold flowing water. It typically is found in large streams and rivers. However, it is also found in a very few large spring pools with soft, mud substrates (Furnish and Monthey, 1998) <sup>9</sup> .	<b>Less than Significant.</b> Densities of 2000-3000 individuals per m <sup>2</sup> reported in the Pit and McCloud Rivers (Furnish and Monthey, 1998) <sup>8</sup> . Proposed restrictions for Shasta crayfish and other Pit River basin species (e.g., rough sculpin) would provide surrogate protection for portion of species range. No activity by dredgers was reported in this geographic area (Appendix F). Anticipated level of activity not likely to result in a deleterious effect.
western ridged mussel	<i>Gonidea angulata</i>	None	None	Primarily creeks & rivers & less often lakes. Originally in most of state, now extirpated from Central & Southern Calif.		<b>Less than Significant.</b> Proposed regulations would minimize impacts by prohibiting disturbance of mussel beds. Residual impacts are not likely to result in a deleterious effect to species.
Great Basin rams-horn	<i>Helisoma newberryi</i>	None	None	Larger lakes & slow rivers, including larger spring sources & spring-fed creeks.	Snails burrow in soft mud.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in preferred habitat (i.e., larger lakes and slow rivers).
Merced Canyon shoulderband	<i>Helminthoglypta allynsmithi</i>	None	None	Merced River Canyon, 3-6 miles below El Portal; 150 ft elev.	Inhabits rockslides	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
						reproduction or dispersal of species.
mountain shoulderband	<i>Helminthoglypta arrosa monticola</i>	None	None	Known only from the King Range in Humboldt County.	Found in talus slopes.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Pomo bronze shoulderband	<i>Helminthoglypta arrosa pomoensis</i>	None	None	Found near the coast in heavily-timbered redwood canyons of Mendocino County.	Found under redwoods.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Kern shoulderband	<i>Helminthoglypta callistoderma</i>	None	None	Known only from Tulare and Kern counties, along the lower Kern River Canyon.	Has been collected from dead vegetation along the water's edge.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
mesa shoulderband	<i>Helminthoglypta coelata</i>	None	None	Known only from a few locations in coastal San Diego County.	Found in rock slides, beneath bark and rotten logs, and among coastal vegetation.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Oregon shoulderband	<i>Helminthoglypta hertleini</i>	None	None	Found on basaltic talus slopes; partial riparian associate.	Found wherever permanent ground cover/moisture is available. Somewhat	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
					adapted to dry conditions during a portion of the year.	reproduction or dispersal of species.
Victorville shoulderband	<i>Helminthoglypta mohaveana</i>	None	None	Known only from along the Mojave River in San Bernardino County.	Found among granite boulders and at the base of rocky cliffs.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Bridges' coast range shoulderband	<i>Helminthoglypta nickliniana bridgesi</i>	None	None	Inhabits open hillsides of Alameda and Contra Costa counties.	Tends to colonize under tall grasses and weeds.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
redwood shoulderband	<i>Helminthoglypta sequoicola consors</i>	None	None	Known only from south slope of San Juan Grade, near Foot, 8 miles NW of Salinas.		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Trinity shoulderband	<i>Helminthoglypta talmadgei</i>	None	None	Limestone rockslides, litter in coniferous forests, old mine tailings, and along shaded streams in the Klamath Mountains		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
westfork shoulderband	<i>Helminthoglypta taylori</i>	None	None	Vicinity of the Mojave River.	Under logs and leaves.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
						activities are not likely to impact reproduction or dispersal of species.
leaden slug	<i>Hesperarion plumbeus</i>	None	None	Terrestrial snail known to occur in Shasta County		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
topaz juga	<i>Juga acutifilosa</i>	None	None	Cold, well-oxygenated, unpolluted water, generally with stable gravel substrate.		<b>Less than Significant.</b> This species is known to occur at 12 isolated spring complexes, all but one in Northern California. Additional occupied sites may be discovered in the vicinity of Fall River Mills and in Lassen National Park east of Hat Creek (USFS, 2007) <sup>9</sup> . Suction dredging not likely to occur in occupied habitat (i.e., isolated spring complexes, and in National Park boundaries).
Chace juga	<i>Juga chacei</i>	None	None	Small permanent streams at low to middle elevations in the Smith River drainage.	Generally on gravel substrate, always in cold, clear, highly oxygenated, unpolluted, running water.	<b>Less than Significant.</b> Occurs in rivulets and small creeks [California fish and game (Volume 67, no. 3)]. Proposed regulations which would restrict dredging within 3 feet of a streambank [Section 228.(k)(3)] would preclude dredging in much of this habitat type.



**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
						Limited activity by dredgers was reported in this geographic area (Appendix F). Anticipated level of activity not likely to result in a deleterious effect.
scalloped juga	<i>Juga occata</i>	None	None			<b>Less than Significant.</b> Species exists in widely separated sites in the Pit River below the "Falls" in Shasta County (USFS, 2007). Proposed restrictions for Shasta crayfish and other Pit River basin species (e.g., rough sculpin) would provide surrogate protection for portion of species range. No activity by dredgers was reported in this geographic area (Appendix F). Anticipated level of activity not likely to result in a deleterious effect.
redwood juga	<i>Juga orickensis</i>	None	None	High to low elevation coastal streams in northwestern California & southern Oregon.	Small spring-fed permanent rivulets to creeks, often on gravel, always in unpolluted, clear, cold, running water.	<b>Less than Significant.</b> Occurs in Del Norte, Humboldt, and western Trinity counties (NatureServe, 2010) <sup>10</sup> . Proposed regulations which would restrict dredging within 3 feet of a streambank would preclude dredging in much of this habitat type. Residual impacts are not likely to result in a deleterious effect to species.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
kneecap lanx	<i>Lanx patelloides</i>	None	None	Endemic to upper Sacramento River system. Breath entirely through mantle, & are very sensitive to polluted water.	Prefers fast, cold, well-oxygenated water and cobble-boulder substrate.	<b>Less than Significant.</b> Species co-occurs with nugget pebblesnail ( <i>Fluminicola seminalis</i> ) (Furnish and Monthey, 1998). Proposed restrictions for Shasta crayfish and other Pit River basin species (e.g., rough sculpin) would provide surrogate protection for portion of species range. No activity by dredgers was reported in this geographic area (Appendix F). Anticipated level of activity not likely to result in a deleterious effect.
vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	FE	None	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water.	Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed & highly turbid.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat. Proposed restrictions on dredging into streambanks would provide protection for species and their habitat.
California linderiella	<i>Linderiella occidentalis</i>	None	None	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions.	Water in the pools has very low alkalinity, conductivity, and TDS.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat. Proposed restrictions on dredging into streambanks would provide protection for species and their habitat.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
Santa Rosa Plateau fairy shrimp	<i>Linderiella santarosae</i>	None	None	Found only in the vernal pools on Santa Rosa Plateau in Riverside County.	Southern basalt flow vernal pools.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat.
western pearlshell	<i>Margaritifera falcata</i>	None	None	Aquatic.	Prefers lower velocity waters.	<b>Less than Significant.</b> Proposed regulations would minimize impacts by prohibiting disturbance of mussel beds. Residual impacts are not likely to result in a deleterious effect to species.
Natural Bridge megomphix	<i>Megomphix californicus</i>	None	None	Forested areas.	In moist leaf litter & under rotting logs on streambanks. Associated with perennial seeps and springs.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
downy sideband	<i>Monadenia callipeplus</i>	None	None	Old growth and riparian associate.	Found among rocks and leaf litter along forested streambanks.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Siskiyou shoulderband	<i>Monadenia chaceana</i>	None	None	Lower reaches of major drainages. Found in talus and rock slides, under rocks and woody debris in moist conifer forests, caves, and riparian corridors in shrubby	Rocks and woody debris serve as refugia during the summer.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
				areas.		
Klamath sideband	<i>Monadenia churchi</i>	None	None	Lives mostly in limestone outcrops, caves, talus slides, and lava rockslides, but also occurs under forest debris in heavy shade on wooded hillsides.		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
keeled sideband	<i>Monadenia circumcarinata</i>	None	None	Endemic to the Tuolumne River canyon, in association with steep limestone outcrops and talus slopes.	Occurs in limestone where fractures or loose talus allow deep, sub-surface sheltering.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
crested sideband	<i>Monadenia cristulata</i>	None	None	Old growth and riparian associate.		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
A terrestrial snail	<i>Monadenia fidelis leonina</i>	None	None	Old growth and riparian associate; local endemic.	Dead alder leaves and trunks near a stream, in relatively undisturbed forest.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
yellow-based sideband	<i>Monadenia infumata ochromphalus</i>	None	None	Old growth and riparian associate. Not collected since the early 1960s.	Found on leaves, sticks, concrete wall of irrigation ditch and mossy boulders and stones.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
						reproduction or dispersal of species.
Trinity bristle snail	<i>Monadenia infumata setosa</i>	None	ST	Known only from along a few streams in the Trinity River drainage.	Juveniles are found under bark of standing dead broadleaf trees, and the species may require this habitat.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Button's Sierra sideband	<i>Monadenia mormonum buttoni</i>	None	None	Known from the central Sierra Nevada counties.		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
hirsute Sierra sideband	<i>Monadenia mormonum hirsuta</i>	None	None	Known only from a few basaltic outcrops in Tuolumne County.		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Shasta sideband	<i>Monadenia troglodytes troglodytes</i>	None	None	Associated with limestone terrain in Shasta and Siskiyou counties. Associated with pine-oak woodlands.		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Tuolumne sideband	<i>Monadenia tuolumneana</i>	None	None	Endemic to the Tuolumne River canyon, in association with steep limestone outcrops and	Occurs in limestone where fractures or loose talus allow deep, sub-surface sheltering.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
				talus slopes.		reproduction or dispersal of species.
Yosemite Mariposa sideband	<i>Monadenia yosemitensis</i>	None	None	Known only from Yosemite Valley along the Merced River, Mariposa County.	Known to inhabit rockslides.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Ten Mile shoulderband	<i>Noyo intersessa</i>	None	None	Found in coastal dunes, coastal scrub, and riparian redwood forest habitats.		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Warner Valley redband trout	<i>Oncorhynchus mykiss ssp. 3</i>	None	None	Only present in the Warner Lakes Basin, in the extreme northeastern portion of California.		<b>Less than Significant.</b> Species dependent primarily on habitat in Oregon. Dredging in California portion of species range not likely to result in a deleterious effect.
robust walker	<i>Pomatiopsis binneyi</i>	None	None	Freshwater.		<b>Less than Significant.</b> Species is found in perennial seeps and rivulets, where it is protected from seasonal flushing in the rainy season (USFS, 2010) <sup>11</sup> . Proposed regulations which would restrict dredging within 3 feet of a streambank would preclude dredging in this habitat type.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
pristine pyrg	<i>Pristinicola hemphilli</i>	None	None	Found in small springs.		<b>Less than Significant.</b> Species occurs in small springs. Proposed regulations which would restrict dredging within 3 feet of a streambank would preclude dredging in this habitat type.
Trinity Spot	<i>Punctum hannai</i>	None	None	Uncommon localized species with a disjunct range divided between the Klamath Mountains & Sierra Nevada.	In moist leaf litter in forests, and in more areas, along streams or near seeps, springs, bogs & swamps.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Benton Valley (=Aahrdahl's) springsnail	<i>Pyrgulopsis aardahli</i>	None	None	Endemic to the type locality - a spring at Bramlette Ranch in Benton Valley, Mono County.	Common in dense watercress in uppermost portion of outflow of small, highly degraded spring.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in occupied habitat.
Archimedes pyrg	<i>Pyrgulopsis archimedis</i>	None	None	Springs and streams in the Pit and Klamath Basins.	Snails typically found on mud substrate.	<b>Less than Significant.</b> Proposed restrictions on dredging within 3 feet of a streambank would further minimize impacts by setting a threshold on the width of stream in which dredging may occur. Furthermore, no activity by dredgers was reported in this geographic area (Appendix F). Anticipated level of activity not likely to result in a deleterious effect.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
Ash Valley pyrg	<i>Pyrgulopsis cinerana</i>	None	None	Cold springs associated with upper Ash Creek, Ash Valley, upper Pit River basin.	Helocrenes.	<b>Less than Significant.</b> Species occurs in springs. Proposed regulations which would restrict dredging within 3 feet of a streambank would preclude dredging in this habitat type.
Diablo Range pyrg	<i>Pyrgulopsis diablensis</i>	None	None	Found in unnamed creek in Del Puerto Canyon.	Stream is poorly shaded and slightly disturbed from pastoral and recreational activities.	<b>Less than Significant.</b> Suction dredging unlikely to occur in occupied habitat.
Smoke Creek pyrg	<i>Pyrgulopsis eremica</i>	None	None	Springs & spring brooks within the Great Basin of northeastern California.		<b>Less than Significant.</b> Species occurs in springs. Proposed regulations which would restrict dredging within 3 feet of a streambank would preclude dredging in the majority of suitable habitat.
Likely pyrg	<i>Pyrgulopsis falciglans</i>	None	None	Restricted to two closely adjacent springs along the south fork Pit River.		<b>Less than Significant.</b> Species occurs in springs. Proposed regulations which would restrict dredging within 3 feet of a streambank would likely preclude dredging in occupied habitat. Furthermore, no activity by dredgers was reported in this geographic area (Appendix F).
Surprise Valley pyrg	<i>Pyrgulopsis gibba</i>	None	None	Found in springs in the Great Basin of northeastern California.		<b>Less than Significant.</b> Species occurs in springs. Proposed regulations which would restrict dredging within 3 feet of a streambank would likely



**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
						preclude dredging in occupied habitat. Furthermore, no activity by dredgers was reported in this geographic area (Appendix F).
Willow Creek pyrg	<i>Pyrgulopsis lasseni</i>	None	None	Upper reaches of Willow Creek and an associated warm nasmode in the upper Pit River basin.	Snails found in warm (22 degrees C) nasmode and in cooler Willow Creek. Snails more abundant in Willow Creek.	<b>Less than Significant.</b> Species occurs in springs. Proposed regulations which would restrict dredging within 3 feet of a streambank would likely preclude dredging in occupied habitat. Furthermore, no activity by dredgers was reported in this geographic area (Appendix F).
Fish Slough springsnail	<i>Pyrgulopsis perturbata</i>	None	None	Found in three of the four main springs in Fish Slough.	Found only in small vestiges of rheocrene habitat at small orifices in NW springs & at start of outflow of NE springs.	<b>Less than Significant.</b> Proposed restrictions for Owens pupfish would provide surrogate protection for species.
Sucker Springs pyrg	<i>Pyrgulopsis rupinicola</i>	None	None	Endemic to a single site in the Pit River basin.	Found in a large, cold spring outflow with slow to moderate current.	<b>Less than Significant.</b> Proposed restrictions for Shasta crayfish would provide surrogate protection for species.
San Luis Obispo pyrg	<i>Pyrgulopsis taylori</i>	None	None	Freshwater habitats in San Luis Obispo County.		<b>Less than Significant.</b> Specific habitat requirements not defined. Assumed to be similar to other <i>Pyrgulopsis</i> species. Proposed regulations which would restrict dredging within 3 feet of a streambank would likely preclude dredging in most suitable habitat.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
Wong's springsnail	<i>Pyrgulopsis wongi</i>	None	None	Owens Valley. Along east side from Pine Creek to Little Lake & along west side from French Spring to Marble Creek.	Seeps and small-moderate size spring-fed streams. Common in watercress and/or on small bits of travertine & stone.	<b>Less than Significant.</b> Suction dredging unlikely to occur in most suitable habitat (i.e., springs). Proposed restrictions for mountain sucker and mountain whitefish would minimize potential for impacts in springs along streams. Proposed regulations which would restrict dredging within 3 feet of a streambank would further reduce potential for impacts dredging. Residual impacts are not likely to result in a deleterious effect to species.
Warner Springs shoulderband	<i>Rothelix warnerfontis</i>	None	None	Known only from two localities near Warner Springs, San Diego Co.	Found in wood rat nests; as development eliminates rat nests, snail has become scarce.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Riverside fairy shrimp	<i>Streptocephalus woottoni</i>	FE	None	Endemic to W RIV, ORA & SDG counties in areas of tectonic swales/earth slump basins in grassland & coastal sage scrub.	Inhabit seasonally astatic pools filled by winter/spring rains. Hatch in warm water later in the season.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat. Proposed restrictions on dredging into streambanks would provide protection for species and their habitat.
Grady's Cave amphipod	<i>Stygobromus gradyi</i>	None	None	Known only from Central California.	Mostly found in caves, but one collection from a spring.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
						activities are not likely to impact reproduction or dispersal of species.
Hara's Cave amphipod	<i>Stygobromus harai</i>	None	None	Central California foothills.	Mostly found in caves & mine tunnels. Also taken from a spring	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Wengerors' Cave amphipod	<i>Stygobromus wengerorum</i>	None	None	Known only from two caves in Mariposa County.	Subterranean groundwater habitats.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Shasta chaparral	<i>Trilobopsis roperi</i>	None	None	Found within 100 meters of limestone outcroppings and talus slopes with some protective shade, or caves with shrubs or oak cover.		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
mimic tryonia (=California brackish water snail)	<i>Tryonia imitator</i>	None	None	Inhabits coastal lagoons, estuaries and salt marshes, from Sonoma County south to San Diego County.	Found only in permanently submerged areas in a variety of sediment types; able to withstand a wide range of salinities.	<b>Less than Significant.</b> Suction dredging highly unlikely to occur in suitable habitat.
Grapevine Springs elongate tryonia	<i>Tryonia margae</i>	None	None	Endemic to Grapevine Springs, Death Valley, Amargosa River basin,		<b>Less than Significant.</b> Suction dredging highly unlikely to occur in occupied habitat.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
				California		
Grapevine Springs squat tryonia	<i>Tryonia rowlandsi</i>	None	None	Endemic to springs in the Amargosa River basin		<b>Less than Significant.</b> Suction dredging highly unlikely to occur in occupied habitat.
Karok hesperian	<i>Vespericola karokorum</i>	None	None	Occurs primarily under riparian vegetation (alders, maples), which provide shading from sunlight and a moist substrate.	Inhabits leaf litter, wood debris, or soil & sand containing stones/pieces of wood; often found in large aggregations.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Marin hesperian	<i>Vespericola marinensis</i>	None	None	Found in moist spots in coastal brushfield and chaparral vegetation in Marin County.	Under leaves of cow-parship, around spring seeps, in leafmold along streams, in alder woods & mixed evergreen forest.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Big Bar hesperian	<i>Vespericola pressleyi</i>	None	None	Only found in Trinity County, within the boundaries of Shasta-Trinity National Forest.	Found in conifer or hardwood forests in permanently damp areas within 200 meters of stable streams, seeps, and springs.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.
Shasta hesperian	<i>Vespericola shasta</i>	None	None	Primarily found in the vicinity of Shasta Lake, up to 915 meters elevation.	Moist bottom lands such as riparian areas, springs, seeps, marshes, and in the mouths of caves.	<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.

**TABLE 4.3-2. OTHER FISH SPECIES**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Determination regarding effects of Proposed Program
Siskiyou hesperian	<i>Vespericola sierranus</i>	None	None	Found under logs in a swampy meadow in Siskiyou County		<b>Less than Significant.</b> Reproduction is terrestrial. Suction dredging and associated activities are not likely to impact reproduction or dispersal of species.

\* List of Abbreviations for Federal and State Species Status follow below:

- FC Federal candidate for listing
- FE Federal endangered
- FP State fully protected species
- FPT Federal proposed: threatened
- SSC State species of special concern
- FSC Federal species of concern (per NOAA or USFWS website)
- SCE State candidate: endangered
- SE State endangered
- SSC State species of special concern
- ST State threatened

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**TABLE 4.3-3. NON-FISH ANIMAL SPECIES WITH POTENTIALLY SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Potential for Significant Impact prior to Program Regulations	Level of Significance with Proposed Regulations
<b>Invertebrates</b>							
valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	None	Occurs only in the central valley of California, in association with blue elderberry ( <i>Sambucus mexicana</i> ).	Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries.	<b>Potentially Significant.</b> If left unrestricted, suction dredging would have the potential to disturb/destroy host plants (i.e., blue elderberry) by dredging into streambanks. This would cause loss of suitable or occupied habitat which may be potentially significant.	<b>Less than Significant.</b> Compliance with proposed regulations which restrict dredging within 3 feet of a streambank, and prohibit the damage or removal of streamside vegetation, would minimize the potential for disturbance/destruction of host plants. Ancillary activities such as access/egress to and from streams and camping are not likely to cause significant impacts to species or host plants.
<b>Birds</b>							
southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE	SE	Riparian woodlands in Southern California.		<b>Potentially Significant.</b> Species breeding activity generally extends from May through August (USFWS, 2002) <sup>1</sup> . If left unrestricted, suction dredging or ancillary activities would have the potential to disturb breeding and potentially cause nesting failure (See Impact BIO-WILD-2). If disturbance caused by	<b>Potentially Significant.</b> The Proposed Regulations, which include spatial and temporal restrictions on suction dredging, would provide surrogate protection for the vast majority of the USFWS designated critical habitat. Of the 17,212 acres of critical habitat in California, approximately 75% (nearly 13,000 acres) would be closed to dredging (Class A or E) during the nesting season, thereby limiting the potential

**TABLE 4.3-3. NON-FISH ANIMAL SPECIES WITH POTENTIALLY SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Potential for Significant Impact prior to Program Regulations	Level of Significance with Proposed Regulations
						suction dredging or ancillary activities resulted in nest abandonment and/or failure of the species to successfully reproduce, this would be considered a significant impact.	for impacts during the nesting season. However, dredging that may occur in unrestricted areas of the species range has the potential to disrupt nesting of the species. Therefore, the impact remains potentially significant.
least Bell's vireo	<i>Vireo bellii pusillus</i>	FE	SE	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. elevation.	Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	<b>Potentially Significant.</b> Species breeding activity generally extends from April through July (Wellik et al., 2009) <sup>2</sup> . If left unrestricted, suction dredging or ancillary activities would have the potential to disturb breeding and potentially cause nesting failure (See Impact BIO-WILD-2). If disturbance caused by suction dredging or ancillary activities resulted in nest abandonment and/or failure of the species to successfully reproduce, this would be	<b>Potentially Significant.</b> The Proposed Regulations, which include spatial and temporal restrictions on suction dredging, would provide surrogate protection for the majority of the USFWS designated critical habitat. Of the 36,988 acres of critical habitat in California, approximately 58% (more than 20,000 acres) would be closed to dredging (Class A or E) during the nesting season, thereby limiting the potential for impacts during the nesting season. However, dredging that may occur in unrestricted areas of the species range has the potential to disrupt nesting of the species. Therefore, the impact remains potentially significant.



**TABLE 4.3-3. NON-FISH ANIMAL SPECIES WITH POTENTIALLY SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Potential for Significant Impact prior to Program Regulations	Level of Significance with Proposed Regulations
						considered a significant impact.	
western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	FC	SE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	Nests in riparian jungles of willow, often mixed with cottonwoods, w/ lower story of blackberry, nettles, or wild grape.	<b>Potentially Significant.</b> In California, stable breeding populations (i.e., greater than five pairs which persist every year) are currently limited to the Sacramento River from Red Bluff to Colusa, and the South Fork Kern River from Isabella Reservoir to Canebroke Ecological Reserve (Layman, 1998) <sup>3</sup> . Species breeding activity generally extends from June through mid-September; peak nesting activity on the South Fork Kern River occurs in the first half of July (Layman, 1998) <sup>3</sup> . If left unrestricted, suction dredging or ancillary activities would have the potential to disturb breeding and	<b>Potentially Significant.</b> The Proposed Regulations include spatial and temporal restrictions on suction dredging. Much of the known breeding habitat for species along the Sacramento and South Fork Kern River would be open to dredging from July 1 through September 30 (Class F). This restriction would not limit potential impacts during the species' nesting season. The level of activity anticipated to occur in breeding habitat on the Sacramento River is not anticipated to result in a significant impact. The level of activity anticipated to occur in breeding habitat on the South Fork Kern River is not known. Therefore, the impact remains potentially significant.

**TABLE 4.3-3. NON-FISH ANIMAL SPECIES WITH POTENTIALLY SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Potential for Significant Impact prior to Program Regulations	Level of Significance with Proposed Regulations
						potentially cause nesting failure (See Impact BIO-WILD-2). If disturbance caused by suction dredging or ancillary activities resulted in nest abandonment and/or failure of the species to successfully reproduce, this would be considered a significant impact.	
little willow flycatcher	<i>Empidonax traillii brewsteri</i>	FSC	SE	Mountain meadows and riparian habitats in the Sierra Nevada and Cascades.	Nests near the edges of vegetation clumps and near streams.	<b>Potentially Significant.</b> Species' breeding activity in the Sierra Nevada generally extends from late May through August. If left unrestricted, suction dredging or ancillary activities would have the potential to disturb breeding and potentially cause nesting failure (See Impact BIO-WILD-2). If disturbance caused by suction dredging or ancillary activities resulted in nest abandonment and/or	<b>Potentially Significant.</b> Under the Proposed Regulations significant portions of the species range would be open to suction dredging during the nesting season. Suction dredging activity may occur in occupied breeding habitat. Therefore, the impact remains potentially significant.
willow flycatcher	<i>Empidonax traillii</i>	None	SE	Inhabits extensive thickets of low, dense willows on edge of wet meadows, ponds, or backwaters; 2000-8000 ft elevation.	Requires dense willow thickets for nesting/roosting. Low, exposed branches are used for singing posts/hunting perches.		

**TABLE 4.3-3. NON-FISH ANIMAL SPECIES WITH POTENTIALLY SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Potential for Significant Impact prior to Program Regulations	Level of Significance with Proposed Regulations
						failure of the species to successfully reproduce, this would be considered a significant impact.	
Swainson's hawk	<i>Buteo swainsoni</i>	None	ST	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees.	Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	<b>Potentially Significant.</b> Species breeding activity generally extends from April through July. If left unrestricted, suction dredging or ancillary activities would have the potential to disturb breeding and potentially cause nesting failure (See Impact BIO-WILD-3). If disturbance caused by suction dredging or ancillary activities resulted in nest abandonment and/or failure of the species to successfully reproduce, this would be considered a significant impact.	<b>Less than Significant.</b> In California 95% of Swainson's Hawks are in the Central Valley (CDFG, 2005) <sup>4</sup> and about 85% of Swainson's Hawks nests in the Central Valley are within riparian forest or remnant riparian trees (Woodbridge, 1998) <sup>5</sup> . The vast majority of nesting occurs from Tehama County south to Tulare and Kings Counties. The greatest density of nests occur in Contra Costa, Colusa, Sacramento, San Joaquin, Solano, Sutter, Yolo counties and portions of northeastern Siskiyou county (CDFG, 2005) <sup>4</sup> . Nearly all nesting habitat would be closed to suction dredging through June or July (Class C or F). In the Central Valley, young have fledged by mid-June and are relatively safe without parental protection (CDFG, 2000) <sup>6</sup> ; nest failure would be unlikely. Furthermore, dredging activity

**TABLE 4.3-3. NON-FISH ANIMAL SPECIES WITH POTENTIALLY SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Potential for Significant Impact prior to Program Regulations	Level of Significance with Proposed Regulations
							in the Central Valley and other portions of the species breeding range is not anticipated to be common or widespread. Therefore, impacts are likely to be less than significant.
bank swallow	<i>Riparia riparia</i>	None	ST	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert.	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	<b>Potentially Significant.</b> Species nests in streambanks. Breeds from early May through July, with peak activity from mid-May to mid-June (Garrison, 1999) <sup>7</sup> . If left unrestricted, suction dredging would have the potential to disturb/destroy nests by dredging into streambanks. This would cause loss of suitable or occupied habitat which may be potentially significant. If disturbance caused by suction dredging or ancillary activities resulted in nest abandonment and/or failure of the species to successfully reproduce, this would be	<b>Less than Significant.</b> Major breeding is confined to the Sacramento and Feather rivers and their major tributaries north of their confluence. Other relatively large breeding populations of several colonies occur in: (1) Scott River, Siskiyou County; (2) Cache Creek, Yolo County; (3) Pit River, Shasta and Lassen counties; (4) American River, Sacramento County; (5) Cosumnes River, Sacramento County; (6) Salinas River, Monterey County; (7) Fall River, Shasta County; (8) Hat Creek and Lake Briton area, Shasta County; (9) Susan River and Baxter Creek, Lassen County; (10) Tule and Lower Klamath Lake area, Siskiyou and Modoc counties; (11) Clear Lake Reservoir, Modoc County; (12) Indian Creek, Plumas County; (13) Long Valley Creek, Lassen

**TABLE 4.3-3. NON-FISH ANIMAL SPECIES WITH POTENTIALLY SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat	Potential for Significant Impact prior to Program Regulations	Level of Significance with Proposed Regulations
						considered a significant impact.	County; and (14) Bishop area, Inyo County (Garrison, 1998) <sup>8</sup> . Much of the species nesting habitat, including the mainstem Sacramento and Feather Rivers, would be closed to dredging during the peak nesting season. Proposed regulations which prohibit dredging within 3 feet of a streambank would further minimize the potential for disturbance/destruction of nests. Residual impacts from ancillary activities such as access/egress to and from streams and camping are not likely to cause significant impacts to species.

\* List of Abbreviations for Federal and State Species Status follow below:

- FC* Federal candidate for listing
- FE* Federal endangered
- FP* State fully protected species
- FPT* Federal proposed: threatened
- SSC* State species of special concern
- FSC* Federal species of concern (per NOAA or USFWS website)
- SCE* State candidate: endangered
- SE* State endangered
- SSC* State species of special concern
- ST* State threatened

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**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
<b>Amphibians</b>					
Couch's spadefoot	<i>Scaphiopus couchii</i>	None	SSC	Temporary desert rainpools that last a least 7 days, with water temps > 15 C & with subterranean refuge sites close by.	An insect food base especially termites must be available.
<b>Birds</b>					
Cooper's hawk	<i>Accipiter cooperii</i>	None	WL	Woodland, chiefly of open, interrupted or marginal type.	Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.
northern goshawk	<i>Accipiter gentilis</i>	None	SSC	Within, and in vicinity of, coniferous forest. Uses old nests, and maintains alternate sites.	Usually nests on north slopes, near water. Red fir, lodgepole pine, Jeffrey pine, and aspens are typical nest trees.
sharp-shinned hawk	<i>Accipiter striatus</i>	None	WL	Ponderosa pine, black oak, riparian deciduous, mixed conifer & Jeffrey pine habitats. Prefers riparian areas.	North-facing slopes, with plucking perches are critical requirements. Nests usually within 275 ft of water.
tricolored blackbird	<i>Agelaius tricolor</i>	None	SSC	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California.	Requires open water, protected nesting substrate, & foraging area with insect prey within a few km of the colony.
southern California rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	None	WL	Resident in Southern California coastal sage scrub and sparse mixed chaparral.	Frequents relatively steep, often rocky hillsides with grass & forb patches.
grasshopper sparrow	<i>Ammodramus savannarum</i>	None	SSC	Dense grasslands on rolling hills, lowland plains, in valleys & on hillsides on lower mountain slopes.	Favors native grasslands with a mix of grasses, forbs & scattered shrubs. Loosely colonial when nesting.
Bell's sage sparrow	<i>Amphispiza belli belli</i>	None	WL	Nests in chaparral dominated by fairly dense stands of chamise.	Nest located on the ground beneath a shrub or in a shrub 6-18 inches

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
				Found in coastal sage scrub in south of range.	above ground. Territories about 50 yds apart.
golden eagle	<i>Aquila chrysaetos</i>	None	WL, FP	Rolling foothills, mountain areas, sage-juniper flats, & desert.	Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.
great egret	<i>Ardea alba</i>	None	None	Colonial nester in large trees.	Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.
great blue heron	<i>Ardea herodias</i>	None	None	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes.	Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.
short-eared owl	<i>Asio flammeus</i>	None	SSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields.	Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.
long-eared owl	<i>Asio otus</i>	None	SSC	Riparian bottomlands grown to tall willows & cottonwoods; also, belts of live oak paralleling stream courses.	Require adjacent open land productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.
burrowing owl	<i>Athene cunicularia</i>	None	SSC	Open, dry annual or perennial grasslands, deserts & scrublands characterized by low-growing vegetation.	Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.
ruffed grouse	<i>Bonasa umbellus</i>	None	WL	Extreme northern humid coastal strip, in Del Norte, Humboldt, and Siskiyou Counties.	Inhabits dense canyon-bottom or stream-side growths, usually of mixed deciduous and coniferous trees.



TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 3 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
marbled murrelet	<i>Brachyramphus marmoratus</i>	FT	SE	Feeds near-shore; nests inland along coast from Eureka to Oregon border & from Half Moon Bay to Santa Cruz.	Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.
cackling (=Aleutian Canada) goose	<i>Branta hutchinsii leucopareia</i>	Delisted	None	Winters on lakes and inland prairies.	Forages on natural pasture or that cultivated to grain; loafs on lakes, reservoirs, ponds.
ferruginous hawk	<i>Buteo regalis</i>	None	WL	Open grasslands, sagebrush flats, desert scrub, low foothills & fringes of pinyon-juniper habitats.	Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.
Costa's hummingbird	<i>Calypte costae</i>	None	None	Desert riparian, desert and arid scrub foothill habitats.	
coastal cactus wren	<i>Campylorhynchus brunneicapillus sandiegensis</i>	None	SSC	Southern California coastal sage scrub.	Wrens require tall opuntia cactus for nesting and roosting.
northern cardinal	<i>Cardinalis cardinalis</i>	None	WL	Extremely rare resident along the Colorado River.	Dense brushy river bottom thickets, well-vegetated dry washes & dense desert scrub.
greater sage-grouse	<i>Centrocercus urophasianus</i>	None	SSC	Found in the northeastern, Great Basin portion of state.	Restricted to flat/rolling terrain vegetated by sage-brush, upon which it depends for both food and shelter.
rhinoceros auklet	<i>Cerorhinca monocerata</i>	None	WL	Off-shore islands and rocks along the California coast.	Nests in a burrow on undisturbed, forested and unforested islands, and probably in cliff caves on the mainland.
western snowy plover	<i>Charadrius alexandrinus nivosus</i>	FT	SSC	Sandy beaches, salt pond levees & shores of large alkali lakes.	Needs sandy, gravelly or friable soils for nesting.
mountain plover	<i>Charadrius montanus</i>	Proposed FT	SSC	Short grasslands, freshly plowed fields, newly sprouting grain fields, &	Short vegetation, bare ground & flat topography. Prefers grazed areas &

TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 4 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
				sometimes sod farms	areas with burrowing rodents.
northern harrier	<i>Circus cyaneus</i>	None	SSC	Coastal salt & fresh-water marsh. Nest & forage in grasslands, from salt grass in desert sink to mountain cienagas.	Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.
gilded flicker	<i>Colaptes chrysoides</i>	None	SE	Sonoran desert habitat and riparian woodlands along the Colorado River.	Uses willows, cottonwood, tree yucca and, when available, saguaro cactus.
yellow rail	<i>Coturnicops noveboracensis</i>	None	SSC	Summer resident in eastern Sierra Nevada in Mono County.	Fresh-water marshlands.
black swift	<i>Cypseloides niger</i>	None	SSC	Coastal belt of Santa Cruz & Monterey Co; central & southern Sierra Nevada; San Bernardino & San Jacinto Mountains.	Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above the surf; forages widely.
fulvous whistling-duck	<i>Dendrocygna bicolor</i>	None	SSC	Fresh-water marsh.	Tule/cattail marsh.
yellow warbler	<i>Dendroica petechia brewsteri</i>	None	SSC	Riparian plant associations. Prefers willows, cottonwoods, aspens, sycamores, & alders for nesting & foraging.	Also nests in montane shrubbery in open conifer forests.
Sonoran yellow warbler	<i>Dendroica petechia sonorana</i>	None	SSC	Summer resident of Colorado River Valley, in riparian deciduous habitat. Below 600 ft elevation.	Inhabits cottonwoods and willows, particularly the crown foliage; nests in understory, usually 2-16 ft above ground.
snowy egret	<i>Egretta thula</i>	None	None	Colonial nester, with nest sites situated in protected beds of dense tules.	Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.
white-tailed kite	<i>Elanus leucurus</i>	None	FP	Rolling foothills and valley margins with scattered oaks & river	Open grasslands, meadows, or marshes for foraging close to

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
				bottomlands or marshes next to deciduous woodland.	isolated, dense-topped trees for nesting and perching.
California horned lark	<i>Eremophila alpestris actia</i>	None	WL	Coastal regions, chiefly from Sonoma Co. to San Diego Co. Also main part of San Joaquin Valley & east to foothills.	Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.
merlin	<i>Falco columbarius</i>	None	WL	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches.	Clumps of trees or windbreaks are required for roosting in open country.
prairie falcon	<i>Falco mexicanus</i>	None	WL	Inhabits dry, open terrain, either level or hilly.	Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.
American peregrine falcon	<i>Falco peregrinus anatum</i>	Delisted	Delisted, FP	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures.	Nest consists of a scrape or a depression or ledge in an open site.
tufted puffin	<i>Fratercula cirrhata</i>	None	SSC	Open-ocean bird; nests along the coast on islands, islets, or (rarely) mainland cliffs.	Requires sod or earth into which the birds can burrow, on island cliffs or grassy island slopes.
gull-billed tern	<i>Gelochelidon nilotica</i>	None	SSC	Only known breeding colonies in Imperial & Riverside Counties.	Nests on low, sandy islets. Known to feed on fishes at mouth of Colorado River and on grasshoppers in alfalfa fields.
saltmarsh common yellowthroat	<i>Geothlypis trichas sinuosa</i>	None	SSC	Resident of the San Francisco Bay region, in fresh and salt water marshes.	Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.
lesser sandhill crane	<i>Grus canadensis canadensis</i>	None	SSC		

TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 6 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
greater sandhill crane	<i>Grus canadensis tabida</i>	None	ST, FP	Nests in wetland habitats in northeastern California; winters in the Central Valley.	Prefers grain fields within 4 mi of a shallow body of water used as a communal roost site; irrigated pasture used as loafing sites
California condor	<i>Gymnogyps californianus</i>	FE	SE	Require vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude.	Deep canyons containing clefts in the rocky walls provide nesting sites. forages up to 100 miles from roost/nest.
bald eagle	<i>Haliaeetus leucocephalus</i>	Delisted	SE, FP	Ocean shore, lake margins, & rivers for both nesting & wintering. Most nests within 1 mi of water.	Nests in large, old-growth, or dominant live tree w/open branches, especially ponderosa pine. Roosts communally in winter.
harlequin duck	<i>Histrionicus histrionicus</i>	None	SSC	Breeds on west slope of the Sierra Nevada, nesting along shores of swift, shallow rivers.	Nest often built in a recess, sheltered overhead by stream bank, rocks, woody debris, usually within 7 ft of water.
Caspian tern	<i>Hydroprogne caspia</i>	None	None	Nests on sandy or gravelly beaches and shell banks in small colonies inland and along the coast.	Inland fresh-water lakes and marshes; also, brackish or salt waters of estuaries and bays.
yellow-breasted chat	<i>Icteria virens</i>	None	SSC	Summer resident; inhabits riparian thickets of willow & other brushy tangles near watercourses.	Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft of ground.
least bittern	<i>Ixobrychus exilis</i>	None	SSC	Colonial nester in marshlands and borders of ponds and reservoirs which provide ample cover.	Nests usually placed low in tules, over water.
gray-headed junco	<i>Junco hyemalis caniceps</i>	None	WL	Summer resident of Clark Mountain (eastern San Bernardino County) & Grapevine Mtns (Inyo County).	Inhabits white fir association at 7300 ft (Clark Mountain); also, from dense pinyons above 6700 ft (Grapevine

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
					Mountains).
loggerhead shrike	<i>Lanius ludovicianus</i>	None	SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, & riparian woodlands, desert oases, scrub & washes.	Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.
California gull	<i>Larus californicus</i>	None	WL	Littoral waters, sandy beaches, waters & shorelines of bays, tidal mud-flats, marshes, lakes, etc.	Colonial nester on islets in large interior lakes, either fresh or strongly alkaline.
California black rail	<i>Laterallus jamaicensis coturniculus</i>	None	ST	Inhabits freshwater marshes, wet meadows & shallow margins of saltwater marshes bordering larger bays.	Needs water depths of about 1 inch that does not fluctuate during the year & dense vegetation for nesting habitat.
Gila woodpecker	<i>Melanerpes uropygialis</i>	None	SE	In California, inhabits cottonwoods and other desert riparian trees, shade trees, and date palms.	Cavity nester in riparian trees or saguaro cactus.
Suisun song sparrow	<i>Melospiza melodia maxillaris</i>	None	SSC	Resident of brackish-water marshes surrounding Suisun Bay.	Inhabits cattails, tules and other sedges, and Salicornia; also known to frequent tangles bordering sloughs.
Alameda song sparrow	<i>Melospiza melodia pusillula</i>	None	SSC	Resident of salt marshes bordering south arm of San Francisco Bay.	Inhabits Salicornia marshes; nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia.
San Pablo song sparrow	<i>Melospiza melodia samuelis</i>	None	SSC	Resident of salt marshes along the north side of San Francisco and San Pablo bays.	Inhabits tidal sloughs in the Salicornia marshes; nests in Grindelia bordering slough channels.
wood stork	<i>Mycteria americana</i>	None	SSC	Freshwater and saltwater sloughs, lagoons, shallow ponds and marshes.	
brown-crested flycatcher	<i>Myiarchus tyrannulus</i>	None	WL	Inhabits desert riparian along Colorado River, as well as other	Requires riparian thickets, trees, snags, and shrubs for foraging

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
				desert oases & riparian area NW to Victorville.	perches, nesting cavities, and cover.
black-crowned night heron	<i>Nycticorax nycticorax</i>	None	None	Colonial nester, usually in trees, occasionally in tule patches.	Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.
fork-tailed storm-petrel	<i>Oceanodroma furcata</i>	None	SSC	Colonial nester on small, offshore islets. Forages over the open ocean, usually well off-shore.	Birds choose off-shore islets which provide nesting crannies beneath rocks or sod for burrowing.
ashy storm-petrel	<i>Oceanodroma homochroa</i>	None	SSC	Colonial nester on off-shore islands. Usually nests on driest part of islands. Forages over open ocean.	Nest sites on islands are in crevices beneath loosely piled rocks or driftwood, or in caves.
osprey	<i>Pandion haliaetus</i>	None	WL	Ocean shore, bays, fresh-water lakes, and larger streams.	Large nests built in tree-tops within 15 miles of a good fish-producing body of water.
Harris' hawk	<i>Parabuteo unicinctus</i>	None	WL	Was in lower Colorado River & Imperial Valley in riparian forests of cottonwoods near mesquite thickets.	Deciduous woods and adjacent open ground, of river or delta bottomlands.
Belding's savannah sparrow	<i>Passerculus sandwichensis beldingi</i>	None	SE	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County.	Nests in Salicornia on and about margins of tidal flats.
large-billed savannah sparrow	<i>Passerculus sandwichensis rostratus</i>	None	SSC	Breeds along the Colorado River delta in Mexico; winters at the Salton Sea.	Saline emergent wetlands at the Salton Sea and southern coast.
American white pelican	<i>Pelecanus erythrorhynchos</i>	None	SSC	Colonial nester on large interior lakes.	Nests on large lakes, providing safe roosting and breeding places in the form of well-sequestered islets.
California brown pelican	<i>Pelecanus occidentalis californicus</i>	Delisted	Delisted, FP	Colonial nester on coastal islands just outside the surf line.	Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
					predators. Roosts communally.
double-crested cormorant	<i>Phalacrocorax auritus</i>	None	None	Colonial nester on coastal cliffs, offshore islands, & along lake margins in the interior of the state.	Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.
hepatic tanager	<i>Piranga flava</i>	None	WL	White fir-pinyon forest on desert peaks, 5300-8100 ft elev. Understory of xerophytic shrubs.	
summer tanager	<i>Piranga rubra</i>	None	SSC	Summer resident of desert riparian along lower Colorado River, & locally elsewhere in California deserts.	Requires cottonwood-willow riparian for nesting and foraging; prefers older, dense stands along streams.
white-faced ibis	<i>Plegadis chihi</i>	None	WL	Shallow fresh-water marsh.	Dense tule thickets for nesting interspersed with areas of shallow water for foraging.
black-capped chickadee	<i>Poecile atricapillus</i>	None	WL	Inhabits riparian woodlands in Del Norte and northern Humboldt Counties.	Mainly found in deciduous tree-types, especially willows and alders, along large or small watercourses.
coastal California gnatcatcher	<i>Polioptila californica californica</i>	FT	SSC	Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California.	Low, coastal sage scrub in arid washes, on mesas & slopes. Not all areas classified as coastal sage scrub are occupied.
black-tailed gnatcatcher	<i>Polioptila melanura</i>	None	None	Primarily inhabits wooded desert wash habitats; also occurs in desert scrub habitat, especially in winter.	Nests in desert washes containing mesquite, paloverde, ironwood, acacia; absent from areas where salt cedar introduced.
mardon skipper	<i>Polites mardon</i>	FC	None	Known from western Washington State and extreme northwestern Del Norte Co.	

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
purple martin	<i>Progne subis</i>	None	SSC	Inhabits woodlands, low elevation coniferous forest of Douglas-fir, ponderosa pine, & Monterey pine.	Nests in old woodpecker cavities mostly, also in human-made structures. Nest often located in tall, isolated tree/snag.
vermilion flycatcher	<i>Pyrocephalus rubinus</i>	None	SSC	During nesting, inhabits desert riparian adjacent to irrigated fields, irrigation ditches, pastures, & other open, mesic areas	Nest in cottonwood, willow, mesquite, and other large desert riparian trees.
light-footed clapper rail	<i>Rallus longirostris levipes</i>	FE	SE, FP	Found in salt marshes traversed by tidal sloughs, where cordgrass and pickleweed are the dominant vegetation.	Requires dense growth of either pickleweed or cordgrass for nesting or escape cover; feeds on molluscs and crustaceans.
California clapper rail	<i>Rallus longirostris obsoletus</i>	FE	SE, FP	Salt-water & brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay.	Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	FE	ST, FP	Nests in fresh-water marshes along the Colorado River and along the south and east ends of the Salton Sea.	Prefers stands of cattails and tules dissected by narrow channels of flowing water; principle food is crayfish.
black skimmer	<i>Rynchops niger</i>	None	SSC	Nests on gravel bars, low islets, and sandy beaches, in unvegetated sites. Nesting colonies usually less than 200 pairs.	
Brewer's sparrow	<i>Spizella breweri</i>	None	None	East of Cascade-Sierra Nevada crest, mountains & high valleys of Mojave Desert & mountains at south end of San Joaquin Valley	For nesting they prefer high sagebrush plains, slopes & valley with Great Basin sagebrush & antelope brush.



**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
California least tern	<i>Sternula antillarum browni</i>	FE	SE, FP	Nests along the coast from San Francisco Bay south to northern Baja California.	Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, land fills, or paved areas.
great gray owl	<i>Strix nebulosa</i>	None	SE	Resident of mixed conifer or red fir forest habitat, in or on edge of meadows.	Requires large diameter snags in a forest with high canopy closure, which provide a cool sub-canopy microclimate.
Bendire's thrasher	<i>Toxostoma bendirei</i>	None	SSC	Migratory; local spring/summer resident in flat areas of desert succulent shrub/Joshua tree habitats in Mojave Desert.	Nests in cholla, yucca, paloverde, thorny shrub, or small tree, usually 0.5 to 20 feet above ground.
Crissal thrasher	<i>Toxostoma crissale</i>	None	SSC	Resident of southeastern deserts in desert riparian and desert wash habitats.	Nests in dense vegetation along streams/washes; mesquite, screwbean mesquite, ironwood, catclaw, acacia, arrowweed, and willow.
Le Conte's thrasher	<i>Toxostoma lecontei</i>	None	SSC	Desert resident; primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats.	Commonly nests in a dense, spiny shrub or densely branched cactus in desert wash habitat, usually 2-8 feet above ground.
Lucy's warbler	<i>Vermivora luciae</i>	None	SSC	Lower Colorado River Valley & the washes & arroyos emptying into it.	Partial to thickets of mesquite, riparian scrub & even stands of tamarisk.
Virginia's warbler	<i>Vermivora virginiae</i>	None	WL	East slope of Southern Sierra Nevada, in arid, shrubby, mixed-conifer, pinyon-juniper, montane-chaparral. 7000-9000 ft	Nests on arid slopes w/ stands of tall shrubs/scattered trees; also, riparian thickets of willow/wild rose along streams.

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Arizona bell's vireo	<i>Vireo bellii arizonae</i>	None	SE	Summer resident along Colorado River. Chiefly inhabits willow thickets with undergrowth of <i>Baccharis glutinosa</i>	Nests in willow, mesquite, or other small tree/shrub, within 8 ft (usually 2-3 ft) of ground.
gray vireo	<i>Vireo vicinior</i>	None	SSC	Dry chaparral; west of desert, in chamise-dominated habitat; mountains of Mojave Desert, associated with juniper & <i>Artemisia</i> .	Forage, nest, and sing in areas formed by a continuous growth of twigs, 1-5 ft above ground.
yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	None	SSC	Nests in freshwater emergent wetlands with dense vegetation & deep water. Often along borders of lakes or ponds.	Nests only where large insects such as Odonata are abundant, nesting timed with maximum emergence of aquatic insects.
<b>Invertebrates</b>					
Oso Flaco robber fly	<i>Ablautus schlingeri</i>	None	None	Sand dunes.	
Opler's longhorn moth	<i>Adela oplerella</i>	None	None	From Marin County & the Oakland area on the inner coast ranges south to Santa Clara County. One record from Santa Cruz County.	All but Santa Cruz site is on serpentine grassland. Larve feed on <i>Platystemon californicus</i> .
Ciervo aegilian scarab beetle	<i>Aegialia concinna</i>	None	None	Known only from Fresno County in sandy substrates.	
Death Valley agabus diving beetle	<i>Agabus rumppi</i>	None	None	Known only from Carson Slough which drains Ash Meadows; 2200 ft elevation.	Appears to inhabit either the very edges or the extreme depths.
Kelso jerusalem cricket	<i>Ammopelmatus kelsoensis</i>	None	None	Inhabits a limited area of the Kelso Dunes (type locality), San Bernardino County.	Found at the north base of a sand declivity, 15-25 ft high; assoc plants: sandpaper weed, croton, sand dune grass.
Andrena macswaini	<i>An andrenid bee</i>	None	None	This bee is oligolectic on morning-opening, yellow-flowered spp of	Nests in deep, sandy soil; the only species in the subgenus <i>Diandrena</i>

TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 13 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
				Camissonia.	with aggregated nests associated with depressions.
Blennosperma vernal pool andrenid bee	<i>Andrena blennospermatis</i>	None	None	This bee is oligolectic on vernal pool blennosperma.	Bees nest in the uplands around vernal pools.
A vernal pool andrenid bee	<i>Andrena subapasta</i>	None	None	Collects pollen primarily from <i>Arenaria californica</i> but also <i>Orthocarpus erianthus</i> & <i>Lasthenia</i> sp.	Nests in uplands near vernal pools.
Carlson's dune beetle	<i>Anomala carlsoni</i>	None	None	Known primarily from creosote scrub in vicinity of Algodones Dunes, Imperial County. Also taken from Borrego, San Diego County.	Host preferences unknown.
Antioch Dunes anthicid beetle	<i>Anthicus antiochensis</i>	None	None	Extirpated from Antioch Dunes but present in several localities along the Sacramento and Feather rivers.	
Sacramento anthicid beetle	<i>Anthicus sacramento</i>	None	None	Restricted to sand dune areas.	Inhabit sand slipfaces among bamboo and willow but may not depend on presence of these plant species.
Grubbs' Cave pseudoscorpion	<i>Aphrastochthonius grubbsi</i>	None	None		
Lange's metalmark butterfly	<i>Apodemia mormo langei</i>	FE	None	Inhabits stabilized dunes along the San Joaquin River. Endemic to Antioch Dunes, Contra Costa County.	Primary host plant is <i>Eriogonum nudum</i> var <i>auriculatum</i> ; feeds on nectar of other wildflowers, as well as host plant.
Oso Flaco flightless moth	<i>Areniscythis brachypteris</i>	None	None	Open, coastal sand dune slopes in San Luis Obispo County.	Larvae live in tubes attached to buried, green parts of plants at the margin of the active, moving sand

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
					dunes.
Wawona riffle beetle	<i>Atractelmis wawona</i>	None	None	Aquatic; found in riffles of rapid, small to medium clear mountain streams; 2000-5000 ft elevation.	Strong preference for inhabiting submerged aquatic mosses.
Galile's cave harvestman	<i>Banksula galilei</i>	None	None	Known only from the type locality, lime rock caves, El Dorado County.	Species is troglobitic.
Grubbs' cave harvestman	<i>Banksula grubbsi</i>	None	None	Known only from the type locality, Black Chasm Cave, Volcano, Amador County.	Species is troglobitic.
Martins' cave harvestman	<i>Banksula martinorum</i>	None	None	Known only from the type locality, Heater Cave, 8 km north of Columbia.	Species is troglobitic.
Melones Cave harvestman	<i>Banksula melones</i>	None	None	Limestone caves in the vicinity of New Melones Reservoir on the Stanislaus River, Calaveras/Tuolumne Counties.	Cave temps range from 14-16 degrees C; humidity, from 82-97%. Found under rocks or wandering on floor or walls.
Rudolph's cave harvestman	<i>Banksula rudolphi</i>	None	None	Known only from the type locality, Chrome Cave, Pardee Reservoir, Amador County.	Species is troglobitic.
Tuolumne cave harvestman	<i>Banksula tuolumne</i>	None	None	Known only from the type locality, Tuolumne Crystal Cave, Tuolumne, Tuolumne County.	Species is troglobitic.
King Tut Cave harvestman	<i>Banksula tutankhamen</i>	None	None	Known only from the type locality, King Tut Cave, Calaveras County.	Species is troglobitic.
Saratoga Springs belostoman bug	<i>Belostoma saratogae</i>	None	None	Known only from Saratoga Spring in Death Valley, San Bernardino County.	Inhabits the hot spring pool and inlet/outlet channels; have been collected year-round.
Belkin's dune tabanid fly	<i>Brennania belkini</i>	None	None	Inhabits coastal sand dunes of Southern California.	

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
San Benito harvestman	<i>Calicina arida</i>	None	None	Known only from the type locality, Panoche Road, San Benito County.	Found on serpentine rocks.
Stanislaus harvestman	<i>Calicina breva</i>	None	None	Known only from the type locality, 1.6 km south of Knight's Ferry, Stanislaus County.	Found under basalt rocks in grassland.
Clough Cave harvestman	<i>Calicina cloughensis</i>	None	None	Known only from the type locality, Clough Cave.	
Crane Flat harvestman	<i>Calicina conifera</i>	None	None	Known only from Crane Flat Junction, Tuolumne County. Known only from the holotype male and two female paratypes.	Found under fallen bark in a mixed coniferous forest.
marbled harvestman	<i>Calicina macula</i>	None	None	Known only from the type locality, 14.5 km (9 miles) SE of Academy, Fresno County. Known only from the type series.	Serpentine endemic.
Table Mountain harvestman	<i>Calicina mesaensis</i>	None	None	Known only from the type locality, Table Mountain, Fresno County. Known only from the type series.	
Edgewood blind harvestman	<i>Calicina minor</i>	None	None	Open grassland in areas of serpentine bedrock.	Found on the underside of moist serpentine rocks near permanent springs.
Piedra harvestman	<i>Calicina piedra</i>	None	None	Known only from the type locality, 2.6 km SW of Piedra, Fresno County. Known only from the type series.	Found under unspecified type of rocks.
Briggs' leptonetid spider	<i>Calileptoneta briggsi</i>	None	None	Known only from the type locality, Indian Valley Creek Cave, and nearby Butter Creek Cave, Trinity County.	Troglobitic species.
Ubick's leptonetid spider	<i>Calileptoneta ubicki</i>	None	None	Known only from the type locality, Arroyo Seco, Monterey County.	

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Page 16 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Mendocino leptonetid spider	<i>Calileptoneta wapiti</i>	None	None	Known only from the type locality, Elk, and nearby sites in Mendocino County.	
San Bruno elfin butterfly	<i>Callophrys mossii bayensis</i>	FE	None	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County.	Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is <i>Sedum spathulifolium</i> .
Marin elfin butterfly	<i>Callophrys mossii marinensis</i>	None	None	Found only in the redwood forest areas of Marin County.	Larvae collected and reared on <i>Sedum spathulifolium</i>
Thorne's hairstreak	<i>Callophrys thornei</i>	None	None	Associated with the endemic tectate cypress ( <i>Cupressus forbesii</i> ).	Only known from vicinity of Otay Mountain.
Lake Tahoe benthic stonefly	<i>Capnia lacustra</i>	None	None	Endemic to Lake Tahoe. Found at depths of 95-400 ft.	Associated with deepwater plant communities of algae, mosses & liverworts.
Sonoma arctic skipper	<i>Carterocephalus palaemon magnus</i>	None	None	Redwood forest.	Most specimens collected in deep shade or at the edge of forested clearings.
Bradley's cuckoo wasp	<i>Ceratochrysis bradleyi</i>	None	None		
Piute Mountains cuckoo wasp	<i>Ceratochrysis gracilis</i>	None	None	Known only from the holotype female.	
A cuckoo wasp	<i>Ceratochrysis longimala</i>	None	None		
Menke's cuckoo wasp	<i>Ceratochrysis menkei</i>	None	None		
Leech's chaetarthrian water scavenger beetle	<i>Chaetarthria leechi</i>	None	None	Aquatic; known only from Hayfork Creek, Trinity County.	

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Page 17 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Oso Flaco patch butterfly	<i>Chlosyne leanira elegans</i>	None	None	Sand dune habitat around Oso Flaco Lake, San Luis Obispo County.	Distribution corresponds to its foodplant, <i>Castilleja affinis</i> .
Tulare cuckoo wasp	<i>Chrysis tularensis</i>	None	None		
western tidal-flat tiger beetle	<i>Cicindela gabbii</i>	None	None	Inhabits estuaries and mudflats along the coast of Southern California.	Generally found on dark-colored mud in the lower zone; occasionally found on dry saline flats of estuaries.
sandy beach tiger beetle	<i>Cicindela hirticollis grvida</i>	None	None	Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico.	Clean, dry, light-colored sand in the upper zone. Subterranean larvae prefer moist sand not affected by wave action.
western beach tiger beetle	<i>Cicindela latesignata latesignata</i>	None	None	Mudflats and beaches in coastal Southern California.	
Ohlone tiger beetle	<i>Cicindela ohlone</i>	FE	None	Remnant native grasslands with California oatgrass & purple needlegrass in Santa Cruz County.	Substrate is poorly-drained clay or sandy clay soil over bedrock of Santa Cruz mudstone.
senile tiger beetle	<i>Cicindela senilis frosti</i>	None	None	Inhabits marine shoreline, from Central California coast south to salt marshes of San Diego. Also found at Lake Elsinore.	Inhabits dark-colored mud in the lower zone and dried salt pans in the upper zone.
San Joaquin tiger beetle	<i>Cicindela tranquebarica ssp.</i>	None	None	Known only from Tulare and Kings Counties.	
greenest tiger beetle	<i>Cicindela tranquebarica viridissima</i>	None	None	Inhabits the woodlands adjacent to the Santa Ana River basin.	Usually found in open spots between trees.
globose dune beetle	<i>Coelus globosus</i>	None	None	Inhabitant of coastal sand dune habitat, from Bodega Head in Sonoma County south to Ensenada, Mexico.	Inhabits foredunes and sand hummocks; it burrows beneath the sand surface and is most common beneath dune vegetation.

TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 18 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
San Joaquin dune beetle	<i>Coelus gracilis</i>	None	None	Inhabits fossil dunes along the western edge of San Joaquin Valley; extirpated from Antioch Dunes (type locality).	Inhabits sites containing sandy substrates.
Yontocket satyr	<i>Coenonympha tullia yontockett</i>	None	None	Coastal dunes north of Crescent City in Del Norte County.	Grassy areas among dunes with coniferous lee slopes & grassy exposed slopes, also dunes around sphagnum bogs.
Cosumnes spring stonefly	<i>Cosumnoperla hypocrena</i>	None	None	Known only an intermittent tributary of the Cosumnes River in El Dorado County.	
Denning's cryptic caddisfly	<i>Cryptochia denningi</i>	None	None	Larvae found in small, cool streams.	
Kings Canyon cryptochian caddisfly	<i>Cryptochia excella</i>	None	None	Narrowly distributed in cold springs in the Sierra Nevada.	Restricted to spring stream and source.
confusion caddisfly	<i>Cryptochia shasta</i>	None	None	Creeks.	
monarch butterfly	<i>Danaus plexippus</i>	None	None	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico.	Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.
amphibious caddisfly	<i>Desmona bethula</i>	None	None	Mostly small first order streams in open, wet meadows. Also found in beaver ponds & second order streams.	Final instar larvae leave the water at night to feed on riparian vegetation & return to water at sunrise.
Casey's June beetle	<i>Dinacoma caseyi</i>	Proposed FE	None	Found only in two populations in a small area of southern Palm Springs.	Found in sandy soils; the females live underground and only come to the ground surface to mate.



TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 19 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
California diplectronan caddisfly	<i>Diplectrona californica</i>	None	None		
brownish dubiraphian riffle beetle	<i>Dubiraphia brunnescens</i>	None	None	Aquatic; known only from the NE shore of Clear Lake, Lake County.	Inhabits exposed, wave-washed willow roots.
Giuliani's dubiraphian riffle beetle	<i>Dubiraphia giulianii</i>	None	None	Aquatic; found in the slow part of the Russian River.	Inhabits rocks and vegetation.
Stage's dufourine bee	<i>Dufourea stagei</i>	None	None	Species is a ground-nesting bee.	
Kings Creek ecclisomyian caddisfly	<i>Ecclisomyia bilera</i>	None	None	Narrowly distributed in springs in the Sierra Nevada & Cascades.	
Antioch efferian robberfly	<i>Efferia antiochi</i>	None	None	Known only from Contra Costa and Fresno Counties.	
Delta green ground beetle	<i>Elaphrus viridis</i>	FT	None	Restricted to the margins of vernal pools in the grassland area between Jepson Prairie and Travis AFB.	Prefers the sandy mud substrate where it slopes gently into the water, with low-growing vegetation, 25-100% cover.
redheaded sphecid wasp	<i>Eucerceris ruficeps</i>	None	None	Central California interior dunes.	Nest in hard-packed sand utilizing abandoned halictine bee burrows.
Andrew's marble butterfly	<i>Euchloe hyantis andrewsi</i>	None	None	Inhabits yellow pine forest near Lake Arrowhead and Big Bear Lake, San Bernardino Mountains, San Bernardino County, 5000-6000 ft elevation.	Hostplants are <i>Streptanthus bernardinus</i> & <i>Arabis holboellii</i> var <i>pinetorum</i> ; larval foodplant is <i>Descurainia richardsonii</i> .
Henne's eucosman moth	<i>Eucosma hennei</i>	None	None	Endemic to the El Segundo Dunes (type locality), Los Angeles County.	Larval foodplant is <i>Phacelia ramosissima</i> var <i>austrolitoralis</i> ;

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
					larvae can be found on woody stems and upper root parts.
El Segundo blue butterfly	<i>Euphilotes battoides allyni</i>	FE	None	Restricted to remnant coastal dune habitat in Southern California.	Hostplant is Eriogonum parvifolium; larvae feed only on the flowers and seeds; used by adults as major nectar source.
Comstock's blue butterfly	<i>Euphilotes battoides comstocki</i>	None	None	Hostplant is Eriogonum sp.	
Smith's blue butterfly	<i>Euphilotes enoptes smithi</i>	FE	None	Most commonly associated with coastal dunes & coastal sage scrub plant communities in Monterey & Santa Cruz Counties.	Hostplant: Eriogonum latifolium and Eriogonum parvifolium are utilized as both larval and adult foodplants.
Bay checkerspot butterfly	<i>Euphydryas editha bayensis</i>	FT	None	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay.	Plantago erecta is the primary host plant; Orthocarpus densiflorus & O. purpureus are the secondary host plants.
Mono checkerspot butterfly	<i>Euphydryas editha monoensis</i>	None	None		
quino checkerspot butterfly	<i>Euphydryas editha quino</i>	FE	None	Sunny openings within chaparral & coastal sage shrublands in parts of Riverside & San Diego Counties.	Hills & mesas near the coast. need high densities of food plants Plantago erecta, P. insularis, Orthocarpus purpureus
Kern primrose sphinx moth	<i>Euproserpinus euterpe</i>	FT	None	Found in the Walker Basin, Kern Co., and several other scattered locations (Carrizo Plain, Pinnacles NM).	Host plant is Camissonia contorta epilobioides (evening primrose).
long-tailed caddisfly	<i>Farula praelonga</i>	None	None	Cold water streams fed by springs in the Sierra Nevada.	
Kelso Dunes scarab glaresis beetle	<i>Glaresis arenata</i>	None	None	Known only from the Kelso Dunes.	

TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 21 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Palos Verdes blue butterfly	<i>Glaucopsyche lygdamus palosverdesensis</i>	FE	None	Restricted to the cool, fog-shrouded, seaward side of Palos Verdes Hills, Los Angeles County.	Host plant is <i>Astragalus trichopodus</i> var. <i>lonchus</i> (locoweed).
Sagehen Creek goeracean caddisfly	<i>Goeracea oregona</i>	None	None	Found in relatively warm springs. Known from several sites in Nevada County, and perhaps also from Mount Tamalpais in Marin County.	
haromonius halictid bee	<i>Halictus harmonius</i>	None	None	Known only from the foothills of the San Bernardino Mts., possibly also the San Jacinto Mts.	
Borax Lake cuckoo wasp	<i>Hedychridium milleri</i>	None	None	Endemic to Central California. Only collection is from the type locality.	External parasite of wasp and bee larva.
Morro shoulderband (=banded dune) snail	<i>Helminthoglypta walkeriana</i>	FE	None	Restricted to the coastal strand in the immediate vicinity of Morro Bay.	Inhabits the duff beneath <i>Haplopappus</i> , <i>Salvia</i> , <i>Dudleya</i> , and <i>Mesembryanthemum</i> .
White Mountains skipper	<i>Hesperia miriamae longaevicola</i>	None	None	Above the timberline (above 10,500 ft elevation) in the White Mountains.	Scree slopes just off of summits & grassy saddles between high ridges & summits. Oviposition on <i>Festuca brachyphylla</i> .
Arroyo Seco short-tailed whipscorpion	<i>Hubbardia secoensis</i>	None	None	Known only from the type locality, Arroyo Seco, Monterey County.	
Ricksecker's water scavenger beetle	<i>Hydrochara rickseckeri</i>	None	None	Aquatic.	
wooly hydroporus diving beetle	<i>Hydroporus hirsutus</i>	None	None	Aquatic.	Known only from Mt. Goethe, Fresno County. Species may be restricted to high elevations.
Leech's skyline diving beetle	<i>Hydroporus leechi</i>	None	None	Aquatic.	

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
simple hydroporus diving beetle	<i>Hydroporus simplex</i>	None	None	Known from aquatic habitats in Tuolumne and San Bernardino Counties.	
curved-foot hygrotus diving beetle	<i>Hygrotus curvipes</i>	None	None	Aquatic; known only from Alameda & Contra Costa Counties.	
travertine band-thigh diving beetle	<i>Hygrotus fontinalis</i>	None	None	Aquatic; occurs in the run-off pools from hot springs in a limestone outcrop.	
Middlekauff's shieldback katydid	<i>Idiostatus middlekauffi</i>	None	None	Known only from Antioch Dunes.	
San Francisco forktail damselfly	<i>Ischnura gemina</i>	None	None	Endemic to the San Francisco Bay area.	Small, marshy ponds and ditches with emergent and floating aquatic vegetation.
Cold Spring caddisfly	<i>Lepidostoma ermanae</i>	None	None	Only known from cold springs in the vicinity of Sagehen Creek.	
Algodones sand jewel beetle	<i>Lepismadora algodones</i>	None	None	Found in and along the old canal on W side of Algodones Dunes, Imperial County.	Found on flowers of <i>Tiquilia plicata</i> during the hottest part of the day in June and July.
white sand bear scarab beetle	<i>Lichnanthe albipilosa</i>	None	None	Inhabit coastal sand dunes of San Luis Obispo County, in the vicinity of Dune Lakes.	Found hovering close to the surface of the dunes near the lake, but some distance from the surf.
bumblebee scarab beetle	<i>Lichnanthe ursina</i>	None	None	Inhabits coastal sand dunes from Sonoma County south to San Mateo County.	Usually flies close to sand surface near the crest of the dunes.
Fort Dick limnephilus caddisfly	<i>Limnephilus atercus</i>	None	None	Known only from Fort Dick in Del Norte County.	

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Hermes copper butterfly	<i>Lycaena hermes</i>	None	None	Found in southern mixed chaparral & coastal sage scrub at western edge of Laguna Mountains.	Host plant is Rhamnus crocea. Although R. crocea is widespread throughout the coast range, Lycaena hermes is not.
Hopping's blister beetle	<i>Lytta hoppingi</i>	None	None	Inhabits the foothills at the southern end of the Central Valley.	
moestan blister beetle	<i>Lytta moesta</i>	None	None	Central California.	
molestan blister beetle	<i>Lytta molesta</i>	None	None	Inhabits the Central Valley of California, from Contra Costa to Kern and Tulare Counties.	
Morrison's blister beetle	<i>Lytta morrisoni</i>	None	None	Inhabitant of the southern Central Valley of California.	
Kelso giant sand treader cricket	<i>Macrobaenetes kelsoensis</i>	None	None	Known only from the Kelso Dunes, San Bernardino County; 2500 ft elevation.	Found on bare, hard-packed sand ridges, 0.5 mile inland from margin.
Coachella giant sand treader cricket	<i>Macrobaenetes valgum</i>	None	None	Known from the sand dune ridges in the vicinity of Coachella Valley.	Population size regulated by amount of annual rainfall; some spots favor permanent habitation where springs dampen sand.
Shirttail Creek stonefly	<i>Megaleuctra sierra</i>	None	None	Stenothermic and found in spring-like areas.	
A mellitid bee	<i>Melitta californica</i>	None	None	Desert regions of SW Arizona, SE California, and Baja California, Mexico. Also collected from Torrey Pines, San Diego County.	Earlier records of M. wilmattae pertain to this species; species was synonymized with M. californica in 1981.
Dolloff Cave spider	<i>Meta dolloff</i>	None	None	Known from caves in the Santa Cruz area.	This species is an orb-weaver and occurs from the cave mouth into deep twilight.

TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 24 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Hurd's metapogon robberfly	<i>Metapogon hurdi</i>	None	None	Known only from Antioch (Dunes?) and Fresno.	
Hom's micro-blind harvestman	<i>Microcina homi</i>	None	None	Known only from Santa Clara County in xeric habitats.	Known only from serpentine rocks in grassland habitats.
Nelson's miloderes weevil	<i>Miloderes nelsoni</i>	None	None	Eureka Valley.	
South Forks ground beetle	<i>Nebria darlingtoni</i>	None	None	Restricted to the canyon of the South Fork American River.	
Siskiyou ground beetle	<i>Nebria gebleri siskiyouensis</i>	None	None	Restricted to the Klamath Mountain system in northwestern California and southwestern Oregon.	
Tinity Alps ground beetle	<i>Nebria sahlbergii triad</i>	None	None	Restricted to the Klamath Mountain system of northwestern California. May extend into Oregon.	
golden-horned caddisfly	<i>Neothremma genella</i>	None	None	Small streams in the Sierra.	Larger population numbers downstream from the source and in more open areas.
Wilbur Springs minute moss beetle	<i>Ochthebius recticulus</i>	None	None	Aquatic; known only from Wilbur Hot Springs area, Colusa County; 1250 ft elevation.	Inhabits the shoreline of the creek at Wilbur Hot Springs.
cheeseweed owlfly (cheeseweed moth lacewing)	<i>Oliarces clara</i>	None	None	Inhabits the lower Colorado River drainage.	Found under rocks or in flight over streams. <i>Larrea tridentata</i> is the suspected larval host.
Lange's El Segundo Dune weevil	<i>Onychobaris langei</i>	None	None	Known from El Segundo Dunes.	
Pinnacles optioservus riffle beetle	<i>Optioservus canus</i>	None	None	Aquatic.	Found on rocks and in gravel of riffles in cool, swift, clear streams.

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Page 25 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Dry Creek cliff strider bug	<i>Oravelia pege</i>	None	None	Known only from Dry Creek in Fresno County.	Found in cracks & crevices of a sheer rocky cliff moistened by seeping water and under debris at the base of the cliff.
gold rush hanging scorpionfly	<i>Orobittacus obscurus</i>	None	None	Known only from a small area on the western slopes of the central Sierra Nevada	Darkly shaded crannies w/ high humidity, i.e. under tree roots, in overhanging banks, below rock outcrops, along streams
wandering (=saltmarsh) skipper	<i>Panoquina errans</i>	None	None	Southern California coastal salt marshes.	Requires moist saltgrass for larval development.
Wilber Springs shore fly	<i>Paracoenia calida</i>	None	None	Endemic to Wilbur Hot Springs, Colusa County.	Inhabits all but the hottest portion of the hot spring effluent; water temp 20-40 deg C.
A cuckoo bee	<i>Paranomada californica</i>	None	None		
Borrego parnopes cuckoo wasp	<i>Parnopes borregoensis</i>	None	None		
Amargosa naucorid bug	<i>Pelocoris shoshone</i>	None	None	Endemic to the Amargosa River drainage in Death Valley, Inyo County, and San Bernardino County.	
Antioch andrenid bee	<i>Perdita scitula antiochensis</i>	None	None	Known only from Antioch Dunes and Oakley.	Visits flowers of Eriogonum, Gutierrezia californica, Heterotheca grandiflora, Lessingia glandulifera.
Antioch sphecid wasp	<i>Philanthus nasalis</i>	None	None	Previously known only from Antioch Dunes, in Contra Costa County. Now known only from the inland sandhills in Santa Cruz County.	

TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 26 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Boharts' blue butterfly	<i>Philotiella speciosa bohartorum</i>	None	None	Known from the foothills of the southern Sierra Nevada, near Briceburg, Mariposa County.	Associated with <i>Chorizanthe membranacea</i> .
White Mountains icarioides blue butterfly	<i>Plebejus icarioides albihalos</i>	None	None	Found in the White Mountains of the California-Nevada border.	
Mission blue butterfly	<i>Plebejus icarioides missionensis</i>	FE	None	Inhabits grasslands of the San Francisco peninsula.	Three larval host plants: <i>Lupinus albifrons</i> , <i>L. variicolor</i> , and <i>L. formosus</i> , of which <i>L. albifrons</i> is favored.
Morro Bay blue butterfly	<i>Plebejus icarioides moroensis</i>	None	None	Inhabits stabilized dunes & adjacent areas of coastal San Luis Obispo & NW Santa Barbara Counties.	Larval foodplant thought to be <i>Lupinus chamissonis</i> .
Point Reyes blue butterfly	<i>Plebejus icarioides parapheres</i>	None	None	Confined to the Point Reyes peninsula, from Point Reyes proper north to Tomales Point.	Stabilized sand dunes with the common bush <i>Lupinus arboreus</i> & <i>L. variicolor</i> . <i>L. variicolor</i> is the likely foodplant.
White Mountains saepiolus blue butterfly	<i>Plebejus saepiolus albomontanus</i>	None	None	Primarily alpine fell-fields, but also wet meadows and along streams at high elevations (>2800 m) in the White Mountains	Principal hostplant is <i>Trifolium andersonii</i> .
San Gabriel Mountains blue butterfly	<i>Plebejus saepiolus aureolus</i>	None	None	Type locality is a wet meadow seep in yellow pine forest.	Foodplant is <i>Trifolium wormskioldii</i> .
San Emigdio blue butterfly	<i>Plebulina emigdionis</i>	None	None	Found in desert canyons and along riverbeds on the southernmost edge of the San Joaquin Valley.	Hostplant is <i>Atriplex canescens</i> ; maybe <i>Lotus purshianus</i> also.
Mount Hermon (=barbate) June	<i>Polyphylla barbata</i>	FE	None	Known only from sand hills in vicinity of Mt. Hermon, Santa Cruz	



**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
beetle				County.	
Death Valley June beetle	<i>Polyphylla erratica</i>	None	None	Halophytic species. Larva, pupae & adults found in moist, salt-encrusted soil in the Amargosa River system.	Larvae taken at roots of <i>Distichlis divaricata</i> .
Atascadero June beetle	<i>Polyphylla nubila</i>	None	None	Known only from sand dunes in San Luis Obispo County.	
Wasbauer's protodufourea bee	<i>Protodufourea wasbaueri</i>	None	None	Chaparral and desert scrub.	Nests in the ground. Oligolectic on <i>Emmenanthe</i> sp., a plant that blooms in profusion after fires, then declines.
Carson wandering skipper	<i>Pseudocopaodes eunus obscurus</i>	FE	None	Found in grasslands on alkaline substrates in eastern California (around Honey Lake) & western Nevada (Washoe Co.) below 5,000 ft.	The larval host plant is salt grass. Needs open areas near springs or water.
desert monkey grasshopper	<i>Psychomastax deserticola</i>	None	None	Occurs in very arid environments in the vicinity of the San Bernardino Mountains.	Known to occur on chamise ( <i>Adenostoma fasciculatum</i> ).
Laguna Mountains skipper	<i>Pyrgus ruralis lagunae</i>	FE	None	Only in a few open meadows in yellow pine forest between 5,000 & 6,000 ft. in the vicinity of Mt Laguna & Palomar Mtn.	Eggs laid on leaves of <i>Horkelia bolanderi clevelandi</i> . Larvae feed on leaves and overwinter on the host plant.
Delhi Sands flower-loving fly	<i>Rhaphiomidas terminatus abdominalis</i>	FE	None	Found only in areas of the Delhi Sands formation in southwestern San Bernardino & northwestern Riverside Counties.	Requires fine, sandy soils, often with wholly or partly consolidated dunes & sparse vegetation. Oviposition req. shade.
El Segundo flower-loving fly	<i>Rhaphiomidas terminatus terminatus</i>	None	None	Presumed extinct but recently discovered on Malaga Dunes, Los Angeles County.	Perched dunes.
Roberts' rhopalolemma bee	<i>Rhopalolemma robertsi</i>	None	None	Known only from the type locality 8 km south of Twentynine Palms.	

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Castle Crags rhyacophilan caddisfly	<i>Rhyacophila lineata</i>	None	None	Creeks.	
bilobed rhyacophilan caddisfly	<i>Rhyacophila mosana</i>	None	None	Known only from Castle Crags State Park, Shasta County.	
spiny rhyacophilan caddisfly	<i>Rhyacophila spinata</i>	None	None	Rhyacophilids generally prefer cool, running water.	
Wilbur Springs shorebug	<i>Saldula usingeri</i>	None	None	Requires springs/creeks with high concentrations of Na, Cl, & Li.	Found only on wet substrate of spring outflows.
Gertsch's socialchemmis spider	<i>Socalchemmis gertschi</i>	None	None	Known from only 2 localities in Los Angeles County: Brentwood (type locality) and Topanga Canyon.	
Monterey socialchemmis spider	<i>Socalchemmis monterey</i>	None	None	Known from only two localities in Monterey County: Los Padres National Forest, Arroyo Seco (type locality), and Cone Peak Trail.	
callippe silverspot butterfly	<i>Speyeria callippe callippe</i>	FE	None	Restricted to the northern coastal scrub of the San Francisco peninsula.	Hostplant is <i>Viola pedunculata</i> . Most adults found on E-facing slopes; males congregate on hilltops in search of females.
Carson Valley silverspot	<i>Speyeria nokomis carsonensis</i>	None	None	Wet meadows along the eastern base of the Carson Range from southern Washoe County Nevada to northern Alpine County California.	Occurs as isolated colonies.
Behren's silverspot butterfly	<i>Speyeria zerene behrensii</i>	FE	None	Restricted to the Pacific side of the Coast Ranges, from Point Arena to Cape Mendocino, Mendocino Co.	Inhabits coastal terrace prairie habitat. Foodplant is <i>Viola</i> sp.

TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 29 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Hippolyta frittilary	<i>Speyeria zerene hippolyta</i>	FT	None	Coastal meadows in Del Norte County.	The larvae feed only on the foliage of the western dog violet ( <i>Viola adunca</i> ).
Myrtle's silverspot	<i>Speyeria zerene myrtleae</i>	FE	None	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County.	Larval foodplant thought to be <i>Viola adunca</i> .
Antioch Dunes halcetid bee	<i>Sphecodogastra antiochensis</i>	None	None	Restricted to Antioch Dunes.	Host plant is <i>Oenothera deltoides howellii</i> . This bee nests in the ground in stabilized sand dunes in open, xeric areas.
Coachella Valley jerusalem cricket	<i>Stenopelmatus cahuilaensis</i>	None	None	Inhabits a small segment of the sand and dune areas of the Coachella Valley, in the vicinity of Palm Springs.	Found in the large, undulating dunes piled up at the north base of Mt San Jacinto.
Moody's gnaphosid spider	<i>Talanites moodyae</i>	None	None	Serpentine endemic.	
Sierra pygmy grasshopper	<i>Tetrix sierrana</i>	None	None	Known only from Madera and Mariposa Counties.	
A leaf-cutter bee	<i>Trachusa gummifera</i>	None	None		
serpentine cypress wood-boring beetle	<i>Trachykele hartmani</i>	None	None	Larvae develop in Sargent cypress. Restricted to Napa, Colusa, and Lake Counties.	
brown tassel trigonoscuta weevil	<i>Trigonoscuta brunnotessellata</i>	None	None	Known only from the Kelso Dunes, San Bernardino County.	
Dorothy's El Segundo Dune weevil	<i>Trigonoscuta dorothea dorothea</i>	None	None	Coastal sand dunes in Los Angeles County.	

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Doyen's trigonoscuta dune weevil	<i>Trigonoscuta sp.</i>	None	None	Species is restricted to one dune in the Los Medanos area, south of Kettleman Station in Kings County.	Found on an open "slip-face covering about 200 square meters of a modified, vegetated relict dune.
Zayante band-winged grasshopper	<i>Trimerotropis infantilis</i>	FE	None	Isolated sandstone deposits in the Santa Cruz Mountains (the Zayante Sand Hills ecosystem)	Mostly on sand parkland habitat but also in areas with well-developed ground cover & in sparse chaparral with grass.
serpentine cypress long-horned beetle	<i>Vandykea tuberculata</i>	None	None	Breeds in shaded-out lower branches of Sargent cypress and perhaps McNab cypress in serpentine soil/cypress habitats.	
<b>Mammals</b>					
Nelson's antelope squirrel	<i>Ammospermophilus nelsoni</i>	None	ST	Western San Joaquin Valley from 200-1200 ft elev. On dry, sparsely vegetated loam soils.	Dig burrows or use k-rat burrows. Need widely scattered shrubs, forbs & grasses in broken terrain with gullies & washes
pallid bat	<i>Antrozous pallidus</i>	None	SSC	Deserts, grasslands, shrublands, woodlands & forests. Most common in open, dry habitats with rocky areas for roosting.	Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.
Sierra Nevada mountain beaver	<i>Aplodontia rufa californica</i>	None	SSC	Dense growth of small deciduous trees & shrubs, wet soil, & abundance of forbs in the Sierra Nevada & east slope.	Needs dense understory for food & cover. Burrows into soft soil. Needs abundant supply of water.
Point Arena mountain beaver	<i>Aplodontia rufa nigra</i>	FE	SSC	Coastal areas of Point Arena with springs or seepages.	North-facing slopes of ridges & gullies with friable soils & thickets of undergrowth.
Point Reyes mountain beaver	<i>Aplodontia rufa phaea</i>	None	SSC	Coastal area of Point Reyes in areas of springs or seepages.	North-facing slopes of hills & gullies in areas overgrown with sword ferns

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
					and thimbleberries.
white-footed vole	<i>Arborimus albipes</i>	None	SSC	Mature coastal forests in Humboldt & Del Norte cos. Prefers areas near small, clear streams with dense alder & shrubs.	Occupies the habitat from the ground surface to the canopy. Feeds in all layers & nests on the ground under logs or rock.
Sonoma tree vole	<i>Arborimus pomo</i>	None	SSC	North coast fog belt from Oregon border to Sonoma County in Douglas fir, redwood & montane hardwood-conifer forests.	Feeds almost exclusively on Douglas fir needles. Will occasionally take needles of grand fir, hemlock or spruce.
pygmy rabbit	<i>Brachylagus idahoensis</i>	None	SSC	Sagebrush, bitterbrush, & pinyon-juniper habitats in Modoc, Lassen & Mono Counties.	Tall dense, large-shrub stages of sagebrush, greasewood & rabbitbrush. May avoid heavily grazed areas.
Dulzura pocket mouse	<i>Chaetodipus californicus femoralis</i>	None	SSC	Variety of habitats including coastal scrub, chaparral & grassland in San Diego Co.	Attracted to grass-chaparral edges.
northwestern San Diego pocket mouse	<i>Chaetodipus fallax fallax</i>	None	SSC	Coastal scrub, chaparral, grasslands, sagebrush, etc. in western San Diego County.	Sandy, herbaceous areas, usually in association with rocks or coarse gravel.
pallid San Diego pocket mouse	<i>Chaetodipus fallax pallidus</i>	None	SSC	Desert border areas in eastern San Diego County in desert wash, desert scrub, desert succulent scrub, pinyon-juniper, etc.	Sandy herbaceous areas, usually in association with rocks or coarse gravel.
Mexican long-tongued bat	<i>Choeronycteris mexicana</i>	None	SSC	Occasionally found in San Diego Co., which is on the periphery of their range.	Feeds on nectar & pollen of night-blooming succulents. Roosts in relatively well-lit caves, & in & around buildings.
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	None	SSC	Throughout California in a wide variety of habitats. Most common in	Roosts in the open, hanging from walls & ceilings. Roosting sites

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Page 32 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
				mesic sites.	limiting, extremely sensitive to human disturbance.
Marysville California kangaroo rat	<i>Dipodomys californicus eximius</i>	None	SSC	Known only from the Sutter Buttes area.	Friable soil, grass-forb stages of chaparral.
Berkeley kangaroo rat	<i>Dipodomys heermanni berkeleyensis</i>	None	None	Open grassy hilltops & open spaces in chaparral & blue oak/digger pine woodlands.	Needs fine, deep, well-drained soil for burrowing.
Merced kangaroo rat	<i>Dipodomys heermanni dixoni</i>	None	None	Grassland and savanna communities in eastern Merced & Stanislaus Counties.	Needs fine, deep, well-drained soil for burrowing. Granivorous, but also eats forbs & green grasses.
Morro Bay kangaroo rat	<i>Dipodomys heermanni morroensis</i>	FE	SE, FP	Coastal sage scrub on the south side of Morro Bay.	Needs sandy soil, but not active dunes, prefers early seral stages.
giant kangaroo rat	<i>Dipodomys ingens</i>	FE	SE	Annual grasslands on the western side of the San Joaquin Valley, marginal habitat in alkali scrub.	Need level terrain & sandy loam soils for burrowing.
Earthquake Merriam's kangaroo rat	<i>Dipodomys merriami collinus</i>	None	None	Known only from San Diego & Riverside Counties. Associated with riversidean sage scrub, chaparral, & non-native grassland.	Need sandy loam substrates for digging of burrows.
San Bernardino kangaroo rat	<i>Dipodomys merriami parvus</i>	FE	SSC	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains.	Needs early to intermediate seral stages.
short-nosed kangaroo rat	<i>Dipodomys nitratoides brevinasus</i>	None	SSC	Western side of San Joaquin Valley in grassland and desert shrub associations, especially Atriplex.	Occurs in highly alkaline soils around Soda Lake. Needs friable soils. Favors flat to gently sloping terrain.
Fresno kangaroo rat	<i>Dipodomys nitratoides exilis</i>	FE	SE	Alkali sink-open grassland habitats in western Fresno County.	Bare alkaline clay-based soils subject to seasonal inundation, with more friable soil mounds around shrubs &

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
					grasses.
Tipton kangaroo rat	<i>Dipodomys nitratoides nitratoides</i>	FE	SE	Saltbrush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley.	Needs soft friable soils which escape seasonal flooding. Digs burrows in elevated soil mounds at bases of shrubs.
Argus Mountains kangaroo rat	<i>Dipodomys panamintinus argusensis</i>	None	None	Known only from the Argus Mountain range. Inhabits creosote scrub, saltbush scrub, & Joshua tree woodland.	Sandy-gravelly soils with an overstory of big sage, pinyon pine, juniper, or yucca.
Panamint kangaroo rat	<i>Dipodomys panamintinus panamintinus</i>	None	None	Found only in the Panamint Range between 4,600 and 7,000 ft elevation in arid mountain steppe communities.	Found on coarse-textured soils on sloping ground with an overstory of yucca, pinyon pine, juniper & big sage.
Stephens' kangaroo rat	<i>Dipodomys stephensi</i>	FE	ST	Primarily annual & perennial grasslands, but also occurs in coastal scrub & sagebrush with sparse canopy cover.	Prefers buckwheat, chamise, brome grass & filaree. Will burrow into firm soil.
big-eared kangaroo rat	<i>Dipodomys venustus elephantinus</i>	None	SSC	Chaparral-covered slopes of the southern part of the Gabilian Range, in the vicinity of the Pinnacles.	Forages under shrubs & in the open. Burrows for cover and for nesting.
Santa Cruz kangaroo rat	<i>Dipodomys venustus venustus</i>	None	None	Silverleaf manzanita mixed chaparral in the Zayante Sand Hills ecosystem of the Santa Cruz Mountains.	Needs soft, well-drained sand.
spotted bat	<i>Euderma maculatum</i>	None	SSC	Occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests.	Feeds over water and along washes. Feeds almost entirely on moths. Needs rock crevices in cliffs or caves for roosting.
western mastiff bat	<i>Eumops perotis californicus</i>	None	SSC	Many open, semi-arid to arid habitats, including conifer &	Roosts in crevices in cliff faces, high buildings, trees & tunnels.

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
				deciduous woodlands, coastal scrub, grasslands, chaparral etc	
San Bernardino flying squirrel	<i>Glaucomys sabrinus californicus</i>	None	SSC	Black oak or white fir dominated woodlands between 5200 - 8500 ft in the San Bernardino and San Jacinto ranges.	Need cavities in trees/snags for nests & cover. Needs nearby water.
California wolverine	<i>Gulo gulo</i>	None	ST, FP	Found in the north coast mountains and the Sierra Nevada. Found in a wide variety of high elevation habitats.	Needs water source. uses caves, logs, burrows for cover & den area. Hunts in more open areas. Can travel long distances
silver-haired bat	<i>Lasionycteris noctivagans</i>	None	None	Primarily a coastal & montane forest dweller feeding over streams, ponds & open brushy areas.	Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes & rarely under rocks. Needs drinking water.
western red bat	<i>Lasiurus blossevillii</i>	None	SSC	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests.	Prefers habitat edges & mosaics with trees that are protected from above & open below with open areas for foraging.
hoary bat	<i>Lasiurus cinereus</i>	None	None	Prefers open habitats or habitat mosaics, with access to trees for cover & open areas or habitat edges for feeding.	Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.
western yellow bat	<i>Lasiurus xanthinus</i>	None	SSC	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats.	Roosts in trees, particularly palms. Forages over water and among trees.
lesser long-nosed bat	<i>Leptonycteris yerbabuena</i>	FE	None		
Oregon snowshoe hare	<i>Lepus americanus klamathensis</i>	None	SSC	Above the yellow pine zone in Canadian and Hudsonian provinces	Alder & willow thickets in riparian zone, also thickets of young conifers.



**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
				in Northern California.	
Sierra Nevada snowshoe hare	<i>Lepus americanus tahoensis</i>	None	SSC	Boreal riparian areas in the Sierra Nevada.	Thickets of deciduous trees in riparian areas and thickets of young conifers.
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	None	SSC	Intermediate canopy stages of shrub habitats & open shrub / herbaceous & tree / herbaceous edges.	Coastal sage scrub habitats in Southern California.
western white-tailed jackrabbit	<i>Lepus townsendii townsendii</i>	None	SSC	Sagebrush, subalpine conifer, juniper, alpine dwarf shrub & perennial grassland.	Open areas with scattered shrubs & exposed flat-topped hills with open stands of trees, brush & herbaceous understory.
southwestern river otter	<i>Lontra canadensis sonora</i>	None	SSC	Aquatic habitats along the Colorado River.	Needs abundant food sources and sufficient water for shelter and foraging.
California leaf-nosed bat	<i>Macrotus californicus</i>	None	SSC	Desert riparian, desert wash, desert scrub, desert succulent scrub, alkali scrub and palm oasis habitats.	Needs rocky, rugged terrain with mines or caves for roosting.
American (=pine) marten	<i>Martes americana</i>	None	None	Mixed evergreen forests with more than 40% crown closure along North Coast & Sierra Nevada, Klamath & Cascade mountains.	Needs variety of different-aged stands, particularly old-growth conifers & snags which provide cavities for dens/nests.
Humboldt marten	<i>Martes americana humboldtensis</i>	None	SSC	Occurs only in the coastal redwood zone from the Oregon border south to Sonoma County.	Associated with late-successional coniferous forests, prefer forests with low, overhead cover.
Sierra marten	<i>Martes americana sierrae</i>	None	None	Mixed evergreen forests with more than 40% crown closure along Sierra Nevada & Cascade mountains.	Needs variety of different-aged stands, particularly old-growth conifers & snags which provide cavities for dens/nests.

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Pacific fisher	<i>Martes pennanti (pacific) DPS</i>	FC	SSC	Intermediate to large-tree stages of coniferous forests & deciduous-riparian areas with high percent canopy closure.	Uses cavities, snags, logs & rocky areas for cover & denning. Needs large areas of mature, dense forest.
Mohave river vole	<i>Microtus californicus mohavensis</i>	None	SSC	Occurs only in weedy herbaceous growth in wet areas along the Mojave River. May be found in some irrigated pastures.	Burrows into soft soil. Feeds on leafy parts of grasses, sedges and herbs. Clips grasses to form runways from burrow.
San Pablo vole	<i>Microtus californicus sanpabloensis</i>	None	SSC	Saltmarshes of San Pablo Creek, on the south shore of San Pablo Bay.	Constructs burrow in soft soil. Feeds on grasses, sedges and herbs. Forms a network of runways leading from the burrow
Amargosa vole	<i>Microtus californicus scirpensis</i>	FE	SE	Known only from bulrush marshes along the Amargosa River.	Burrows in soft soil. Nests are constructed in the burrows. Creates runway system through grasses from burrow.
south coast marsh vole	<i>Microtus californicus stephensi</i>	None	SSC	Tidal marshes in Los Angeles, Orange and southern Ventura Counties.	
Owens Valley vole	<i>Microtus californicus vallicola</i>	None	SSC	Found in wetlands and lush grassy ground in the Owens Valley.	Needs friable soil for burrowing. Eats grasses, sedges & herbs. Clips grass to make runways leading from burrows.
western small-footed myotis	<i>Myotis ciliolabrum</i>	None	None	Wide range of habitats mostly arid wooded & brushy uplands near water. Seeks cover in caves, buildings, mines & crevices	Prefers open stands in forests and woodlands. Requires drinking water. Feeds on a wide variety of small flying insects.
long-eared myotis	<i>Myotis evotis</i>	None	None	Found in all brush, woodland & forest habitats from sea level to about 9000 ft. prefers coniferous	Nursery colonies in buildings, crevices, spaces under bark, & snags. Caves used primarily as night roosts.

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
				woodlands & forests.	
little brown bat	<i>Myotis lucifugus</i>	None	None	State rank for San Bernardino Mtns population only. Hibernates in mines or caves. Will use buildings for roosts.	Forages near water. Females return to same nursery colonies year after year.
Arizona Myotis	<i>Myotis occultus</i>	None	SSC	Lowlands of the Colorado River and adjacent desert mountain ranges.	Need roosting areas in tree hollows, rock crevices, under bridges, etc.
fringed myotis	<i>Myotis thysanodes</i>	None	None	In a wide variety of habitats, optimal habitats are pinyon-juniper, valley foothill hardwood & hardwood-conifer.	Uses caves, mines, buildings or crevices for maternity colonies and roosts.
cave myotis	<i>Myotis velifer</i>	None	SSC	Lowlands of the Colorado River and adjacent mountain ranges.	Require caves or mines for roosting.
long-legged myotis	<i>Myotis volans</i>	None	None	Most common in woodland & forest habitats above 4000 ft. Trees are important day roosts; caves & mines are night roosts.	Nursery colonies usually under bark or in hollow trees, but occasionally in crevices or buildings.
Yuma myotis	<i>Myotis yumanensis</i>	None	None	Optimal habitats are open forests and woodlands with sources of water over which to feed.	Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.
lodgepole chipmunk	<i>Neotamias speciosus speciosus</i>	None	None	Summits of isolated Piute, San Bernardino, & San Jacinto mountains. Usually found in open-canopy forests.	Habitat is usually lodgepole pine forests in the San Bernardino Mts & chinquapin slopes in the San Jacinto Mts.
Colorado Valley woodrat	<i>Neotoma albigula venusta</i>	None	None	Low-lying desert areas in southeastern California. Closely associated with beaver-tail cactus & mesquite.	Intolerant of cold temperatures. Eats mainly succulent plants. Distribution influenced by abundance of nest building material.

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
San Francisco dusky-footed woodrat	<i>Neotoma fuscipes annectens</i>	None	SSC	Forest habitats of moderate canopy & moderate to dense understory. May prefer chaparral & redwood habitats.	Constructs nests of shredded grass, leaves & other material. May be limited by availability of nest-building materials.
riparian (=San Joaquin Valley) woodrat	<i>Neotoma fuscipes riparia</i>	FE	SSC	Riparian areas along the San Joaquin, Stanislaus & Tuolumne rivers.	Need areas with mix of brush & trees. Need suitable nesting sites in trees, snags or logs.
San Diego desert woodrat	<i>Neotoma lepida intermedia</i>	None	SSC	Coastal scrub of Southern California from San Diego County to San Luis Obispo County.	Moderate to dense canopies preferred. They are particularly abundant in rock outcrops & rocky cliffs & slopes.
pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>	None	SSC	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc.	Rocky areas with high cliffs.
big free-tailed bat	<i>Nyctinomops macrotis</i>	None	SSC	Low-lying arid areas in Southern California.	Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.
Mt. Whitney pika	<i>Ochotona princeps albata</i>	None	None	Mountainous areas, generally at higher elevations, often above the treeline up to the limit of vegetation. At lower elevations found in rocky areas within forests or near lakes.	Talus slopes, occasionally on mine tailings. Prefers talus-meadow interface.
Yosemite pika	<i>Ochotona princeps muii</i>	None	None	Mountainous areas, generally at higher elevations, often above the treeline up to the limit of vegetation. At lower elevations found in rocky areas within forests or near lakes.	Talus slopes, occasionally on mine tailings. Prefers talus-meadow interface.

TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 39 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
gray-headed pika	<i>Ochotona princeps schisticeps</i>	None	None	Mountainous areas, generally at higher elevations, often above the treeline up to the limit of vegetation. At lower elevations found in rocky areas within forests or near lakes.	Talus slopes, occasionally on mine tailings. Prefers talus-meadow interface.
White Mountains Pika	<i>Ochotona princeps sheltoni</i>	None	None	Mountainous areas, generally at higher elevations, often above the treeline up to the limit of vegetation.	Talus slopes above 8000 ft, occasionally on mine tailings. Prefers talus-meadow interface.
Taylor pika	<i>Ochotona princeps taylori</i>	None	None	Mountainous areas, generally at higher elevations, often above the treeline up to the limit of vegetation. At lower elevations found in rocky areas within forests or near lakes.	Talus slopes, occasionally on mine tailings. Prefers talus-meadow interface.
southern grasshopper mouse	<i>Onychomys torridus ramona</i>	None	SSC	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover.	Feeds almost exclusively on arthropods, especially scorpions & orthopteran insects.
Tulare grasshopper mouse	<i>Onychomys torridus tularensis</i>	None	SSC	Hot, arid valleys and scrub deserts in the southern San Joaquin Valley.	Diet almost exclusively composed of arthropods, therefore needs abundant supply of insects.
Nelson's bighorn sheep	<i>Ovis canadensis nelsoni</i>	None	None	Widely distributed from the White Mountains in Mono County to the Chocolate Mountains in Imperial County.	Open, rocky, steep areas with available water and herbaceous forage.
peninsular bighorn sheep	<i>Ovis canadensis nelsoni DPS</i>	FE	ST, FP	Open desert slopes below 4,000 ft elevation from San Gorgonio Pass south into Mexico.	Optimal habitat includes steep walled canyons and ridges bisected by rocky or sandy washes, with available water.
Sierra Nevada bighorn sheep	<i>Ovis canadensis sierrae</i>	FE	SE, FP	Historically found along the east side and crest of the Sierra Nevada, and	Available water and steep, open terrain free of competition from

TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 40 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
				on the Great Western Divide.	other grazing ungulates.
Tehachapi pocket mouse	<i>Perognathus alticolus inexpectatus</i>	None	SSC	Arid annual grassland & desert shrub communities, but also taken in fallow grain field & in Russian thistle.	Burrows for cover & nesting. Aestivates and hibernates during extreme weather. Forages on open ground & under shrubs.
San Joaquin pocket mouse	<i>Perognathus inornatus inornatus</i>	None	None	Typically found in grasslands and blue oak savannas.	Needs friable soils.
Salinas pocket mouse	<i>Perognathus inornatus psammophilus</i>	None	SSC	Annual grassland & desert shrub communities in the Salinas Valley.	Fine-textured, sandy, friable soils. Burrows for cover & nesting.
Palm Springs pocket mouse	<i>Perognathus longimembris bangsi</i>	None	SSC	Desert riparian, desert scrub, desert wash & sagebrush habitats. most common in creosote-dominated desert scrub.	Rarely found on rocky sites. Occurs in all canopy coverage classes.
Los Angeles pocket mouse	<i>Perognathus longimembris brevinasus</i>	None	SSC	Lower elevation grasslands & coastal sage communities in and around the Los Angeles Basin.	Open ground with fine sandy soils. May not dig extensive burrows, hiding under weeds & dead leaves instead.
Jacumba pocket mouse	<i>Perognathus longimembris internationalis</i>	None	SSC	Desert riparian, desert scrub, desert wash, coastal scrub & sagebrush.	Rarely found on rocky sites, uses all canopy coverages.
Pacific pocket mouse	<i>Perognathus longimembris pacificus</i>	FE	SSC	Inhabits the narrow coastal plains from the Mexican border north to El Segundo, Los Angeles Co.	Seems to prefer soils of fine alluvial sands near the ocean, but much remains to be learned.
yellow-eared pocket mouse	<i>Perognathus parvus xanthonotus</i>	None	None	Known only from four canyons in the Tehachapi Mountains, northeastern Kern County. Elevational range 4000-5300 ft.	Desert shrub and Joshua tree communities with scattered pinyon pines. Occupies underground burrow when inactive.

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
yellow-billed magpie	<i>Pica nuttalli</i>	None	None	Central Valley and coastal mountain ranges from south of San Francisco to Santa Barbara Co.	Open oak & riparian woodland, farm & ranchland or urban areas with tall trees near grassland, pasture or cropland.
Abert's towhee	<i>Pipilo aberti</i>	None	None	Desert riparian and desert wash habitats in the lower Colorado River Valley, also the Imperial & Coachella valleys.	Frequents dense vegetation, thickets of willow, cottonwood, mesquite, & saltcedar.
Yuma mountain lion	<i>Puma concolor browni</i>	None	SSC	Low elevations in the Colorado River Valley of California.	Live in dense bottomland vegetation, also found in adjacent, rocky uplands.
Salinas harvest mouse	<i>Reithrodontomys megalotis distichlis</i>	None	None	Known only from the Monterey Bay region.	Occurs in fresh and brackish water wetlands and probably in the adjacent uplands around the mouth of the Salinas River.
salt-marsh harvest mouse	<i>Reithrodontomys raviventris</i>	FE	SE, FP	Only in the saline emergent wetlands of San Francisco Bay and its tributaries.	Pickleweed is primary habitat. Do not burrow, build loosely organized nests. Require higher areas for flood escape.
Angel Island mole	<i>Scapanus latimanus insularis</i>	None	None	Known only from Angel Island in San Francisco Bay.	Need friable soils for burrowing.
Alameda Island mole	<i>Scapanus latimanus parvus</i>	None	SSC	Only known from Alameda Island. Found in a variety of habitats, especially annual & perennial grasslands.	Prefers moist, friable soils. avoids flooded soils.
Yuma hispid cotton rat	<i>Sigmodon hispidus eremicus</i>	None	SSC	Along the Colorado River and in grass & agricultural areas near irrigation waters.	Wetlands & uplands with dense grass & herbaceous plants. Makes runways through vegetation. Nests on surface & in burrows.

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Mount Lyell shrew	<i>Sorex lyelli</i>	None	SSC	High elevation riparian areas in the southern Sierra Nevada.	Requires moist soil, lives in grass or under willows. Uses logs, stumps, etc. for cover.
Buena Vista Lake shrew	<i>Sorex ornatus relictus</i>	FE	SSC	Marshlands and riparian areas in the Tulare Basin.	Prefers moist soil. Uses stumps, logs and litter for cover.
Monterey shrew	<i>Sorex ornatus salarius</i>	None	SSC	Riparian, wetland & upland areas in the vicinity of the Salinas River delta.	Prefers moist microhabitats. feeds on insects & other invertebrates found under logs, rocks & litter.
southern California saltmarsh shrew	<i>Sorex ornatus salicornicus</i>	None	SSC	Coastal marshes in Los Angeles, Orange and Ventura Counties.	Requires dense vegetation and woody debris for cover.
Suisun shrew	<i>Sorex ornatus sinuosus</i>	None	SSC	Tidal marshes of the northern shores of San Pablo and Suisun bays.	Require dense low-lying cover and driftweed and other litter above the mean hightide line for nesting and foraging.
salt-marsh wandering shrew	<i>Sorex vagrans halicoetes</i>	None	SSC	Salt marshes of the south arm of San Francisco Bay.	Medium high marsh 6-8 ft above sea level where abundant driftwood is scattered among salicornia.
riparian brush rabbit	<i>Sylvilagus bachmani riparius</i>	FE	SE	Riparian areas on the San Joaquin River in northern Stanislaus County.	Dense thickets of wild rose, willows, and blackberries.
American badger	<i>Taxidea taxus</i>	None	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	Needs sufficient food, friable soils & open, uncultivated ground. Preys on burrowing rodents. Digs burrows.
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE	ST	Annual grasslands or grassy open stages with scattered shrubby vegetation.	Need loose-textured sandy soils for burrowing, and suitable prey base.
Sierra Nevada red fox	<i>Vulpes vulpes necator</i>	None	ST	Found from the Cascades down to the Sierra Nevada. Found in a variety of habitats from wet	Use dense vegetation & rocky areas for cover & den sites. Prefer forests interspersed w/ meadows or alpine



**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
				meadows to forested areas.	fell-fields.
Mohave ground squirrel	<i>Xerospermophilus mohavensis</i>	None	ST	Open desert scrub, alkali scrub & Joshua tree woodland. Also feeds in annual grasslands. Restricted to Mojave Desert.	Prefers sandy to gravelly soils, avoids rocky areas. Uses burrows at base of shrubs for cover. Nests are in burrows.
Palm Springs round-tailed ground squirrel	<i>Xerospermophilus tereticaudus chlorus</i>	FC	SSC	Restricted to the Coachella Valley. Prefers desert succulent scrub, desert wash, desert scrub, alkali scrub, & levees.	Prefers open, flat, grassy areas in fine-textured, sandy soil. Density correlated with winter rainfall.
Point Reyes jumping mouse	<i>Zapus trinitatus orarius</i>	None	SSC	Primarily in bunch grass marshes on the uplands of Point Reyes. Also present in coastal scrub, grassland, and meadows.	Eats mainly grass seeds w/ some insects & fruit taken. Builds grassy nests on ground under vegetation, burrows in winter
<b>Reptiles</b>					
western pond turtle	<i>Actinemys marmorata</i>	None	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams & irrigation ditches with aquatic vegetation below 6000 ft elevation.	Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 1/4 mile from water for egg-laying.
black legless lizard	<i>Anniella pulchra nigra</i>	None	SSC	Sand dunes and sandy soils in the Monterey Bay and Morro Bay regions.	Inhabit sandy soil/dune areas with bush lupine and mock heather as dominant plants. Moist soil is essential.
silvery legless lizard	<i>Anniella pulchra pulchra</i>	None	SSC	Sandy or loose loamy soils under sparse vegetation.	Soil moisture is essential. they prefer soils with a high moisture content.
orangethroat whiptail	<i>Aspidoscelis hyperythra</i>	None	SSC	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats.	Prefers washes & other sandy areas with patches of brush & rocks. Perennial plants necessary for its major food-termites

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
coastal whiptail	<i>Aspidoscelis tigris stejnegeri</i>	None	None	Found in deserts & semiarid areas with sparse vegetation and open areas. Also found in woodland & riparian areas.	Ground may be firm soil, sandy, or rocky.
rosy boa	<i>Charina trivirgata</i>	None	None	Desert & chaparral from the coast to the Mojave & Colorado deserts. prefers moderate to dense vegetation & rocky cover.	Habitats with a mix of brushy cover & rocky soil such as coastal canyons & hillsides, desert canyons, washes & mountains.
southern rubber boa	<i>Charina umbratica</i>	None	ST	Restricted to the San Bernardino and San Jacinto mtns; found in a variety of montane forest habitats.	Found in vicinity of streams or wet meadows; requires loose, moist soil for burrowing; seeks cover in rotting logs.
red-diamond rattlesnake	<i>Crotalus ruber</i>	None	SSC	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains.	Occurs in rocky areas & dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.
San Bernardino ringneck snake	<i>Diadophis punctatus modestus</i>	None	None	Most common in open, relatively rocky areas. Often in somewhat moist microhabitats near intermittent streams.	Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous vegetation.
Panamint alligator lizard	<i>Elgaria panamintina</i>	None	SSC	Found in the White & Inyo Mtms to the north & west, & the Panamint Mtms to the south & east; 2800-6800 ft elevation.	Inhabits areas near permanent water, in canyons, damp gullies, and rocky areas near dense vegetation.
blunt-nosed leopard lizard	<i>Gambelia sila</i>	FE	SE, FP	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief.	Seeks cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrows.

TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS

Page 45 of 47

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
desert tortoise	<i>Gopherus agassizii</i>	FT	ST	Most common in desert scrub, desert wash, and Joshua tree habitats; occurs in almost every desert habitat.	Require friable soil for burrow and nest construction. Creosote bush habitat with lg annual wildflower blooms preferred.
banded gila monster	<i>Heloderma suspectum cinctum</i>	None	SSC	Inhabits the lower slopes of rocky canyons and arroyos, but is also found on desert flats among scrub and succulents.	Eggs are laid in soil in excavated nests; thus, soil must be sandy or friable. Found in areas moister than surroundings.
California mountain kingsnake (San Bernardino population)	<i>Lampropeltis zonata (parvirubra)</i>	None	SSC	Bigcone spruce & chaparral at lower elev. Black oak, incense cedar, Jeffrey pine & ponderosa pine at higher elevations.	Well-lit canyons with rocky outcrops or rocky talus.
California mountain kingsnake (San Diego population)	<i>Lampropeltis zonata (pulchra)</i>	None	SSC	Restricted to the San Gabriel and San Jacinto mtns of Southern California.	Inhabits a variety of habitats, including valley-foothill hardwood, coniferous, chaparral, riparian, and wet meadows.
San Joaquin whipsnake	<i>Masticophis flagellum ruddocki</i>	None	SSC	Open, dry habitats with little or no tree cover. Found in valley grassland & saltbush scrub in the San Joaquin Valley.	Needs mammal burrows for refuge and oviposition sites.
Alameda whipsnake	<i>Masticophis lateralis euryxanthus</i>	FT	ST	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats.	Mostly south-facing slopes & ravines, with rock outcrops, deep crevices or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.
coast horned lizard	<i>Phrynosoma blainvillii</i>	None	SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes.	Open areas for sunning, bushes for cover, patches of loose soil for burial, & abundant supply of ants & other insects.

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
flat-tailed horned lizard	<i>Phrynosoma mcallii</i>	None	SSC	Restricted to desert washes and desert flats in central Riverside, eastern San Diego, and Imperial Counties.	Critical habitat element is fine sand, into which lizards burrow to avoid temp extremes; requires vegetative cover and ants.
Coronado Island skink	<i>Plestiodon skiltonianus interparietalis</i>	None	SSC	Grassland, chaparral, pinon-juniper & juniper sage woodland, pine-oak & pine forests in Coast Ranges of Southern California.	Prefers early successional stages or open areas. Found in rocky areas close to streams & on dry hillsides.
coast patch-nosed snake	<i>Salvadora hexalepis virgultea</i>	None	SSC	Brushy or shrubby vegetation in coastal Southern California.	Require small mammal burrows for refuge and overwintering sites.
northern sagebrush lizard	<i>Sceloporus graciosus graciosus</i>	None	None	Ground dweller, usually found near bushes, brush heaps, logs, or rocks.	Needs good light, open ground, & scattered low bushes.
giant garter snake	<i>Thamnophis gigas</i>	FT	ST	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals & irrigation ditches.	This is the most aquatic of the garter snakes in California.
two-striped garter snake	<i>Thamnophis hammondi</i>	None	SSC	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 ft elevation.	Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.
south coast garter snake	<i>Thamnophis sirtalis ssp.</i>	None	SSC	Southern California coastal plain from Ventura County to San Diego County, and from sea level to about 2,750 ft elevation.	Marsh & upland habitats near permanent water with good strips of riparian vegetation.
San Francisco garter snake	<i>Thamnophis sirtalis tetrataenia</i>	FE	SE, FP	Vicinity of freshwater marshes, ponds and slow moving streams in San Mateo County & extreme northern Santa Cruz County.	Prefers dense cover & water depths of at least one foot. upland areas near water are also very important.

**TABLE 4.3-4. NON-FISH ANIMAL SPECIES WITH LESS THAN SIGNIFICANT IMPACTS**

Common name	Scientific name	Federal listing status*	State listing status*	General Habitat	Micro Habitat
Coachella Valley fringe-toed lizard	<i>Uma inornata</i>	FT	SE	Limited to sandy areas in the Coachella Valley, Riverside County.	Requires fine, loose, windblown sand (for burrowing), interspersed with hardpan and widely spaced desert shrubs.
Mojave fringe-toed lizard	<i>Uma scoparia</i>	None	SSC	Fine, loose, wind-blown sand in sand dunes, dry lakebeds, riverbanks, desert washes, sparse alkali scrub & desert scrub.	Shrubs or annual plants may be necessary for arthropods found in the diet.

\* List of Abbreviations for Federal and State Species Status follow below:

- FC* Federal candidate for listing
- FE* Federal endangered
- FP* State fully protected species
- FPT* Federal proposed: threatened
- SSC* State species of special concern
- FSC* Federal species of concern (per NOAA or USFWS website)
- SCE* State candidate: endangered
- SE* State endangered
- SSC* State species of special concern
- ST* State threatened

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Sanicula maritima</i>	None	Rare	1B.1	Meadows and seeps, valley and foothill grassland, chaparral, coastal prairie.	Moist clay or ultramafic soils. 30-240m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Juncus leiospermus var. ahartii</i>	None	None	1B.2	Vernal pools.	Restricted to the edges of vernal pools. 30-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Paronychia ahartii</i>	None	None	1B.1	Valley and foothill grassland, vernal pools, cismontane woodland.	Stony, nearly barren clay of swales and higher ground around vernal pools. 30-510m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Rhamnus alnifolia</i>	None	None	2.2	Meadows and seeps, lower montane coniferous forest, upper montane coniferous forest, montane riparian scrub.	Mesic sites. 1370-2130m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Geum aleppicum</i>	None	None	2.2	Meadows, Great Basin scrub, lower montane coniferous forest.	450-1515m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Ivesia kingii var. kingii</i>	None	None	2.2	Meadows, Great Basin scrub, playas.	Alkaline meadows, alkaline flats, and low-lying alkaline basins; w/ <i>Distichlis</i> ,	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					Sporobolus, Juncus, etc. 1200-2130m.	substantially impact suitable habitat.
<i>Astragalus tener</i> var. <i>tener</i>	None	None	1B.2	Alkali playa, valley and foothill grassland, vernal pools.	Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 1-170m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Sphaeromeria potentilloides</i> var. <i>nitrophila</i>	None	None	2.2	Meadows and seeps, playas.	Usually alkaline soils. 2100-2400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Nitrophila mohavensis</i>	Endangered	Endangered	1B.1	Alkali playa, meadows and seeps.	Heavy alkaline mudflats, and saltgrass meadows. 425-750m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Glyceria grandis</i>	None	None	2.3	Meadows.	Wet meadows, ditches, streams, and ponds in valleys and lower elevations in the mountains. 15-1980m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Scheuchzeria palustris</i> var. <i>americana</i>	None	None	2.1	Bogs and fens, marshes and swamps.	Sphagnum bogs and on lake margins. 1360-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Trientalis arctica</i>	None	None	2.2	Meadows and seeps, bogs and fens.	Coastal boggy areas. 0-15m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Grindelia fraxinipratensis</i>	Threatened	None	1B.2	Meadows, chenopod scrub.	Saline clay soil, esp in depressions and in saturated soils next to standing water. 630-700m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Limnanthes bakeri</i>	None	Rare	1B.1	Freshwater marsh, valley and foothill grassland, meadows and seeps, vernal pools.	Seasonally moist or saturated sites w/in grassland; also in swales, roadside ditches & margins of marshy areas. 175-910m	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Navarretia leucocephala ssp. bakeri</i>	None	None	1B.1	Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest.	Vernal pools and swales; adobe or alkaline soils. 5-950m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Pyrrocoma uniflora var. gossypina</i>	None	None	1B.2	Pebble plain, meadows and seeps.	Meadows, meadow edges, and along streams in or near pebble plain habitat. 1600-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Plagiobothrys hystriculus</i>	None	None	1B.1	Vernal pools, valley and foothill grassland.	Wet sites. 10-50m.	Low. Suction dredging not likely to occur in occupied habitat or



**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						substantially impact suitable habitat.
<i>Mertensia oblongifolia</i> var. <i>amoena</i>	None	None	2.2	Great Basin scrub, meadows and seeps.	1630-2315m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Salix bebbiana</i>	None	None	2.3	Riparian scrub, marshes and swamps.	Streambanks, lakeshores. 1200-1400m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Bensoniella oregona</i>	None	Rare	1B.1	Bogs and fens, lower montane coniferous forest, meadows.	Wet meadows and openings in forest. 935-1400m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Sidalcea pedata</i>	Endangered	Endangered	1B.1	Meadows and seeps, pebble plains.	Vernally mesic sites in meadows or pebble plains. 1600-2500m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Hymenoxys odorata</i>	None	None	2	Riparian scrub, Sonoran desert scrub.	Sandy sites. 45-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Schoenus nigricans</i>	None	None	2.2	Marshes and swamps.	Often in alkaline marshes. 150-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Potentilla basaltica</i>	Candidate	None	1B.3	Meadows and seeps.	Alkaline, sandy, volcanic soils. 1530-1555m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Helodium blandowii</i>	None	None	2.3	Meadows and seeps, bogs and fens, subalpine coniferous forest.	Moss growing on damp soil. 2000-2700m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Oxytropis deflexa var. sericea</i>	None	None	2.1	Upper montane coniferous forest, meadows and seeps.	Moist meadows and turfey banks in the White Mountains. 2800-3355m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Gratiola heterosepala</i>	None	Endangered	1B.2	Marshes and swamps (freshwater), vernal pools.	Clay soils; usually in vernal pools, sometimes on lake margins. 5-2400m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Bruchia bolanderi</i>	None	None	2.2	Lower montane coniferous forest, meadows and seeps,	Moss which grows on damp clay soils. This species has an ephemeral nature and takes	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				upper montane coniferous forest.	advantage of disturbed sites. 1700-2800m.	substantially impact suitable habitat.
<i>Trifolium bolanderi</i>	None	None	1B.2	Meadows and seeps, lower montane coniferous forest, upper montane coniferous forest.	Moist mountain meadows. 2075-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Cicuta maculata var. bolanderi</i>	None	None	2.1	Marshes, fresh or brackish water.	0-200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Cinna bolanderi</i>	None	None	1B.2	Meadows and seeps, upper montane coniferous forest.	Streamsides and other mesic areas. 1670-2440m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Wolffia brasiliensis</i>	None	None	2.3	Shallow freshwater marshes.	30-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex leptalea</i>	None	None	2.2	Bogs and fens, meadows, marshes and swamps.	Mostly known from bogs and wet meadows. 0-790m.	Low. Suction dredging not likely to substantially impact suitable habitat.
<i>Carex comosa</i>	None	None	2.1	Marshes and swamps.	Lake margins, wet places; site below sea level is on a Delta island. -5-1005m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						suitable habitat.
<i>Atriplex depressa</i>	None	None	1B.2	Chenopod scrub, meadows, playas, valley and foothill grassland, vernal pools.	Usually in alkali scalds or alk. clay in meadows or annual grassland; rarely assoc w/riparian, marshes, or V.P's. 1-320m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Meesia uliginosa</i>	None	None	2.2	Meadows and seeps, bogs and fens, upper montane coniferous forest.	Moss on damp soil. 1300-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex vulpinoidea</i>	None	None	2.2	Marshes and swamps, riparian woodland.	Wet places. 30-1200m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Rhynchospora capitellata</i>	None	None	2.2	Lower montane coniferous forest, meadows and seeps, marshes and swamps, upper montane coniferous forest.	Mesic sites. 455-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Lasthenia burkei</i>	Endangered	Endangered	1B.1	Vernal pools, meadows and seeps.	Most often in vernal pools and swales. 15-580m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Limnanthes floccosa ssp. californica</i>	Endangered	Endangered	1B.1	Vernal pools, valley and foothill grassland.	Wet or flowing drainages & depressions; often not in	Low. Suction dredging not likely to occur in

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					discrete vernal pools; soils are usu Redding clay w/rocks. 50-930m.	occupied habitat or substantially impact suitable habitat.
<i>Suksdorfia ranunculifolia</i>	None	None	2	Upper montane coniferous forest, meadows and seeps.	Mesic sites; rocky. 1500-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Rhynchospora californica</i>	None	None	1B.1	Bogs and fens, marshes and swamps, lower montane coniferous forest, meadows and seeps.	Freshwater seeps and open marshy areas. 45-1000m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Taraxacum californicum</i>	Endangered	None	1B.1	Meadows and seeps.	Mesic meadows, usually free of taller vegetation. 1620-2800m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Orcuttia californica</i>	Endangered	Endangered	1B.1	Vernal pools.	15-660m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Imperata brevifolia</i>	None	None	2.1	Coastal scrub, chaparral, riparian scrub, mojavean scrub, meadows and seeps (alkali).	Mesic sites, alkali seeps, riparian areas. 0-500m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						or their habitat.
<i>Cladium californicum</i>	None	None	2.2	Freshwater and alkali marshes, seeps.	Freshwater or alkaline moist habitats. 60-600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex californica</i>	None	None	2.3	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows, marshes and swamps.	Meadows, drier areas of swamps, marsh margins. 90-250m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Eleocharis torticulmis</i>	None	None	1B.3	Bogs and fens, meadows and seeps, lower montane coniferous forest.	1005-1175m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Plagiobothrys strictus</i>	Endangered	Threatened	1B.1	Broadleafed upland forest, meadows and seeps, valley and foothill grassland, vernal pools.	Alkaline sites near thermal springs and on margins of vernal pools in heavy, dark, adobe-like clay. 90-160m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Geothallus tuberosus</i>	None	None	1B.1	Coastal scrub, vernal pools. most suitable habitat lost to urbanization.	Liverwort known from mesic soil. 10-600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Parnassia cirrata var. intermedia</i>	None	None	2.2	Lower montane coniferous forest, upper	Rocky serpentine soil. 780-1980m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				montane coniferous forest, meadows and seeps, bogs and fens.		occupied habitat or substantially impact suitable habitat.
<i>Cirsium fontinale var. obispoens</i>	Endangered	Endangered	1B.2	Chaparral, cismontane woodland.	Serpentine seeps. 35-365m.	Low. Limited distribution; Occupied habitat not likely to overlap with suction dredging.
<i>Erythronium revolutum</i>	None	None	2.2	Bogs and fens, broadleafed upland forest, North Coast coniferous forest.	0-1065m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Sidalcea oregana ssp. eximia</i>	None	None	1B.2	Meadows and seeps, North Coast coniferous forest, lower montane coniferous forest.	Nears meadows, in gravelly soil. 0-1800m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Rorippa columbiae</i>	None	None	1B.2	Pinyon-juniper woodland, meadows and seeps, playas.	Moist sandy soil, low gravelly river banks, basaltic lava slopes. 360-1800m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Neostapfia colusana</i>	Threatened	Endangered	1B.1	Vernal pools.	Usually in large, or deep vernal pool bottoms; adobe soils. 5-110m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Lasthenia conjugens</i>	Endangered	None	1B.1	Valley and foothill grassland, vernal pools, cismontane woodland. Extirpated from most of its range; extrem. endangered.	Vernal pools, swales, low depressions, in open grassy areas. 1-445m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Triteleia ixioides</i> ssp. <i>cookii</i>	None	None	1B.3	Cismontane woodland, closed-cone coniferous forest.	Streamsides, wet ravines; on serpentine and in serpentine seeps. Sometimes near cypresses. ?-500m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Lotus oblongifolius</i> var. <i>cupreus</i>	None	None	1B.3	Meadows, upper montane coniferous forest (mesic).	Wet meadow borders. 2400-2600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	None	None	1B.1	Coastal salt marshes, playas, valley and foothill grassland, vernal pools.	Usually found on alkaline soils in playas, sinks, and grasslands. 1-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Tuctoria mucronata</i>	Endangered	Endangered	1B.1	Vernal pools, valley and foothill grassland.	Clay bottoms of drying vernal pools and lakes in valley grassland. 5-10m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Utricularia ochroleuca</i>	None	None	2.2	Mesic meadows, marshes near lakes.	Mesic sites, including lake margins. 1435-1440m.	Low. Suction dredging not likely to occur in occupied habitat or



**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						substantially impact suitable habitat.
<i>Downingia concolor</i> <i>var. brevior</i>	None	Endangered	1B.1	Meadows (mesic), vernal pools.	In vernal seeps, lakes and pools, and on mudflats, with <i>Orthocarpus</i> , <i>Limnanthes</i> , <i>Collinsia</i> . 1400-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Delphinium hesperium</i> ssp. <i>cuyamaca</i>	None	Rare	1B.2	Lower montane coniferous forest, meadows.	On dried edge of grassy meadows, also described as in mesic sites. 1210-1630m.	Low. Suction dredging not likely to substantially impact suitable habitat.
<i>Malacothamnus davidsonii</i>	None	None	1B.2	Coastal scrub, riparian woodland, chaparral.	Sandy washes. 180-855m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Sisyrinchium funereum</i>	None	None	1B.3	Meadows and seeps.	Alkaline meadows. 40-915m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex saliniformis</i>	None	None	1B.2	Coastal prairie, coastal scrub, meadows and seeps, marshes and swamps (coastal salt).	Mesic sites. 3-230m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Eryngium racemosum</i>	None	Endangered	1B.1	Riparian scrub.	Seasonally inundated floodplain on clay. 3-75m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						habitat or impact suitable habitat.
<i>Limosella subulata</i>	None	None	2.1	Riparian scrub, freshwater marsh, brackish marsh. Probably the rarest of the suite of Delta rare plants.	Usually on mud banks of the Delta in marshy or scrubby riparian associations; often with <i>Lilaeopsis masonii</i> . 0-3m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	None	None	1B.2	Freshwater and brackish marshes.	Often found w/ <i>Typha</i> , <i>Aster lentus</i> , <i>Rosa calif.</i> , <i>Juncus</i> spp., <i>Scirpus</i> , etc. Usually on marsh and slough edges.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Plagiobothrys salsus</i>	None	None	2.2	Chenopod scrub, marshes and swamps.	Moist, alkaline mud flats. 605-1360m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Ivesia aperta</i> var. <i>canina</i>	None	None	1B.1	Lower montane coniferous forest, meadows.	Shallow rocky soil of volcanic origin. 1600-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Juncus dudleyi</i>	None	None	2.3	Lower montane coniferous forest (mesic).	Wet areas in forest. 455-2000m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Puccinellia pumila</i>	None	None	2.2	Meadows and seeps, marshes and swamps.	Mineral spring meadows and coastal salt marshes. 1-10m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Downingia pusilla</i>	None	None	2.2	Valley and foothill grassland (mesic sites), vernal pools.	Vernal lake and pool margins with a variety of associates. In several types of vernal pools. 1-485m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Betula glandulosa</i>	None	None	2.2	Bogs and fens, lower montane coniferous forest, meadows and seeps, marshes and swamps, subalpine coniferous forest.	Mesic sites. 1310-2285m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Potamogeton zosteriformis</i>	None	None	2.2	Marshes and swamps.	Ponds, lakes, streams. 0-1860m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Smilax jamesii</i>	None	None	1B.3	North Coast coniferous forest, broadleaved upland forest?, lower montane coniferous forest, marshes and swamps.	Along streams and lake margins. 665-1820m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Drosera anglica</i>	None	None	2.3	Bogs and fens, meadows.	1300-2000m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						substantially impact suitable habitat.
<i>Potentilla glandulosa</i> ssp. <i>Ewanii</i>	None	None	1B.3	Lower montane coniferous forest.	Edges of seeps and springs, small waterways. 1900-2400m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Lupinus padre-crowleyi</i>	None	Rare	1B.2	Great Basin scrub, riparian scrub, riparian forest, upper montane coniferous forest.	Scattered on steep avalanche chutes, in sunny sites in drainages, & in valley bottoms; decomposed granite. 2500-4000m.	Low. Suction dredging not likely to substantially impact suitable habitat.
<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i>	Endangered	Threatened	1B.1	Vernal pools.	Volcanic ash flow, and volc substrate vernal pools. 400-855m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Potamogeton foliosus</i> var. <i>fibrillosus</i>	None	None	2.3	Marshes and swamps.	Shallow water, small streams. 5-1300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Astragalus agrestis</i>	None	None	2.2	Great Basin scrub, meadows and seeps.	Vernally mesic sites. 1560-1650m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Juncus digitatus</i>	None	None	1B.1	Cismontane woodland (openings), lower	In full sun, in the vernal damp ground of seeps, vernal pools	Low. Suction dredging not likely to occur in

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				montane coniferous forest (openings), vernal pools.	and swales on gentle slopes over volcanic bedrock. 600-800m.	occupied habitat or substantially impact suitable habitat.
<i>Astragalus lentiginosus var. piscinensis</i>	Threatened	None	1B.1	Meadows, playas.	Usually found on mounds in alkali meadows with sparse vegetative cover. 1120-1300m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Utricularia intermedia</i>	None	None	2.2	Bogs and fens, meadows and seeps, marshes and swamps.	Mesic meadows, lake margins, marshes, fens. 1200-2700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Thelypodium integrifolium ssp. complanatum</i>	None	None	2.2	Great Basin scrub, meadows and seeps.	Alkaline or subalkaline soils; mesic sites. 1100-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Gentiana fremontii</i>	None	None	2.3	Meadows, upper montane coniferous forest.	Wet mountain meadows. 2400-2700m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Ranunculus hydrocharoides</i>	None	None	2.1	Marshes and swamps.	In or bordering shallow springs or freshwater marshes in the mountains. 1100-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES

Page 17 of 52

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Nasturtium gambelii</i>	Endangered	Threatened	1B.1	Marshes and swamps.	Freshwater and brackish marshes at the margins of lakes and along streams, in or just above the water level. 5-1305m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Dichantheium lanuginosum var. thermale</i>	None	Endangered	1B.1	Closed-cone coniferous forest, riparian forest, valley and foothill grassland.	Usually around moist, warm soil in the vicinity of hot springs. 445-815m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Solidago gigantea</i>	None	None	2.2	Meadows and seeps, marshes and swamps.	Moist streambanks, lakesides, moist meadows. 1000-1500m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Alisma gramineum</i>	None	None	2.2	Marshes and swamps.	Freshwater marsh. 390-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Downingia laeta</i>	None	None	2.2	Great Basin scrub, meadows and seeps, freshwater marshes, pinyon-juniper woodland, vernal pools.	In mesic sites or wetlands. 1220-2200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Nemophila breviflora</i>	None	None	2.3	Great Basin scrub, meadows and seeps,	Mesic sites. 1220-2410m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				upper montane coniferous forest.		occupied habitat or substantially impact suitable habitat.
<i>Sanguisorba officinalis</i>	None	None	2.2	Bogs & fens, meadows & seeps, broadleaved upland forest, marshes & swamps, North Coast coniferous forest, ripar. forest.	Rocky serpentine seepage areas and along stream borders. 60-1400m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Carex viridula var. viridula</i>	None	None	2.3	Bogs and fens, marshes and swamps (freshwater), North Coast coniferous forest.	Mesic sites. 0-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Tuctoria greenei</i>	Endangered	Rare	1B.1	Vernal pools, valley and foothill grassland.	Dry bottoms of vernal pools in open grasslands. 30-1065m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Juncus supiniformis</i>	None	None	2.2	Marshes and swamps, bogs and fens.	20-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Orcuttia pilosa</i>	Endangered	Endangered	1B.1	Vernal pools.	25-125m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Pseudobahia bahiifolia</i>	Endangered	Endangered	1B.1	Valley and foothill grassland, cismontane woodland.	Clay soils, predominantly on the northern slopes of knolls, but also along shady creeks or near vernal pools. 15-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Lepidium latipes var. heckardii</i>	None	None	1B.2	Valley and foothill grassland, vernal pools.	Grassland, and sometimes vernal pool edges. Alkaline soils. 3-30m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Potentilla hickmanii</i>	Endangered	Endangered	1B.1	Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps, marshes and swamps.	Freshwater marshes, seeps, and small streams in open or forested areas along the coast. 5-125m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Trichostema austromontanum ssp. compactum</i>	Threatened	None	1B.1	Upper montane coniferous forest.	Seasonally submerged lake margins, decomposed granite. One site known: 2665m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Atriplex argentea var. hillmanii</i>	None	None	2.2	Great Basin scrub, meadows and seeps.	Alkaline meadows in scrub. 1200-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Cordylanthus mollis ssp. hispidus</i>	None	None	1B.1	Meadows, playas, valley and foothill grassland.	In damp alkaline soils, especially in alkaline meadows and alkali sinks with <i>Distichlis</i> . 10-155m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact



**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						suitable habitat.
<i>Eryngium aristulatum var. hooveri</i>	None	None	1B.1	Vernal pools.	Alkaline depressions, vernal pools, roadside ditches and other wet places near the coast. 5-45m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Chamaesyce hooveri</i>	Threatened	None	1B.2	Vernal pools, valley and foothill grassland.	Vernal pools on volcanic mudflow or clay substrate. 25-130m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Pinguicula macroceras</i>	None	None	2.2	Bogs and fens, meadows and seeps.	Meadow edges, seepage areas, serpentine soil. 20-1820m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Taraxacum ceratophorum</i>	None	None	2.1	Meadows and seeps, valley and foothill grassland.	Mesic sites. 2895m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Astragalus hornii var. hornii</i>	None	None	1B.1	Meadows and seeps, playas.	Lake margins, alkaline sites. 60-850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Fimbristylis thermalis</i>	None	None	2.2	Meadows (alkaline).	Near hot springs. 120-1340m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						suitable habitat.
<i>Puccinellia howellii</i>	None	None	1B.1	Meadows and seeps.	Mineralized soils around mineral springs and seeps. One site known: 485m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Montia howellii</i>	None	None	2.2	Meadows, North Coast coniferous forest, vernal pools.	Vernally wet sites; often on compacted soil. 0-400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Thelypodium howellii</i> <i>ssp. howellii</i>	None	None	1B.2	Great Basin scrub, meadows and seeps.	Moist alkaline meadows. 1200-1830m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Lycopodiella inundata</i>	None	None	2.2	Bogs and fens, lower montane coniferous forest, marshes and swamps.	Peat bogs, muddy depressions, pond margins. 0-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Phacelia inyoensis</i>	None	None	1B.2	Meadows and seeps.	Alkaline meadows. 1025-3200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Sidalcea oregana</i> <i>ssp. valida</i>	Endangered	Endangered	1B.1	Marshes and swamps.	Edges of freshwater marshes. 115-150m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						habitat or impact suitable habitat.
<i>Erythronium klamathense</i>	None	None	2.2	Upper montane coniferous forest, meadows and seeps.	1200-1850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Gentiana plurisetosa</i>	None	None	1B.3	Meadows and seeps, upper montane coniferous forest, lower montane coniferous forest.	Meadows in red fir and yellow pine forests; mesic sites. 1200-1900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex klamathensis</i>	None	None	1B.2	Meadows and seeps, chaparral, cismontane woodland.	Serpentine. 1000-1140m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Juncus nodosus</i>	None	None	2.3	Meadows, marshes and swamps.	Mesic sites and lake margins. 1130-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Cirsium loncholepis</i>	Endangered	Threatened	1B.1	Coastal dunes, brackish marshes, riparian scrub.	Lake edges, riverbanks, other wetlands; often in dune areas. 5-185m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Carex lenticularis var. limnophila</i>	None	None	2.2	Bogs and fens, marshes and swamps, North Coast	Lakeshores, beaches. 0-6m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				coniferous forest.		occupied habitat or substantially impact suitable habitat.
<i>Sedella leiocarpa</i>	Endangered	Endangered	1B.1	Valley and foothill grassland, vernal pools, cismontane woodland.	Level areas that are seasonally wet and dry out in late spring; substrate usually of volcanic origin. 365-790m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Legenere limosa</i>	None	None	1B.1	Vernal pools. Many historical occurrences are extirpated.	In beds of vernal pools. 1-880m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Astragalus lemmonii</i>	None	None	1B.2	Great Basin scrub, meadows and seeps, marshes and swamps.	Lakeshores, meadows and seeps. 1280-2200m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Lilium parryi</i>	None	None	1B.2	Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest.	Wet, mountainous terrain; gen in forested areas; on shady edges of streams, in open boggy meadows & seeps. 1300-2790m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Carex petasata</i>	None	None	2.3	Lower montane coniferous forest, meadows.	600-3200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Mimulus purpureus</i>	None	None	1B.2	Meadows and seeps, pebble plain, upper montane coniferous forest.	Dry clay or gravelly soils under Jeffrey pines, along annual streams or vernal springs & seeps. 1900-2300m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Deinandra bacigalupii</i>	None	None	1B.2	Meadows and seeps.	Alkaline meadows. 150-185m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Eryngium constancei</i>	Endangered	Endangered	1B.1	Vernal pools.	Volcanic ash flow vernal pools. 625-855m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Calochortus longebarbatus</i> var. <i>longebarbatus</i>	None	None	1B.2	Meadows, lower montane coniferous forest.	In wet meadows or grassy areas along drainages within forest. Clay soils. 965-1900m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Stellaria longifolia</i>	None	None	2.2	Meadows and seeps, riparian woodland.	Moist areas. 900-1830m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Atriplex vallicola</i>	None	None	1B.2	Chenopod scrub, valley and foothill grassland, vernal pools.	In powdery, alkaline soils that are vernal moist with Frankenia, Atriplex spp. and	Low. Suction dredging not likely to occur in occupied habitat or

TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					Distichlis. 0-605m.	substantially impact suitable habitat.
<i>Carex lyngbyei</i>	None	None	2.2	Marshes and swamps (brackish or freshwater).	0m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Ranunculus macounii</i>	None	None	2.2	Great Basin scrub, meadows and seeps, pinyon-juniper woodland.	Mesic sites. 1400-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Erigeron maniopotamicus</i>	None	None	1B.2	Meadows and seeps (open and dry), lower montane coniferous forest.	Open slopes, disturbed areas (road cuts), tan-colored, rocky soils. 1350-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Navarretia leucocephala ssp. plieantha</i>	Endangered	Endangered	1B.2	Vernal pools.	Volcanic ash flow vernal pools. 30-950m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Fritillaria lanceolata var. tristulis</i>	None	None	1B.1	Coastal bluff scrub, coastal scrub, coastal prairie.	Occurrences reported from canyons and riparian areas as well as rock outcrops; often on serpentine. 30-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Triglochin palustris</i>	None	None	2.3	Meadows and seeps, freshwater marsh, subalpine coniferous	Mesic sites. 2285-3700m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				forest.		substantially impact suitable habitat.
<i>Sidalcea oregana ssp. hydrophila</i>	None	None	1B.2	Meadows and seeps, riparian forest.	Wet soil of streambanks, meadows. 545-2300m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Lathyrus palustris</i>	None	None	2.2	Bogs & fens, lower montane conif. forest, marshes & swamps, N. Coast coniferous forest, coastal prairie, coastal scrub.	Moist coastal areas. 1-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Arenaria paludicola</i>	Endangered	Endangered	1B.1	Marshes and swamps.	Growing up through dense mats of Typha, Juncus, Scirpus, etc. in freshwater marsh. 10-170m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Scutellaria galericulata</i>	None	None	2.2	Marshes and swamps, lower montane coniferous forest, meadows and seeps.	Swamps and wet places. 0-2100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Epilobium palustre</i>	None	None	2.3	Bogs and fens, meadows and seeps.	Mesic sites. Known in California only from Grass Lake, El Dorado County. 2200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES

Page 27 of 52

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Lilaeopsis masonii</i>	None	Rare	1B.1	Freshwater and brackish marshes, riparian scrub.	Tidal zones, in muddy or silty soil formed through river deposition or river bank erosion. 0-10m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Gentiana setigera</i>	None	None	1B.2	Lower montane coniferous forest, meadows.	Meadows, seeps and bogs. Usually or always on serpentine. 490-1065m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Fissidens pauperculus</i>	None	None	1B.2	North coast coniferous forest.	Moss growing on damp soil along the coast. 10-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Polygonum polygaloides ssp. esotericum</i>	None	None	1B.1	Great Basin scrub, vernal pools, lower montane coniferous forest, meadows and seeps.	Edges of seasonal lakes and ponds with <i>Deschampsia</i> , <i>Navarretia</i> , etc. 1480-1690m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Deinandra mohavensis</i>	None	Endangered	1B.3	Riparian scrub, chaparral.	Low sand bars in river bed; mostly in riparian areas or in ephemeral grassy areas. 850-1600m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Agrostis humilis</i>	None	None	2.3	Alpine boulder and rock field, meadows and seeps, subalpine coniferous forest.	Probably undercollected; high elevation grass. 2700-3200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact



**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						suitable habitat.
<i>Nama stenocarpum</i>	None	None	2.2	Marshes and swamps.	Lake shores, river banks, intermittently wet areas. 5-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex limosa</i>	None	None	2.2	Bogs and fens, lower montane coniferous forest, meadows, marshes and swamps, upper montane coniferous forest.	In floating bogs and soggy meadows and edges of lakes. 1200-2775m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Poa napensis</i>	Endangered	Endangered	1B.1	Meadows and seeps, valley and foothill grassland.	Moist alkaline meadows fed by runoff from nearby hot springs. 100-125m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Potentilla newberryi</i>	None	None	2.3	Marshes and swamps.	Receding shorelines; drying marsh margins. 1290-2200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Hierochloe odorata</i>	None	None	2.3	Meadows and seeps.	Wet sites. 1500-1895m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Pleuropogon hooverianus</i>	None	Threatened	1B.1	Broadleafed upland forest, meadows and	Wet grassy, usually shady areas, sometimes freshwater	Low. Suction dredging not likely to occur in

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				seeps, North Coast coniferous forest.	marsh; associated with forest environments; 10-1150m.	occupied habitat or substantially impact suitable habitat.
<i>Ophioglossum pusillum</i>	None	None	2.2	Marshes and swamps, meadows and seeps.	Marsh edges, low pastures, grassy roadside ditches. Also described as in "open swamp." 1000-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Juglans hindsii</i>	None	None	1B.1	Riparian forest, riparian woodland. Few extant native stands remain; widely naturalized.	Deep alluvial soil associated with a creek or stream. 0-395m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Carex arcta</i>	None	None	2.2	Bogs and fens, North Coast coniferous forest.	Mesic sites. 60-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Corallorhiza trifida</i>	None	None	2.1	Lower montane coniferous forest, meadows.	Wet, open to shaded, generally coniferous forest. In California, under firs, in partial shade. 1370-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex praticola</i>	None	None	2.2	Meadows.	Moist to wet meadows. 0-3200m.	Low. Suction dredging not likely to substantially impact suitable habitat.
<i>Microseris borealis</i>	None	None	2.1	Bogs and fens, meadows and seeps, lower montane coniferous	940-2000m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				forest.		substantially impact suitable habitat.
<i>Potamogeton epihydrus ssp. nuttallii</i>	None	None	2.2	Marshes and swamps.	Shallow water, ponds, lakes, streams, irrigation ditches. 400-2110m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Saxifraga nuttallii</i>	None	None	2.1	North Coast coniferous forest.	Cliff walls, moss-covered rocks along creeks; mesic sites. One site in California: 75m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Brodiaea orcuttii</i>	None	None	1B.1	Vernal pools, valley and foothill grassland, closed-cone coniferous forest, cismontane woodland, chaparral, meadows.	Mesic, clay habitats; sometimes serpentine; usu in vernal pools and small drainages. 30-1615m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Epilobium oreganum</i>	None	None	1B.2	Bogs and fens, meadows, lower montane coniferous forest, upper montane coniferous forest.	In and near springs and bogs; at least sometimes on serpentine. 500-2610m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Coptis laciniata</i>	None	None	2.2	North coast coniferous forest, meadows and seeps.	Mesic sites such as moist streambanks. 0-1000m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Mertensia bella</i>	None	None	2.2	Meadows and seeps, upper montane	Wet meadows, under taller herbs. 1420-2000m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				coniferous forest.		occupied habitat or substantially impact suitable habitat.
<i>Pogogyne nudiuscula</i>	Endangered	Endangered	1B.1	Vernal pools.	Dry beds of vernal pools and moist swales w/ <i>Eryngium aristulatum</i> var <i>parishii</i> and <i>Orcuttia californica</i> . 85-250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Sidalcea covillei</i>	None	Endangered	1B.1	Meadows and seeps, Great Basin scrub.	Moist alkaline meadows & freshwater seeps, fine sandy loam soil, one occurrence in stoney calcareous soil. 1090-1415m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Calochortus palmeri</i> var. <i>palmeri</i>	None	None	1B.2	Meadows and seeps, chaparral, lower montane coniferous forest.	Vernally moist places in yellow-pine forest, chaparral. 600-2245m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Centromadia parryi</i> ssp. <i>parryi</i>	None	None	1B.2	Coastal prairie, meadows and seeps, coastal salt marsh, valley and foothill grassland.	Vernally mesic, often alkaline sites. 2-420m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Atriplex parishii</i>	None	None	1B.1	Alkali meadows, vernal pools, chenopod scrub, playas.	Usually on drying alkali flats with fine soils. 4-140m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Limnanthes gracilis</i>	None	Endangered	1B.2	Meadows and seeps,	Vernally moist areas and	Low. Limited

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>ssp. parishii</i>				vernal pools.	temporary seeps of highland meadows and plateaus; often bordering lakes and streams. 600-1760m.	distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Perideridia parishii</i> <i>ssp. Parishii</i>	None	None	2.2	Lower montane coniferous forest, meadows, upper montane coniferous forest.	Damp meadows or along streambeds-prefers an open pine canopy. 1390-3000m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Scirpus pendulus</i>	None	None	2.2	Meadows and seeps, freshwater marsh.	Mesic sites. 800-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Ivesia pickeringii</i>	None	None	1B.2	Lower montane coniferous forest, meadows.	In summer-drying, hanging bogs on serpentine ledges. 800-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Navarretia myersii</i> <i>ssp. myersii</i>	None	None	1B.1	Vernal pools, valley and foothill grassland.	Clay soils within nonnative grassland. 20-330m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Lilium pardalinum</i> <i>ssp. pitkinense</i>	Endangered	Endangered	1B.1	Cismontane woodland, meadows and seeps, freshwater marsh.	Saturated, sandy soils w/ grasses and shrubs. 35-65m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						suitable habitat.
<i>Phacelia inundata</i>	None	None	1B.3	Great Basin scrub, lower montane coniferous forest, playas.	Dried edges of alkali lakes and sinks, inundated clay soils. 1330-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Sidalcea calycosa ssp. rhizomata</i>	None	None	1B.2	Marshes and swamps.	Freshwater marshes near the coast. 5-75(245)m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Limnanthes douglasii ssp. sulphurea</i>	None	Endangered	1B.2	Fresh. marsh, vernal pools, coastal prairie, meadows & seeps, cismontane woodland.	Vernally wet depressions in open rolling, coastal prairies & meadows; typically in dark clay soil. 10-120m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Carex hystericina</i>	None	None	2.1	Marshes and swamps.	Wet places, such as stream edges. 610m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Sphenopholis obtusata</i>	None	None	2.2	Cismontane woodland, meadows and seeps.	Open moist sites, along rivers and springs, alkaline desert seeps. 360-2325m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Navarretia prostrata</i>	None	None	1B.1	Coastal scrub, valley and foothill grassland, vernal	Alkaline soils in grassland, or in vernal pools. Mesic, alkaline	Low. Suction dredging not likely to occur in

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				pools.	sites. 15-700m.	occupied habitat or substantially impact suitable habitat.
<i>Abronia alpina</i>	Candidate	None	1B.1	Meadows and seeps.	Gravelly margins of meadows; in gravel and sand with Hulsea and Lupinus. 2400-2700m. [Occurs only in Ramshaw and Templeton meadows of Tulare County]	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Botrychium virginianum</i>	None	None	2.2	Bogs and fens.	1300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Collomia rawsoniana</i>	None	None	1B.2	Riparian forest, lower montane coniferous forest.	On stabilized alluvium in riparian zones. 775-2060m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Packera indecora</i>	None	None	2.2	Meadows and seeps.	Mesic sites. 1600-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Juncus regelii</i>	None	None	2.3	Upper montane coniferous forest, meadows and seeps.	Mesic sites. 760-1900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Potamogeton robbinsii</i>	None	None	2.3	Marshes and swamps.	Deep water, lakes. 1520-3500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Rhynchospora globularis</i> var. <i>globularis</i>	None	None	2.1	Marshes and swamps.	Freshwater marsh. 45-60m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Orcuttia viscida</i>	Endangered	Endangered	1B.1	Vernal pools.	30-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Trifolium depauperatum</i> var. <i>hydrophilum</i>	None	None	1B.2	Marshes and swamps, valley and foothill grassland, vernal pools.	Mesic, alkaline sites. 0-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Sidalcea neomexicana</i>	None	None	2.2	Alkali playas, brackish marshes, chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub.	Alkali springs and marshes. 0-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Symphyotrichum defoliatum</i>	None	None	1B.2	Meadows and seeps, marshes and swamps, coastal scrub, cismontane woodland, lower	Vernally mesic grassland or near ditches, streams and springs; disturbed areas. 2-2040m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact



**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				montane coniferous forest, grassland.		suitable habitat.
<i>Poa atropurpurea</i>	Endangered	None	1B.2	Meadows and seeps.	Mesic meadows of open pine forests and grassy slopes, loamy alluvial to sandy loam soil. 1350-2455m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Parnassia cirrata</i> var. <i>cirrata</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forest, meadows and seeps.	Mesic sites, streamsides, sometimes calcareous. 1250-2440m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Mimulus exiguus</i>	None	None	1B.2	Meadows and seeps, pebble plains, upper montane coniferous forest.	Seeps and sandy sometimes disturbed soil in moist drainages of annual streams; clay soils. 1800-2315m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Castilleja lasiorhyncha</i>	None	None	1B.2	Meadows, pebble plain, upper montane coniferous forest, chaparral.	Mesic to drying soils in open areas of stream and meadow margins or of vernal wet areas. 1135-2390m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Packera bernardina</i>	None	None	1B.2	Meadows and seeps, pebble plains, upper montane coniferous forest.	Mesic, sometimes alkaline meadows, and dry rocky slopes. 1800-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Eryngium aristulatum</i> <i>var. parishii</i>	Endangered	Endangered	1B.1	Vernal pools, coastal scrub, valley and foothill grassland.	San Diego mesa hardpan & claypan vernal pools & southern interior basalt flow vernal pools; usu surr by scrub. 15-620m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Iva hayesiana</i>	None	None	2.2	Marshes and swamps, playas.	Riverwashes. 10-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Pogogyne abramsii</i>	Endangered	Endangered	1B.1	Vernal pools.	Vernal pools within grasslands, chamise chaparral or coastal sage scrub communities; w/other rare plants. 90-200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Atriplex coronata</i> <i>var. notatior</i>	Endangered	None	1B.1	Playas, chenopod scrub, valley and foothill grassland, vernal pools.	Dry, alkaline flats in the San Jacinto River Valley. 400-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Atriplex joaquiniana</i>	None	None	1B.2	Chenopod scrub, alkali meadow, valley and foothill grassland.	In seasonal alkali wetlands or alkali sink scrub with <i>Distichlis spicata</i> , <i>Frankenia</i> , etc. 1-250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Orcuttia inaequalis</i>	Threatened	Endangered	1B.1	Vernal pools.	30-755m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Sagittaria sanfordii</i>	None	None	1B.2	Marshes and swamps.	In standing or slow-moving freshwater ponds, marshes, and ditches. 0-610m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Juncus luciensis</i>	None	None	1B.2	Vernal pools, meadows, lower montane coniferous forest, chaparral, Great Basin scrub.	Vernal pools, ephemeral drainages, wet meadow habitats and streamside. 300-2040m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Pogogyne clareana</i>	None	Endangered	1B.2	Riparian woodland.	Tributaries of the Nacimiento River, in moist sandy soil. 300-490m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Sidalcea stipularis</i>	None	Endangered	1B.1	Marshes and swamps.	Wet montane marshes fed by springs. 700-740m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Botrychium crenulatum</i>	None	None	2.2	Bogs and fens, meadows, lower montane coniferous forest, freshwater marsh.	Moist meadows, near creeks. 1500-2670m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Pedicularis crenulata</i>	None	None	2.2	Meadows and seeps.	Near streams in wet meadows. 2100-2300m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Limnanthes vinculans</i>	Endangered	Endangered	1B.1	Mesic meadows, vernal pools, valley and foothill grassland.	Swales, wet meadows and marshy areas in valley oak savanna; on poorly drained soils of clays and sandy loam. 15-115m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex serpenticola</i>	None	None	2.3	Meadows and seeps.	Mesic, serpentine sites. 60-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Neviusia cliftonii</i>	None	None	1B.2	Lower montane coniferous forest, riparian woodland.	Shaded, north-facing, or sheltered canyons. Sometimes on limestone. Mesic areas. 300-500m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Carex sheldonii</i>	None	None	2.2	Lower montane coniferous forest, marshes and swamps, riparian scrub.	Mesic sites; along creeks and in wet meadows. 1065-1755m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Heterotheca shevockii</i>	None	None	1B.3	Chaparral, cismontane woodland, riparian	Ditches, crevices, shallow sand. 230-900m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				woodland.		occupied habitat or substantially impact suitable habitat.
<i>Plagiobothrys nitens</i>	None	None	2.1	Alkaline meadows.	Moise alkaline meadows, near springs. 1510-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Lewisia brachycalyx</i>	None	None	2.2	Lower montane coniferous forest, meadows.	Dry to moist meadows in rich loam. 1400-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Raillardella pringlei</i>	None	None	1B.2	Bogs and fens, meadows and seeps.	Streambanks, wet meadows and bogs in areas of serpentized rock. 1200-2200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Scutellaria lateriflora</i>	None	None	2.2	Meadows and seeps, marshes and swamps.	Wet meadows and marshes. - 3-500m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Juncus nevadensis var. inventus</i>	None	None	2.2	Bogs and fens.	0-10m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Balsamorhiza sericea</i>	None	None	1B.3	Lower montane coniferous forest, meadows.	Collections from Douglas-fir forest, meadow, and Jeffrey pine forest. Can be on serpentine. 1310-1735m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Cryptantha crinita</i>	None	None	1B.2	Cismontane woodland, valley foothill grassland, lower montane coniferous forest, riparian forest, riparian woodland.	In gravelly stream beds. 85-220m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Astragalus argophyllus</i> var. <i>argophyllus</i>	None	None	2.2	Meadows and seeps, playas.	Alkaline and saline meadows, stream banks and lake shores, in stiff alluvial clays and loams. 1280-2350m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Castilleja miniata</i> ssp. <i>elata</i>	None	None	2.2	Lower montane coniferous forest, bogs and fens.	Limited to mesic serpentine soils; often associated with bogs, seeps, stream benches, and dry gullies. 0-1750m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Phacelia leonis</i>	None	None	1B.3	Upper montane coniferous forest, meadows and seeps.	Sandy, moist soil, sometimes on serpentine. 1200-1950m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Schoenoplectus heterochaetus</i>	None	None	2.3	Marshes and swamps, lower montane coniferous forest.	Montane lake margins. In California: 1600m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						substantially impact suitable habitat.
<i>Orcuttia tenuis</i>	Threatened	Endangered	1B.1	Vernal pools.	30-1735m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Potamogeton filiformis</i>	None	None	2.2	Marshes and swamps.	Shallow, clear water of lakes and drainage channels. 15-2310m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Thelypodium stenopetalum</i>	Endangered	Endangered	1B.1	Meadows and seeps, pebble plains.	Seasonally moist alkaline clay soils; associated with seeps and springs in the pebble plains. 1900-2245m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Koeberlinia spinosa ssp. tenuispina</i>	None	None	2.2	Sonoran desert scrub, riparian woodland.	Usually in sandy washes. 145-510m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Androsace filiformis</i>	None	None	2.3	Upper montane coniferous forest, meadows and seeps.	Wet, clay, meadow soil with grasses and sedges; sometimes on streambanks; in somewhat disturbed sites (by cattle). 1800m	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Cirsium crassicaule</i>	None	None	1B.1	Chenopod scrub, marshes and swamps, riparian scrub.	Sloughs, riverbanks, and marshy areas. 3-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Parnassia parviflora</i>	None	None	2.2	Meadows and seeps.	Wet areas. 2000-2800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Atriplex pusilla</i>	None	None	2	Great Basin scrub, meadows and seeps.	Known from hot springs, alkali springs. 1300-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Centromadia pungens ssp. laevis</i>	None	None	1B.1	Valley and foothill grassland, chenopod scrub, meadows, playas, riparian woodland.	Alkali meadow, alkali scrub; also in disturbed places. 0-480m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Erigeron nivalis</i>	None	None	2.3	Alpine boulder and rock field, meadows and seeps, subalpine coniferous forest.	On volcanic rock outcrops in cracks and crevices. 1955-2900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Alopecurus aequalis var. sonomensis</i>	Endangered	None	1B.1	Freshwater marshes and swamps, riparian scrub.	Wet areas, marshes, and riparian banks with other wetland species. 5-360m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact



**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						suitable habitat.
<i>Blennosperma bakeri</i>	Endangered	Endangered	1B.1	Vernal pools, valley and foothill grassland.	Vernal pools and swales. 10-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Thelypteris puberula</i> var. <i>sonorensis</i>	None	None	2.2	Meadows and seeps.	Along streams, seepage areas. 50-550m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Scutellaria bolanderi</i> ssp. <i>austromontana</i>	None	None	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest.	In gravelly soils on streambanks or in mesic sites in oak or pine woodland. 425-2000m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Centromadia parryi</i> ssp. <i>australis</i>	None	None	1B.1	Marshes and swamps (margins), valley and foothill grassland.	Often in disturbed sites near the coast at marsh edges; also in alkaline soils sometimes with saltgrass. Sometimes on vernal pool margins. 0-425m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Eryngium spinosepalum</i>	None	None	1B.2	Vernal pools, valley and foothill grassland.	Some sites on clay soil of granitic origin; vernal pools, within grassland. 100-420m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES

Page 45 of 52

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Navarretia fossalis</i>	Threatened	None	1B.1	Vernal pools, chenopod scrub, marshes and swamps, playas.	San Diego hardpan & San Diego claypan vernal pools; in swales & V.P's, often surr. by other habitat types. 30-1300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Pyrrocoma lucida</i>	None	None	1B.2	Lower montane coniferous forest, meadows and seeps.	Alkaline flats, clay soils. 700-1880m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Castilleja campestris</i> <i>ssp. succulenta</i>	Threatened	Endangered	1B.2	Vernal pools, valley and foothill grassland.	Moist places, often in acidic soils. 25-750m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Symphyotrichum lentum</i>	None	None	1B.2	Marshes and swamps (brackish and freshwater).	Most often seen along sloughs with Phragmites, Scirpus, blackberry, Typha, etc. 0-3m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Campanula californica</i>	None	None	1B.2	Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows, freshwater marsh, N Coast coniferous forest.	Bogs and marshes in a variety of habitats; uncommon where it occurs. 1-405m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Rorippa subumbellata</i>	Candidate	Endangered	1B.1	Lower montane coniferous forest, meadows and seeps.	Sandy beaches, on lakeside margins and in riparian communities; on decomposed granite sand. 1885-1900(2395)m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Oreostemma elatum</i>	None	None	1B.2	Bogs and fens, meadows and seeps, upper montane coniferous forest.	Mesic sites. 1005-2100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Draba praealta</i>	None	None	2.3	Meadows and seeps.	Mesic sites. 2500-3415m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Cordylanthus tecopensis</i>	None	None	1B.2	Meadows (alkaline), chenopod scrub, Mojavean desert scrub.	Restricted to moist alkaline soils. 60-625m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Brodiaea filifolia</i>	Threatened	Endangered	1B.1	Cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools.	Usually associated with annual grassland and vernal pools; often surr by shrubland habitats. Clay soils. 25-860m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Calamagrostis crassiglumis</i>	None	None	2.1	Coastal scrub, freshwater marsh.	Usually in marshy swales surrounded by grassland or coastal scrub. 10-45m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex tiogana</i>	None	None	1B.3	Meadows.	On terraces next to lakes; mesic sites. 3090-3310m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Mertensia cusickii</i>	None	None	2.2	Great Basin scrub, meadows and seeps.	1495-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Lysimachia thyrsoflora</i>	None	None	2.3	Meadows (mesic), marshes, upper montane coniferous forest.	Mesic sites; known from lake margins, along streams and in wet meadows. 975-1675m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Saxifraga cespitosa</i>	None	None	2.3	Meadows and seeps.	Damp, rocky places. 915-2760m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Eryngium pinnatisectum</i>	None	None	1B.2	Vernal pools, cismontane woodland, lower montane coniferous forest.	Volcanic soils; vernal pools and mesic sites within other natural communities. 250-450m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Sarcocornia utahensis</i>	None	None	2.2	Chenopod scrub, playas.	Alkaline sites. 320m in California.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Mimulus glabratus</i> <i>ssp. utahensis</i>	None	None	2.1	Meadows and seeps, pinyon and juniper woodland.	600-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						suitable habitat.
<i>Thermopsis californica</i> var. <i>semota</i>	None	None	1B.2	Lower montane coniferous forest, meadows and seeps, cismontane woodland, valley and foothill grassland.	Pine forests and meadow edges, on rocky slopes and outcrops, and along roadsides. 1030-1870m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Atriplex persistens</i>	None	None	1B.2	Vernal pools.	Alkaline vernal pools. 10-115m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Schoenoplectus subterminalis</i>	None	None	2.3	Marshes and swamps.	Montane lake margins, in shallow water. 750-2335m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Howellia aquatilis</i>	Threatened	None	2.2	Freshwater marshes and swamps, lower montane coniferous forest.	In clear ponds with other aquatics and surrounded by ponderosa pine forest and sometimes riparian associates. 3-1375m	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Ribes hudsonianum</i> var. <i>petiolare</i>	None	None	2.3	Riparian scrub.	Along creeks with Salix, Heracleum, etc. 1500-2215m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Lilium occidentale</i>	Endangered	Endangered	1B.1	Coastal scrub, freshwater marsh, bogs and fens,	Well-drained, old beach washes overlain w/wind-	Low. Suction dredging not likely to occur in

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
				coastal bluff scrub, coastal prairie, No. Coast coniferous forest.	blown alluvium & org. topsoil; usu near margins of Sitka spruce. 2-185m.	occupied habitat or substantially impact suitable habitat.
<i>Packera hesperia</i>	None	None	2.2	Upper montane coniferous forest, meadows and seeps.	Serpentine. 500-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Suaeda occidentalis</i>	None	None	2.3	Great Basin scrub.	Alkaline soils; mesic sites.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex occidentalis</i>	None	None	2.3	Lower montane coniferous forest, meadows and seeps.	1900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex scirpoidea ssp. pseudoscirpoidea</i>	None	None	2.2	Alpine boulder and rock field, meadows and seeps, subalpine coniferous forest.	Often on limestone; mesic sites. 3200-3700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex vallicola</i>	None	None	2.3	Great Basin scrub, meadows and seeps.	Mesic sites. 1525-2805m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Viola primulifolia ssp. occidentalis</i>	None	None	1B.2	Bogs and fens, marshes and swamps.	Streamside flats and bogs; serpentine soils. 100-990m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						occupied habitat or substantially impact suitable habitat.
<i>Carex atherodes</i>	None	None	2.2	Meadows and seeps, marshes and swamps, pinyon-juniper woodland.	1300-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Rhynchospora alba</i>	None	None	2.2	Bogs and fens, marshes and swamps.	Freshwater marshes and sphagnum bogs. 60-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Malaxis monophyllos ssp. brachypoda</i>	None	None	2.1	Meadows and seeps, bogs and fens, upper montane coniferous forest.	Hillside bogs and mesic meadows. 2200-2700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Pseudognaphalium leucocephalum</i>	None	None	2.2	Riparian woodland, cismontane woodland, coastal scrub, chaparral.	Sandy, gravelly sites. 0-2100m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Carex albida</i>	Endangered	Endangered	1B.1	Freshwater marsh, bogs and fens, meadows and seeps.	Wet meadows and marshes. 35-55m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
<i>Potamogeton praelongus</i>	None	None	2.3	Marshes and swamps.	Deep water, lakes. 1645-3000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Campanula wilkinsiana</i>	None	None	1B.2	Subalpine meadows, upper montane coniferous forest, subalpine coniferous forest.	Often on streambanks in meadows. 1515-2600m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Polyctenium williamsiae</i>	None	None	1B.2	Alkali marshes, playas, vernal pools.	1350-2700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Antennaria lanata</i>	None	None	2.2	Meadows and seeps.	Rocky sites. 2225m in California.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Carex lasiocarpa</i>	None	None	2.3	Bogs and fens, marshes and swamps.	Sphagnum bogs, freshwater marsh, and probably other moss-dominated habitats as well. 1800-2100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Trichocoronis wrightii</i> var. <i>wrightii</i>	None	None	2.1	Marshes and swamps, riparian forest, meadows and seeps, vernal pools.	Mud flats of vernal lakes, drying river beds, alkali meadows. 5-435m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact



**TABLE 4.3-5. AQUATIC AND WETLAND PLANT SPECIES**

Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						suitable habitat.
<i>Epilobium luteum</i>	None	None	2.3	Lower montane coniferous forest, meadows.	Along streams and in seeps. 1500-1705m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
<i>Mimulus pulchellus</i>	None	None	1B.2	Lower montane coniferous forest, meadows and seeps.	Sandy decomposed granite soils and moist meadows; vernal wet sites. 600-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
<i>Platanthera yosemitensis</i>	None	None	1B.2	Meadows and seeps.	Mesic areas. Granite substrates. 2100-2285m.	Low. Limited distribution; Suction dredging highly unlikely to occur in occupied habitat or impact suitable habitat.
<i>Plagiobothrys torreyi</i> var. <i>torreyi</i>	None	None	1B.2	Lower montane coniferous forest, meadows and seeps.	1200-1370m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

\* List of Abbreviations for Federal and State Species Status follow below:

- FC Federal candidate for listing
- FE Federal endangered
- FP State fully protected species
- FPT Federal proposed: threatened
- SSC State species of special concern

- FSC Federal species of concern (per NOAA or USFWS website)
- SCE State candidate: endangered
- SE State endangered
- SSC State species of special concern
- ST State threatened

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
Abert's sanvitalia	<i>Sanvitalia abertii</i>	None	None	2.2	Pinyon-juniper woodland.	Rocky limestone slopes and washes. 1570-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Abrams' oxytheca	<i>Acanthoscyphus parishii</i> var. <i>abramsii</i>	None	None	1B.2	Chaparral.	Shale to sandy places. 1150-2060m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Abrams' spurge	<i>Chamaesyce abramsiana</i>	None	None	2.2	Mojavean desert scrub, Sonoran desert scrub.	Sandy sites. -5-915m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
adobe lomatium	<i>Lomatium roseanum</i>	None	None	1B.2	Lower montane coniferous forest, Great Basin scrub.	Rocky, gravelly openings. 1460-2145m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
adobe-lily	<i>Fritillaria pluriflora</i>	None	None	1B.2	Chaparral, cismontane woodland, foothill grassland.	Usually on clay soils; sometimes serpentine. 55-820m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Agoura Hills dudleya	<i>Dudleya cymosa</i> ssp. <i>agourensis</i>	Threatened	None	1B.2	Chaparral, cismontane woodland.	Rocky, volcanic breccia. 200-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Alexander's buckwheat	<i>Eriogonum ochrocephalum</i>	None	None	2.2	Great Basin scrub, pinyon and juniper	Shale or gravel. 1300-2880m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
	<i>var. alexandrae</i>				woodland.		occupied habitat or substantially impact suitable habitat.
Algodones Dunes sunflower	<i>Helianthus niveus ssp. tephrodes</i>	None	Endangered	1B.2	Desert dunes.	On partialized stabilized desert dunes. 50-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
alkali hymenoxys	<i>Hymenoxys lemmonii</i>	None	None	2.2	Great Basin scrub, lower montane coniferous forest, meadows and seeps.	Subalkaline soils. 240-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
alkali mariposa-lily	<i>Calochortus striatus</i>	None	None	1B.2	Chaparral, chenopod scrub, Mojavean desert scrub, meadows.	Alkaline meadows and ephemeral washes. 90-1595m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Allen's pentachaeta	<i>Pentachaeta aurea ssp. allenii</i>	None	None	1B.1	Valley and foothill grasslands, coastal scrub.	Openings in scrub or grassland.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
alpine crisp moss	<i>Tortella alpicola</i>	None	None	2.3	Cismontane woodland.	Moss on volcanic rock. 1400m in California.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
alpine dusty maidens	<i>Chaenactis douglasii var. alpina</i>	None	None	2.3	Alpine boulder and rock fields.	Open, subalpine to alpine gravel and crevices; granitic substrate. 2725-3400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
alpine jewel-flower	<i>Streptanthus gracilis</i>	None	None	1B.3	Subalpine coniferous forest, upper montane coniferous forest.	Gravel pockets among granitic outcrops and talus boulders. 2800-3500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
alpine marsh violet	<i>Viola palustris</i>	None	None	2.2	Coastal scrub, bogs and fens.	Swampy, shrubby places in coastal scrub or coastal bogs. 0-15m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
angel trumpets	<i>Acleisanthes longiflora</i>	None	None	2.3	Sonoran desert scrub.	Generally on limestone. 10-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Anthony Peak lupine	<i>Lupinus antoninus</i>	None	None	1B.3	Upper montane coniferous forest, lower montane coniferous forest.	Open areas with surrounding forest; rocky sites. 1210-2285m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Antioch Dunes evening-primrose	<i>Oenothera deltooides ssp. howellii</i>	Endangered	Endangered	1B.1	Interior dunes.	Remnant river bluffs and sand dunes east of Antioch. 0-30m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
aphanisma	<i>Aphanisma blitoides</i>	None	None	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub.	On bluffs and slopes near the ocean in sandy or clay soils. In steep decline on the islands and the mainland. 1-305m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Applegate stonecrop	<i>Sedum oblancheolatum</i>	None	None	1B.1	Upper montane coniferous forest.	Rocky sites. 400-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
appressed muhly	<i>Muhlenbergia appressa</i>	None	None	2.2	Coastal sage scrub, Mojavean desert scrub, valley and foothill grassland. Possibly undercollected in California.	Rocky slopes, canyon bottoms. 20-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Arburua Ranch jewel-flower	<i>Streptanthus insignis ssp. lyonii</i>	None	None	1B.2	Coastal scrub.	Serpentine slopes, also on non-serpentine. 230-850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
arcuate bush-mallow	<i>Malacothamnus arcuatus</i>	None	None	1B.2	Chaparral.	Gravelly alluvium. 80-355m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Arizona cottontop	<i>Digitaria californica</i>	None	None	2.3	Sonoran desert scrub, Mojavean desert scrub.	Rocky schist hillsides in California; open plains out of state. 290-1490m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Arizona spurge	<i>Chamaesyce arizonica</i>	None	None	2.3	Sonoran desert scrub.	Sandy soils. 50-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
aromatic canyon gooseberry	<i>Ribes menziesii</i> var. <i>ixoderme</i>	None	None	1B.2	Chaparral, cismontane woodland.	In forest openings. 610-1160m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Arroyo de la Cruz mariposa-lily	<i>Calochortus clavatus</i> var. <i>recurvifolius</i>	None	None	1B.2	Coastal bluff scrub, maritime chaparral, coastal prairie, lower montane coniferous forest.	Ocean bluffs, grassy slopes, above riparian zones and in grassland bordering chaparral. 10-125m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Arroyo Seco bush-mallow	<i>Malacothamnus palmeri</i> var. <i>lucianus</i>	None	None	1B.2	Chaparral, meadows and seeps.	Gravel banks and sandstone rocks on west-facing slopes in full sun. 10-915m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Ash Creek ivesia	<i>Ivesia paniculata</i>	None	None	1B.2	Great Basin scrub, pinyon-juniper woodland, upper montane coniferous forest.	Gravelly, shallow volcanic ash on barren ridges. 1500-1915m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Ash Valley milk-vetch	<i>Astragalus anxius</i>	None	None	1B.3	Great Basin scrub, pinyon and juniper woodland, upper montane coniferous forest.	Gravelly, shallow, volcanic soils. 1550-1645m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
ash-gray paintbrush	<i>Castilleja cinerea</i>	Threatened	None	1B.2	Pebble plains, upper montane coniferous forest, Mojavean desert scrub, meadows, pinyon-juniper woodland.	Endemic to the San Bernardino Mountains, in clay openings; often in meadow edges. 1800-2835m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Ashland thistle	<i>Cirsium ciliolatum</i>	None	Endangered	2.1	Cismontane woodland, valley and foothill grassland.	Dry, grassy, south-facing slopes with rock outcrops. 800-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Aven Nelson's phacelia	<i>Phacelia anelsonii</i>	None	None	2.3	Joshua tree woodland, pinyon and juniper woodland.	Shady places in rich soil, base of sandstone or limestone cliffs, among rocks or in washes. 1200-1575m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Bailey's ivesia	<i>Ivesia baileyi</i> var. <i>baileyi</i>	None	None	2.3	Lower montane coniferous forest.	Crevice in volcanic rock cliffs and on rock outcrops. 1575-2600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Baja navarretia	<i>Navarretia peninsularis</i>	None	None	1B.2	Lower montane coniferous forest, chaparral.	Wet areas in open forest. 1500-2425m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Baker's goldfields	<i>Lasthenia californica</i> ssp. <i>bakeri</i>	None	None	1B.2	Closed-cone coniferous forest, coastal scrub.	Openings. 60-520m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Baker's larkspur	<i>Delphinium bakeri</i>	Endangered	Endangered	1B.1	Coastal scrub, grasslands.	Only site occurs on NW-facing slope, on decomposed shale. Hist. known from grassy areas along fencelines too. 90-205m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
Bakersfield cactus	<i>Opuntia basilaris var. treleasei</i>	Endangered	Endangered	1B.1	Chenopod scrub, valley and foothill grassland, cismontane woodland.	Coarse or cobbly well-drained granitic sand on bluffs, low hills, and flats within grassland. 90-550m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Bakersfield smallscale	<i>Atriplex tularensis</i>	None	Endangered	1B.1	Chenopod scrub, alkali meadow.	Historically in valley sink scrub or with saltgrass. 90-110m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Bald Mountain milk-vetch	<i>Astragalus umbraticus</i>	None	None	2.3	Cismontane woodland.	Dry open oak and pine woodlands. 200-1250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Baldwin Lake linanthus	<i>Linanthus killipii</i>	None	None	1B.2	Alkaline meadows, pebble plain, pinyon-juniper woodland, upper montane coniferous forest.	Usually on pebble plains with other rare species. 1700-2400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Barron's buckwheat	<i>Eriogonum spectabile</i>	None	None	1B.2	Upper montane coniferous forest.	Glaciated andesite, rocky or sandy sites. 2010-2025m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Barstow woolly sunflower	<i>Eriophyllum mohavense</i>	None	None	1B.2	Desert chenopod scrub, Mojavean desert scrub, desert playas.	Mostly in open, silty or sandy areas w/saltbush scrub, or creosote bush scrub. Barren ridges or margins of playas. 500-900m	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Barton Flats horkelia	<i>Horkelia wilderae</i>	None	None	1B.1	Lower montane coniferous forest, upper montane coniferous forest, chaparral.	On rocky, north aspects in openings that hold persistent snowdrifts. 1675-2925m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
beach goldenaster	<i>Heterotheca sessiliflora ssp. sessiliflora</i>	None	None	1B.1	Coastal dunes, coastal scrub, chaparral (coastal).	Sandy sites. 0-1224m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
beach layia	<i>Layia carnosa</i>	Endangered	Endangered	1B.1	Coastal dunes. hugely reduced in range along California's North Coast dunes.	On sparsely vegetated, semi-stabilized dunes, usually behind foredunes. 0-75m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
beach spectaclepod	<i>Dithyrea maritima</i>	None	Threatened	1B.1	Coastal dunes, coastal scrub. formerly more widespread in coastal habitats in So. Calif.	Sea shores, on sand dunes, and sandy places near the shore. 3-50m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
beaked clarkia	<i>Clarkia rostrata</i>	None	None	1B.3	Cismontane woodland, valley and foothill grassland.	North-facing slopes; sometimes on sandstone. 60-460m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
beaked tracyina	<i>Tracyina rostrata</i>	None	None	1B.2	Cismontane woodland, valley and foothill grassland.	Open grassy meadows within oak woodland and grassland habitats. 150-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Bear Lake buckwheat	<i>Eriogonum microthecum</i>	None	None	1B.1	Lower montane coniferous forest.	Clay outcrops. 2000-2100m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
	<i>var. lacus-ursi</i>						occupied habitat or substantially impact suitable habitat.
bearded lupine	<i>Lupinus latifolius var. barbatus</i>	None	None	1B.2	Upper montane coniferous forest.	Mesic sites. 1500-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
beautiful cholla	<i>Opuntia pulchella</i>	None	None	2.2	Desert dunes, Mojavean desert scrub, Great Basin scrub?	Sand of dunes, dry lake borders, river bottoms, washes, valleys and sagebrush desert. 1500-1980m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Ben Lomond buckwheat	<i>Eriogonum nudum var. decurrens</i>	None	None	1B.1	Chaparral, cismontane woodland, lower montane coniferous forest.	Ponderosa pine sandhills in Santa Cruz County. 50-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Ben Lomond spineflower	<i>Chorizanthe pungens var. hartwegiana</i>	Endangered	None	1B.1	Lower montane coniferous forest.	Zayante coarse sands in maritime ponderosa pine sandhills. 120-470m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
bent-flowered fiddleneck	<i>Amsinckia lunaris</i>	None	None	1B.2	Cismontane woodland, valley and foothill grassland.	50-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Betty's dudleya	<i>Dudleya abramsii ssp. bettinae</i>	None	None	1B.2	Coastal scrub, valley and foothill grassland, chaparral.	On rocky, barren exposures of serpentine within scrub vegetation. 20-180m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
Big Bear Valley milk-vetch	<i>Astragalus lentiginosus var. sierrae</i>	None	None	1B.2	Mojavean desert scrub, meadows, pinyon-juniper woodland, upper montane coniferous forest.	Stony meadows and open pinewoods; sandy and gravelly soils in a variety of habitats. 1800-2600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Big Bear Valley phlox	<i>Phlox dolichantha</i>	None	None	1B.2	Pebble plains, upper montane coniferous forest.	Sloping hillsides, in shade under pines and <i>Q. kelloggii</i> , with heavy pine litter; also in openings. 2000-2970m	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Big Bear Valley sandwort	<i>Arenaria ursina</i>	Threatened	None	1B.2	Pebble plain, pinyon and juniper woodland.	Mesic, rocky sites. 1750-2900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Big Bear Valley woollypod	<i>Astragalus leucolobus</i>	None	None	1B.2	Lower montane coniferous forest, pebble plain, pinyon and juniper woodland, upper montane coniferous forest.	Dry pine woods, gravelly knolls among sagebrush, or stony lake shores in the pine belt. (425)1670-2515m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
big tarplant	<i>Blepharizonia plumosa</i>	None	None	1B.1	Valley and foothill grassland.	Dry hills & plains in annual grassland. Clay to clay-loam soils; usually on slopes and often in burned areas. 15-455m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
big-scale balsamroot	<i>Balsamorhiza macrolepis var.</i>	None	None	1B.2	Valley and foothill grassland,	Sometimes on serpentine. 35-1000m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
	<i>macrolepis</i>				cismontane woodland.		occupied habitat or substantially impact suitable habitat.
black-flowered figwort	<i>Scrophularia atrata</i>	None	None	1B.2	Closed-cone coniferous forest, chaparral, coastal dunes, coastal scrub, riparian scrub.	Sand, diatomaceous shales, and soils derived from other parent material; around swales and in sand dunes. 10-250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Blair's munzothamnus	<i>Munzothamnus blairii</i>	None	None	1B.2	Coastal scrub, coastal bluff scrub.	Rocky canyon walls. 20-455m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Blakley's spineflower	<i>Chorizanthe blakleyi</i>	None	None	1B.3	Chaparral.	Closely related to <i>C. palmeri</i> . 600-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Blasdale's bent grass	<i>Agrostis blasdalei</i>	None	None	1B.2	Coastal dunes, coastal bluff scrub, coastal prairie. Includes <i>Agrostis blasdalei</i> var. <i>marinensis</i> , State-listed Rare.	Sandy or gravelly soil close to rocks; often in nutrient-poor soil with sparse vegetation. 5-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Blochman's dudleya	<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i>	None	None	1B.1	Coastal scrub, coastal bluff scrub, valley and foothill grassland.	Open, rocky slopes; often in shallow clays over serpentine or in rocky areas w/little soil. 5-450m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Blochman's leafy daisy	<i>Erigeron blochmaniae</i>	None	None	1B.2	Coastal dunes.	Sand dunes and hills. 3-185m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							occupied habitat or substantially impact suitable habitat.
blue alpine phacelia	<i>Phacelia sericea</i> var. <i>ciliosa</i>	None	None	2.3	Upper montane coniferous forest, subalpine coniferous forest.	Among rocks on ridgetops, peaks, and at the base of cliffs. 2100-2700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
blue coast gilia	<i>Gilia capitata</i> ssp. <i>chamissonis</i>	None	None	1B.1	Coastal dunes, coastal scrub.	2-200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
blunt-fruited sweet-cicely	<i>Osmorhiza depauperata</i>	None	None	2.3	Lower montane coniferous forest.	1830-1850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
blushing wild buckwheat	<i>Eriogonum ursinum</i> var. <i>erubescens</i>	None	None	1B.3	Lower montane coniferous forest, montane chaparral.	Rocky sites including scree and talus. 1600-1900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Bodie Hills cusickiella	<i>Cusickiella quadricostata</i>	None	None	1B.2	Great Basin scrub, pinyon-juniper woodland.	Endemic to the Walker River drainage; mainly confined to the shallow decomposed granite or clay soils. 1985-2800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Bodie Hills rock-cress	<i>Arabis bodiensis</i>	None	None	1B.3	Alpine boulder and rock field, Great Basin scrub, pinyon-juniper woodland, subalpine	In rock crevices, outcrops, and on steep slopes. Granite and volcanic substrates.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					coniferous forest.	2195-3530m.	suitable habitat.
Bolander's horkelia	<i>Horkelia bolanderi</i>	None	None	1B.2	Lower montane coniferous forest, chaparral, meadows, valley and foothill grassland.	Grassy margins of vernal pools and meadows. 450-850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Booth's evening-primrose	<i>Camissonia boothii ssp. boothii</i>	None	None	2.3	Joshua tree woodland, pinyon-juniper woodland.	900-2400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Booth's hairy evening-primrose	<i>Camissonia boothii ssp. intermedia</i>	None	None	2.3	Great Basin scrub, pinyon-juniper woodland.	Sandy sites. 1500-2150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Borrego Valley pepper-grass	<i>Lepidium flavum var. felipense</i>	None	None	1B.2	Sonoran desert scrub, pinyon-juniper woodland.	Sandy, clay, or silty soils. 450-840m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Brandegees's clarkia	<i>Clarkia biloba ssp. brandegeae</i>	None	None	1B.2	Chaparral, cismontane woodland.	Often in roadcuts. 295-885m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Brandegees's eriastrum	<i>Eriastrum brandegeae</i>	None	None	1B.2	Chaparral, cismontane woodland.	On barren volcanic soils; often in open areas. 345-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Page 14 of 149

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Brandegee's sage	<i>Salvia brandegeei</i>	None	None	1B.2	Closed-cone coniferous forest, chaparral, coastal scrub.	Coastal bluffs and seaward canyons. 5-200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Brand's star phacelia	<i>Phacelia stellaris</i>	Candidate	None	1B.1	Coastal scrub, coastal dunes.	Open areas. 5-1515m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Braunton's milk-vetch	<i>Astragalus brauntonii</i>	Endangered	None	1B.1	Closed-cone coniferous forest, chaparral, coastal scrub, valley and foothill grassland.	Recent burns or disturbed areas; in stiff gravelly clay soils overlying granite or limestone. 4-640m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Brewer's spineflower	<i>Chorizanthe breweri</i>	None	None	1B.3	Chaparral, cismontane woodland, coastal scrub, closed-cone coniferous forest.	Rocky or gravelly serpentine sites; usually in barren areas. 45-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Brewer's western flax	<i>Hesperolinon breweri</i>	None	None	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Often in rocky serpentine soil in serpentine chaparral and serpentine grassland. 30-885m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
bristly scaleseed	<i>Spermolepis echinata</i>	None	None	2.3	Sonoran desert scrub.	Sandy or rocky sites. 60-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
brittle prickly-pear	<i>Opuntia fragilis</i>	None	None	2.1	Pinyon-juniper woodland.	Volcanic soils. 820m in California.	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							occupied habitat or substantially impact suitable habitat.
broad-keeled milk-vetch	<i>Astragalus platytropis</i>	None	None	2.2	Alpine boulder and rock fields, pinyon-juniper woodland, subalpine coniferous forest.	Bare ridges above timber line in pumice gravel, granite, dolomite, or limestone. 2330-3550m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
brook pocket moss	<i>Fissidens aphelotaxifolius</i>	None	None	2.2	Lower montane coniferous forest, upper montane coniferous forest.	Moss growing on rocks in stream channels and waterfalls; also in splash zones. 2000-2200m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
brown turbans	<i>Malperia tenuis</i>	None	None	2.3	Sonoran desert scrub.	Sandy places and rocky slopes. 15-335m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
burro grass	<i>Scleropogon brevifolius</i>	None	None	2.3	Mojavean desert scrub.	Grassy areas, decomposed granite. 1575-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Butte County checkerbloom	<i>Sidalcea robusta</i>	None	None	1B.2	Chaparral, cismontane woodland.	Small draws and rocky crevices. 85-335m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Butte County golden clover	<i>Trifolium jokerstii</i>	None	None	1B.2	Valley and foothill grassland, vernal pools.	Known only from 2 sites in Butte County in the vicinity of Table Mtn in	Low. Suction dredging not likely to occur in occupied habitat or



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						grassland & swales near oak woodland. 50-385m.	substantially impact suitable habitat.
calico monkeyflower	<i>Mimulus pictus</i>	None	None	1B.2	Broadleafed upland forest, cismontane woodland.	In bare ground around gooseberry bushes or around granite rock outcrops. 100-1300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
California adolphia	<i>Adolphia californica</i>	None	None	2.1	Chaparral, coastal sage scrub, valley and foothill grassland.	From sandy/gravelly to clay soils within grassland, coastal sage scrub, or chaparral; various exposures. 15-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
California ayenia	<i>Ayenia compacta</i>	None	None	2.3	Mojavean desert scrub, Sonoran desert scrub.	Sandy and gravelly washes in the desert; dry desert canyons. 150-1095m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
California beardtongue	<i>Penstemon californicus</i>	None	None	1B.2	Chaparral, lower montane coniferous forest, pinyon-juniper woodland.	Stony slopes and shrubby openings; sandy or granitic soils. 1160-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
California dissanthelium	<i>Dissanthelium californicum</i>	None	None	1B.2	Coastal scrub.	5-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
California globe mallow	<i>Iliamna latibracteata</i>	None	None	1B.2	North Coast coniferous forest.	Seepage areas in silty clay loam. 500-2000m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
California jewel-flower	<i>Caulanthus californicus</i>	Endangered	Endangered	1B.1	Chenopod scrub, valley and foothill grassland, pinyon-juniper woodland.	Historical from various valley habitats in both the Central Valley and Carrizo Plain. 65-900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
California screw moss	<i>Tortula californica</i>	None	None	1B.2	Chenopod scrub, valley and foothill grassland.	Moss growing on sandy soil. 10-1460m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Callahan's mariposa-lily	<i>Calochortus syntrophus</i>	None	None	1B.1	Cismontane woodland.	525-855m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Cambria morning-glory	<i>Calystegia subacaulis ssp. episcopalis</i>	None	None	1B.2	Chaparral, cismontane woodland.	60-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Canadian buffalo-berry	<i>Shepherdia canadensis</i>	None	None	2.2	Upper montane coniferous forest.	Rocky streamsid es, on serpentine. 1731m in California.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
candleholder dudleya	<i>Dudleya candelabrum</i>	None	None	1B.2	Coastal scrub.	In rock walls and crevices, and on canyon sides. 4-535m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
canescent draba	<i>Draba breweri var. cana</i>	None	None	2.3	Alpine boulder and rock field, meadows, subalpine coniferous forest.	In Calif., known only from two occurrences near Lake Genevieve and Wheeler Pk. 3000-3505m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Cantelow's lewisia	<i>Lewisia cantelovii</i>	None	None	1B.2	Broadleafed upland forest, lower montane coniferous forest, cismontane woodland, chaparral.	Mesic rock outcrops and wet cliffs, usually in moss or clubmoss; on granitics or sometimes on serpentine. 330-1340m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Canyon Creek stonecrop	<i>Sedum paradisum</i>	None	None	1B.3	Chaparral, lower montane coniferous forest, subalpine coniferous forest, broadleafed upland forest.	Rock faces, in crevices of exposed granite. 1060-1860m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
caper-fruited tropidocarpum	<i>Tropidocarpum capparideum</i>	None	None	1B.1	Valley and foothill grassland.	Alkaline clay. 0-455m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Caribou coffeeberry	<i>Frangula purshiana ssp. ultramafica</i>	None	None	1B.2	Lower montane coniferous forest, upper montane coniferous forest, chaparral.	On serpentine. 825-1930m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Carmel Valley bush-mallow	<i>Malacothamnus palmeri var. involucratus</i>	None	None	1B.2	Cismontane woodland, chaparral.	Talus hilltops and slopes, sometimes on serpentine. Burn dependent. 30-1100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
Carmel Valley malacothrix	<i>Malacothrix saxatilis</i> var. <i>arachnoidea</i>	None	None	1B.2	Chaparral.	Rock outcrops or steep rocky roadcuts. 25-1215m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Carquinez goldenbush	<i>Isocoma arguta</i>	None	None	1B.1	Valley and foothill grassland.	Alkaline soils, flats, lower hills. On low benches near drainages & on tops & sides of mounds in swale habitat. 1-20m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Cascade alpine campion	<i>Silene suksdorfii</i>	None	None	2.3	Alpine boulder and rock field, subalpine coniferous forest.	Rocky, volcanic soils. 2400-3100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Cascade stonecrop	<i>Sedum divergens</i>	None	None	2.3	Alpine boulder and rock field.	Rocky alpine slopes and cool cliffs. 1520-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Castle Crags harebell	<i>Campanula shetleri</i>	None	None	1B.3	Lower montane coniferous forest.	In protected rock crevices in granite. 1210-1830m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Castle Crags ivesia	<i>Ivesia longibracteata</i>	None	None	1B.3	Lower montane coniferous forest.	Crevices in granitic cliffs. About 1365m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Catalina crossosoma	<i>Crossosoma californicum</i>	None	None	1B.2	Chaparral, coastal scrub.	On rocky sea bluffs, wooded canyons, and dry, open sunny spots on rocky clay. 0-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Chambers' physaria	<i>Physaria chambersii</i>	None	None	2.3	Pinyon-juniper woodland.	Limestone soils; rocky sites. 1500-2590m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
chaparral ash	<i>Fraxinus parryi</i>	None	None	2.2	Chaparral.	Open mixed chaparral and in the chaparral-sage scrub interface in California. 213-620m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
chaparral harebell	<i>Campanula exigua</i>	None	None	1B.2	Chaparral.	Rocky sites, usually on serpentine in chaparral. 300-1250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
chaparral ragwort	<i>Senecio aphanactis</i>	None	None	2.2	Cismontane woodland, coastal scrub.	Drying alkaline flats. 20-575m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
chaparral sand-verbena	<i>Abronia villosa var. aurita</i>	None	None	1B.1	Chaparral, coastal scrub	Sandy areas. 80-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Charlotte's phacelia	<i>Phacelia nashiana</i>	None	None	1B.2	Joshua tree woodland, Mojavean	Granitic soils; sandy or rocky areas on steep	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					desert scrub, pinyon-juniper woodland.	slopes or flats. 600-2200m.	occupied habitat or substantially impact suitable habitat.
Chinese Camp brodiaea	<i>Brodiaea pallida</i>	Threatened	Endangered	1B.1	Valley and foothill grassland.	In flat, rocky, intermittent streambed on serpentine. 385m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Choris' popcorn-flower	<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	None	None	1B.2	Chaparral, coastal scrub, coastal prairie.	Mesic sites. 15-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Cienega Seca oxytheca	<i>Acanthoscyphus parishii</i> var. <i>cienegensis</i>	None	None	1B.3	Upper montane coniferous forest.	Dry gravelly banks and granitic sand. 2090-2450m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Cima milk-vetch	<i>Astragalus cimae</i> var. <i>cimae</i>	None	None	1B.2	Great Basin scrub, Joshua tree woodland, pinyon-juniper woodland.	Mesas and stony hillsides, in stiff, calcareous clay soils, commonly among or sheltering under sagebrush. 890-1850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Clara Hunt's milk-vetch	<i>Astragalus claranus</i>	Endangered	Threatened	1B.1	Cismontane woodland, valley and foothill grassland, chaparral.	Open grassy hillsides, esp. on exposed shoulders in thin, volcanic clay soil moist in spring. 75-235m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
cliff cinquefoil	<i>Potentilla rimicola</i>	None	None	2.3	Subalpine coniferous forest, upper montane coniferous	Granite crevices; rocky sites. 2390-3030m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					forest.		substantially impact suitable habitat.
cliff spurge	<i>Euphorbia misera</i>	None	None	2.2	Coastal bluff scrub, coastal scrub.	Rocky sites. 10-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Clifton's eremogone	<i>Eremogone cliftonii</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forest, chaparral.	Openings; granitic substrates. 445-1770m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
closed-throated beardtongue	<i>Penstemon personatus</i>	None	None	1B.2	Lower montane coniferous forest, upper montane coniferous forest, chaparral.	Usually on N-facing slopes in metavolcanic soils. 1330-2120m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Coachella Valley milk-vetch	<i>Astragalus lentiginosus var. coachellae</i>	Endangered	None	1B.2	Sonoran desert scrub.	Sandy flats, washes, outwash fans, sometimes on dunes. 60-360m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
coast lily	<i>Lilium maritimum</i>	None	None	1B.1	Closed-cone coniferous forest, coastal prairie, coastal scrub, broadleaved upland forest, North Coast coniferous forest.	Historically in sandy soil, often on raised hummocks or bogs; today mostly in roadside ditches. 10-335m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
coast range bindweed	<i>Calystegia collina ssp. tridactylosa</i>	None	None	1B.2	Chaparral, cismontane woodland.	Rocky, gravelly openings in serpentine. 0-600m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
Coast Range lomatium	<i>Lomatium martindalei</i>	None	None	2.3	Lower montane coniferous forest, coastal bluff scrub, meadows.	Bogs and seeps along creeks and on ridgetops, often on serpentine. 240-3000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
coast woolly-heads	<i>Nemacaulis denudata</i> var. <i>denudata</i>	None	None	1B.2	Coastal dunes.	0-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
coast yellow leptosiphon	<i>Leptosiphon croceus</i>	None	None	1B.1	Coastal bluff scrub, coastal prairie.	10-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
coastal bluff morning-glory	<i>Calystegia purpurata</i> ssp. <i>saxicola</i>	None	None	1B.2	Coastal dunes, coastal scrub.	15-105m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
coastal dunes milk-vetch	<i>Astragalus tener</i> var. <i>titi</i>	Endangered	Endangered	1B.1	Coastal bluff scrub, coastal dunes.	Moist, sandy depressions of bluffs or dunes along and near the Pacific Ocean; one site on a clay terrace. 1-50m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
coastal triquetrella	<i>Triquetrella californica</i>	None	None	1B.2	Coastal bluff scrub, coastal scrub.	Moss growing on soil. 10-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
Cobb Mountain lupine	<i>Lupinus sericatus</i>	None	None	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest.	In stands of knobcone pine-oak woodland, on open wooded slopes in gravelly soils; sometimes on serpentine. 180-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
cocks-comb cat's-eye	<i>Cryptantha celosioides</i>	None	None	2.3	Pinyon and juniper woodland.	1615m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Colusa layia	<i>Layia septentrionalis</i>	None	None	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Scattered colonies in fields and grassy slopes in sandy or serpentine soil. 145-1095m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Comanche Point layia	<i>Layia leucopappa</i>	None	None	1B.1	Chenopod scrub, valley and foothill grassland.	Dry hills in white-grey clay soils, often with weedy grasses. 100-350m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
common moonwort	<i>Botrychium lunaria</i>	None	None	2.3	Meadows, subalpine coniferous forest, upper montane coniferous forest.	2760-3400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
compact cobwebby thistle	<i>Cirsium occidentale var. compactum</i>	None	None	1B.2	Chaparral, coastal dunes, coastal prairie, coastal scrub.	On dunes and on clay in chaparral; also in grassland. 5-155m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
compact daisy	<i>Erigeron compactus</i>	None	None	2.3	Pinyon-juniper woodland.	Rocky or gravelly sites. Limestone. 1300-2900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Cone Peak bedstraw	<i>Galium californicum ssp. luciense</i>	None	None	1B.3	Broadleaved upland forest, lower montane coniferous forest, cismontane woodland.	In forest duff or gravelly talus of pine and oak forest, in partial shade. 875-1525m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Conejo buckwheat	<i>Eriogonum crocatum</i>	None	Rare	1B.2	Chaparral, coastal scrub, valley and foothill grassland.	Conejo volcanic outcrops; rocky sites. 50-580m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Conejo dudleya	<i>Dudleya parva</i>	Threatened	None	1B.2	Coastal scrub, valley and foothill grassland.	In clayey or volcanic soils on rocky slopes and grassy hillsides. 60-450m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Congdon's lewisia	<i>Lewisia congdonii</i>	None	Rare	1B.3	Chaparral, lower montane coniferous forest, cismontane woodland, upper montane coniferous forest.	North exposures; in crevices on slopes among rocks. Granitic substrates. 600-2060m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Congdon's lomatium	<i>Lomatium congdonii</i>	None	None	1B.2	Cismontane woodland, chaparral.	Serpentine soils with serpentine chaparral plants and grey pines. 300-610m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
Congdon's tarplant	<i>Centromadia parryi ssp. congdonii</i>	None	None	1B.2	Valley and foothill grassland.	Alkaline soils, sometimes described as heavy white clay. 1-230m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Congdon's woolly sunflower	<i>Eriophyllum congdonii</i>	None	Rare	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest.	In cracks in rock outcroppings, and on talus; sometimes with <i>Quercus douglasii</i> , <i>Aesculus californica</i> . 500-1900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Constance's rock-cress	<i>Arabis constancei</i>	None	None	1B.1	Chaparral, lower montane coniferous forest.	Mostly on open, bare, serpentine slopes and outcrops in chaparral and woodland. 975-2025m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Constance's sedge	<i>Carex constanceana</i>	None	None	1B.1	Subalpine coniferous forest.	2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Contra Costa wallflower	<i>Erysimum capitatum var. angustatum</i>	Endangered	Endangered	1B.1	Inland dunes.	Stabilized dunes of sand and clay near Antioch along the San Joaquin River. 3-20m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Coulter's saltbush	<i>Atriplex coulteri</i>	None	None	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland.	Ocean bluffs, ridgetops, as well as alkaline low places. 10-440m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Coves' cassia	<i>Senna covesii</i>	None	None	2.2	Sonoran desert scrub.	Dry, sandy desert washes, slopes. 200-1070m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
coyote gilia	<i>Aliciella triodon</i>	None	None	2.2	Great Basin scrub, pinyon and juniper woodland.	Fine clayey sand or sand. 610-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
creamy blazing star	<i>Mentzelia tridentata</i>	None	None	1B.3	Mojavean desert scrub.	700-1160m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
crested potentilla	<i>Potentilla cristae</i>	None	None	1B.3	Alpine boulder and rock field, subalpine coniferous forest.	Seasonally wet swales and seeps; gravelly or rocky sites; often on serpentine. 1800-2800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
crisp monardella	<i>Monardella crispa</i>	None	None	1B.2	Coastal dunes, coastal scrub.	Often on the borders of open, sand areas, usually adjacent to typical backdune scrub vegetation. 5-120m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
cruciform evening-primrose	<i>Camissonia claviformis ssp. cruciformis</i>	None	None	2.3	Chenopod scrub, Great Basin scrub.	600-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Crystal Springs lessingia	<i>Lessingia arachnoidea</i>	None	None	1B.2	Coastal sage scrub, valley and foothill	Grassy slopes on serpentine; sometimes	Low. Suction dredging not likely to occur in

TABLE 4.3-6. UPLAND PLANT SPECIES

Page 28 of 149

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					grassland, cismontane woodland.	on roadsides. 60-200m.	occupied habitat or substantially impact suitable habitat.
Cuesta Pass checkerbloom	<i>Sidalcea hickmanii</i> ssp. <i>anomala</i>	None	Rare	1B.2	Closed-cone coniferous forest.	Rocky serpentine soil; associated with Sargent cypress forest. 600-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Cup Lake draba	<i>Draba asterophora</i> var. <i>macrocarpa</i>	None	None	1B.1	Subalpine coniferous forest.	In relatively deep soil in the shade of granitic rocks. 2600-2670m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
curved-spine beavertail	<i>Opuntia curvispina</i>	None	None	2.2	Chaparral, Mojavean desert scrub, pinyon-juniper woodland.	Stabilized hybrid between <i>O. phaeantha</i> x <i>O. chlorotica</i> . 1000-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Cushenbury buckwheat	<i>Eriogonum ovalifolium</i> var. <i>vineum</i>	Endangered	None	1B.1	Mojavean desert scrub, pinyon-juniper woodland, Joshua tree woodland.	Limestone mountain slopes. Dry, usually rocky places. 1400-2440m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Cushenbury milk-vetch	<i>Astragalus albens</i>	Endangered	None	1B.1	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland.	Sandy or stony flats, rocky hillsides, cyn washes, & fans, on granite or mixed granitic-calcareous debris. 1095-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
cushion townsendia	<i>Townsendia condensata</i>	None	None	2.3	Alpine boulder and rock field, subalpine coniferous forest.	Gravelly sites. 2865-3675m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
Cusick's monkeyflower	<i>Mimulus cusickii</i>	None	None	2.3	Great Basin scrub, lower montane coniferous forest.	600-1830m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
cut-leaf checkerbloom	<i>Sidalcea multifida</i>	None	None	2.3	Lower montane coniferous forest, meadows and seeps, Great Basin scrub, pinyon and juniper woodland.	1750-2800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
cylindrical trichodon	<i>Trichodon cylindricus</i>	None	None	2.2	Broadleafed upland forest, upper montane coniferous forest.	Moss growing on sandy, exposed soil, roadbanks. 50-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
dark-eyed gilia	<i>Gilia millefoliata</i>	None	None	1B.2	Coastal dunes.	2-20m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Darwin Mesa milk-vetch	<i>Astragalus atratus var. mensanus</i>	None	None	1B.1	Great Basin scrub, Joshua tree woodland, pinyon-juniper woodland.	Dry desert slopes and mesas, often sheltering under and entangled in shrubs, in volcanic clay and gravel. 1340-1850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Darwin rock-cress	<i>Arabis pulchra var. munciensis</i>	None	None	2.3	Chenopod scrub, Mojavean desert scrub.	On limestone. 1100-2075m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
Davidson's saltscale	<i>Atriplex serenana</i> var. <i> davidsonii</i>	None	None	1B.2	Coastal bluff scrub, coastal scrub.	Alkaline soil. 3-250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Dean's milk-vetch	<i>Astragalus deanei</i>	None	None	1B.1	Chaparral, coastal scrub, riparian forest.	Open, brushy south-facing slopes in Diegan coastal sage, sometimes on recently burned-over hillsides. 75-670m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
Death Valley round-leaved phacelia	<i>Phacelia mustelina</i>	None	None	1B.3	Pinyon-juniper woodland; Mojavean desert scrub.	In crevices on the face of limestone cliffs, on volcanic outcrops, and in gravel talus. 725-2620m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Death Valley sandpaper-plant	<i>Petalonyx thurberi</i> ssp. <i> gilmanii</i>	None	None	1B.3	Desert dunes, Mojavean desert scrub.	Dry washes and slopes. 255-1445m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
decumbent goldenbush	<i>Isocoma menziesii</i> var. <i> decumbens</i>	None	None	1B.2	Coastal scrub.	Sandy soils; often in disturbed sites. 10-910m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Dedecker's clover	<i>Trifolium dedeckerae</i>	None	None	1B.3	Pinyon-juniper woodland, subalpine coniferous forest, upper montane	Gravelly canyons and slopes, cracks in granite rock outcrops, and understory of pinyon	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					coniferous forest, lower montane conif forest.	pinos. 2100-3500m.	suitable habitat.
deep-scarred cryptantha	<i>Cryptantha excavata</i>	None	None	1B.3	Cismontane woodland.	Sandy, gravelly, dry streambanks. 100-500m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
Dehesa nolina	<i>Nolina interrata</i>	None	Endangered	1B.1	Chaparral.	Typically on rocky hillsides or ravines on ultramafic soils (gabbro or metavolcanic). 180-855m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Del Mar Mesa sand aster	<i>Corethrogyne filaginifolia</i> var. <i>linifolia</i>	None	None	1B.1	Chaparral, coastal scrub.	In coastal, shrubby communities on maritime sediments and conglomerates. 30-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Del Norte buckwheat	<i>Eriogonum nudum</i> var. <i>paralinum</i>	None	None	2.2	Coastal bluff scrub, coastal prairie.	Open places along immediate coast. 5-80m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Del Norte pyrrocoma	<i>Pyrrocoma racemosa</i> var. <i>congesta</i>	None	None	2.3	Chaparral, lower montane coniferous forest.	Serpentine soils, from dry roadsides to damp hills; often in forest openings. 200-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
delicate bluecup	<i>Githopsis tenella</i>	None	None	1B.3	Chaparral, cismontane woodland.	Mesic sites. 1100-1900m.	Low. Suction dredging not likely to occur in occupied habitat or



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
delicate clarkia	<i>Clarkia delicata</i>	None	None	1B.2	Cismontane woodland, chaparral.	235-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
delicate muhly	<i>Muhlenbergia fragilis</i>	None	None	2.3	Pinyon-juniper woodland.	Open, more-or-less disturbed limestone gravelly wash. 515m in California.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
desert beauty	<i>Linanthus bellus</i>	None	None	2.3	Chaparral.	Dry slopes and flats; open sandy spots in chaparral, mostly in loamy coarse sandy dg soil types. 920-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
desert cymopterus	<i>Cymopterus deserticola</i>	None	None	1B.2	Joshua tree woodland, Mojavean desert scrub. Most occurrences located near or in Edwards AFB.	On fine to coarse, loose, sandy soil of flats in old dune areas with well-drained sand. 625-910m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
desert germander	<i>Teucrium glandulosum</i>	None	None	2.3	Sonoran desert scrub.	Rocky sites. 400-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
desert pincushion	<i>Coryphantha chlorantha</i>	None	None	2.1	Mojavean desert scrub, Sonoran desert scrub, Joshua tree woodland, pinyon	Calcareous substrates; rocky and gravelly sites. 300-2400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					and juniper woodland.		suitable habitat.
desert spike-moss	<i>Selaginella eremophila</i>	None	None	2.2	Sonoran desert scrub.	Shaded sites, gravelly soils; crevices or among rocks. 300-2425m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Detling's silverpuffs	<i>Microseris laciniata ssp. detlingii</i>	None	None	2.2	Cismontane woodland.	Openings in clay soils. 600-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Diablo Canyon blue grass	<i>Poa diaboli</i>	None	None	1B.2	Chaparral (mesic sites), cismontane woodland, coastal scrub, closed-cone coniferous forest.	Shale, sometimes burned areas. 120-400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Diablo helianthella	<i>Helianthella castanea</i>	None	None	1B.2	Broadleaved upland forest, chaparral, cismontane wldnd, coastal scrub, riparian woodland, valley & foothill grassland.	Usually in chaparral/oak woodland interface in rocky, azonal soils. Often in partial shade. 25-1150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
diamond-petaled California poppy	<i>Eschscholzia rhombipetala</i>	None	None	1B.1	Valley and foothill grassland.	Alkaline, clay slopes and flats. 0-975m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Donner Pass buckwheat	<i>Eriogonum umbellatum var. torreyanum</i>	None	None	1B.2	Upper montane coniferous forest, chaparral, meadows.	Steep slopes and ridgetops; rocky, volcanic soils; usually in	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						bare or sparsely vegetated areas. 1840-2620m.	substantially impact suitable habitat.
doublet	<i>Dimeresia howellii</i>	None	None	2.3	Pinyon-juniper woodland.	On slopes in dry gravelly volcanic soils. 1330-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
drymaria-like western flax	<i>Hesperolinon drymarioides</i>	None	None	1B.2	Closed-cone coniferous forest, chaparral, cismontane woodland, valley and foothill grassland.	Serpentine soils, mostly within chaparral. 390-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Dudley's lousewort	<i>Pedicularis dudleyi</i>	None	Rare	1B.2	Chaparral, North Coast coniferous forest, valley and foothill grassland.	Deep shady woods of older coast redwood forests; also in maritime chaparral. 100-490m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Dugway wild buckwheat	<i>Eriogonum nutans var. nutans</i>	None	None	2.3	Great Basin scrub, chenopod scrub.	Sandy or gravelly sites; also cited as often in greasewood scrub in flat, silty areas. 1220-3000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
dune horsebrush	<i>Tetradymia tetrameres</i>	None	None	2.2	Great Basin scrub.	Sandy soils. 1200-2135m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
dune larkspur	<i>Delphinium parryi ssp. blochmaniae</i>	None	None	1B.2	Chaparral, coastal dunes (maritime).	On rocky areas and dunes. 30-375m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
Dunn's mariposa-lily	<i>Calochortus dunnii</i>	None	Rare	1B.2	Closed-cone coniferous forest, chaparral.	On gabbro or metavolcanic soils; also known from sandstone; often assoc with chaparral. 375-1830m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
dwarf calycadenia	<i>Calycadenia villosa</i>	None	None	1B.1	Chaparral, cismontane woodland, valley and foothill grassland, meadows and seeps.	Open, dry meadows, hillsides, gravelly outwashes. 215-1275m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
dwarf germander	<i>Teucrium cubense ssp. depressum</i>	None	None	2.2	Desert dunes, playas, Sonoran desert scrub.	Dunes, playa margins and scrub. 45-400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
dwarf goldenstar	<i>Bloomeria humilis</i>	None	Rare	1B.2	Coastal bluff scrub, chaparral, valley and foothill grassland.	Known mainly from Arroyo de La Cruz area on coastal bluffs. 10-60m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
dwarf monolepis	<i>Micromonolepis pusilla</i>	None	None	2.3	Great Basin scrub.	Alkaline sites, openings. 1500-2400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
dwarf soaproot	<i>Chlorogalum pomeridianum var. minus</i>	None	None	1B.2	Chaparral, valley and foothill grassland.	Serpentine. 240-970m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Page 36 of 149

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Earlimart orache	<i>Atriplex erecticaulis</i>	None	None	1B.2	Valley and foothill grassland.	40-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Eastwood's buckwheat	<i>Eriogonum eastwoodianum</i>	None	None	1B.3	Cismontane woodland.	Shale, including diatomaceous shale. 500-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Eastwood's goldenbush	<i>Ericameria fasciculata</i>	None	None	1B.1	Closed-cone coniferous forest, chaparral (maritime), coastal scrub, coastal dunes.	In sandy openings. 30-275m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
El Dorado bedstraw	<i>Galium californicum ssp. sierrae</i>	Endangered	Rare	1B.2	Cismontane woodland, chaparral, lower montane coniferous forest.	More often in pine-oak woodland than in chaparral; restricted to gabbroic soils. 100-585m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
El Dorado County mule ears	<i>Wyethia reticulata</i>	None	None	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest.	Stony red clay and gabbroic soils; often in openings in gabbro chaparral. 180-630m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
elongate copper moss	<i>Mielichhoferia elongata</i>	None	None	2.2	Cismontane woodland. Commonly called "copper mosses".	Moss growing on metamorphic rock; usually vernal mesic. 500-1300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Emory's crucifixion-	<i>Castela emoryi</i>	None	None	2.3	Mojavean desert scrub, Sonoran desert	Gravelly soils, sometimes in alkali	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
thorn					scrub, playas.	playas or washes. 85-770m.	occupied habitat or substantially impact suitable habitat.
Encinitas baccharis	<i>Baccharis vanessae</i>	Threatened	Endangered	1B.1	Chaparral.	On sandstone soils in steep, open, rocky areas with chaparral associates. 60-720m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
ephemeral monkeyflower	<i>Mimulus evanescens</i>	None	None	1B.2	Great Basin scrub, lower montane coniferous forest, pinyon-juniper woodland.	Gravelly or rocky sites; vernal mesic. 1250-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
falcate saltbush	<i>Atriplex gardneri var. falcata</i>	None	None	2.2	Chenopod scrub, Great Basin scrub.	Usually on subalkaline soils in low chenopod scrub. 1200-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
false buffalo-grass	<i>Munroa squarrosa</i>	None	None	2.2	Pinyon-juniper woodland.	Open, gravelly or rocky places. 1500-2400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Feather River stonecrop	<i>Sedum albomarginatum</i>	None	None	1B.2	Chaparral, lower montane coniferous forest.	In crevices and on ledges of serpentine outcrops and slopes. 300-1585m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
fell-fields claytonia	<i>Claytonia megarhiza</i>	None	None	2.3	Alpine fell fields, subalpine coniferous forest.	In the crevices between rocks, rocky or gravelly soil. 2600-3300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
felt-leaved monardella	<i>Monardella hypoleuca ssp. lanata</i>	None	None	1B.2	Chaparral, cismontane woodland.	Occurs in understory in mixed chaparral, chamise chaparral, and southern oak woodland; sandy soil. 300-1575m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Ferris' milk-vetch	<i>Astragalus tener var. ferrisiae</i>	None	None	1B.1	Meadows, valley and foothill grassland.	Subalkaline flats on overflow land in the Central Valley; usually seen in dry, adobe soil. 5-75m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
field ivesia	<i>Ivesia campestris</i>	None	None	1B.2	Subalpine coniferous forest, upper montane coniferous forest, meadows.	Meadow edges. 2200-3100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
flagella-like atractylorcarpus	<i>Campylopodiella stenocarpa</i>	None	None	2.2	Cismontane woodland.	Unknown. 100-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
flat-seeded spurge	<i>Chamaesyce platysperma</i>	None	None	1B.2	Sonoran desert scrub, desert dunes.	Sandy places or shifting dunes. Possibly a waif in California; more common in Arizona and Mexico. 60-950m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Follett's monardella	<i>Monardella follettii</i>	None	None	1B.2	Lower montane coniferous forest.	Open rocky serpentine slopes. 600-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
fountain thistle	<i>Cirsium fontinale</i> <i>var. fontinale</i>	Endangered	Endangered	1B.1	Valley and foothill grassland, chaparral.	Serpentine seeps and grassland. 90-180m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
fragrant fritillary	<i>Fritillaria liliacea</i>	None	None	1B.2	Coastal scrub, valley and foothill grassland, coastal prairie.	Often on serpentine; various soils reported though usually clay, in grassland. 3-410m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Franciscan onion	<i>Allium peninsulare</i> <i>var. franciscanum</i>	None	None	1B.2	Cismontane woodland, valley and foothill grassland.	Clay soils; often on serpentine. dry hillsides. 100-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Franciscan thistle	<i>Cirsium andrewsii</i>	None	None	1B.2	Coastal bluff scrub, broadleaved upland forest, coastal scrub.	Sometimes serpentine seeps. 0-135m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Freed's jewel-flower	<i>Streptanthus brachiatus</i> <i>ssp. hoffmanii</i>	None	None	1B.2	Chaparral, cismontane woodland.	Serpentine rock outcrops, primarily in geothermal development areas. 480-1030m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Gander's cryptantha	<i>Cryptantha ganderi</i>	None	None	1B.1	Sonoran desert scrub, desert dunes.	On dunes and in washes. 170-400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Gander's pitcher sage	<i>Lepechinia ganderi</i>	None	None	1B.3	Closed-cone coniferous forest,	Usu. found in chap. or coastal scrub;	Low. Suction dredging not likely to occur in



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					chaparral, coastal scrub, valley and foothill grassland.	sometimes in tecate cypress wldnd. Gabbro or metavolcanic substrate. 300-1000m.	occupied habitat or substantially impact suitable habitat.
Gaviota tarplant	<i>Deinandra increscens ssp. villosa</i>	Endangered	Endangered	1B.1	Coastal scrub, valley and foothill grassland, coastal bluff scrub.	Known from coastal terrace near Gaviota; sandy blowouts amid sandy loam soil; grassland/coast scrub ecotone. 35-430m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Gentner's fritillary	<i>Fritillaria gentneri</i>	Endangered	None	1B.1	Cismontane woodland, chaparral.	Open sites at edge of woodland or chaparral (in Oregon); sometimes on serpentine. 1080-1120m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Geyer's milk-vetch	<i>Astragalus geyeri var. geyeri</i>	None	None	2.2	Chenopod scrub, Great Basin scrub.	Sandy flats and valley floors, depressions in mobile or stabilized dunes, and along draws. 1150-1550m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
ghost-pipe	<i>Monotropa uniflora</i>	None	None	2.2	Broadleaved upland forest, North Coast coniferous forest.	Often under redwoods or western hemlock. 10-200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
giant fawn lily	<i>Erythronium oregonum</i>	None	None	2.2	Cismontane woodland, meadows and seeps.	Openings. Sometimes on serpentine; rocky sites. 100-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
giant spanish-needle	<i>Palafoxia arida var. gigantea</i>	None	None	1B.3	Desert dunes.	Active and stable dune areas; assoc. with	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						Ammobroma sonorae, Astragalus lent. borreganus, etc. 15-100m.	occupied habitat or substantially impact suitable habitat.
Gilman's buckwheat	<i>Eriogonum gilmanii</i>	None	None	1B.3	Mojavean desert scrub.	Dry rocky places in desert mountains. 1800-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Gilman's cymopterus	<i>Cymopterus gilmanii</i>	None	None	2.3	Mojavean desert scrub.	Carbonate; dry rocky slopes in creosote bush scrub; from the Last Chance Range to Death Valley. 1000-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
glandular ditaxis	<i>Ditaxis claryana</i>	None	None	2.2	Mojavean desert scrub, Sonoran desert scrub.	In dry washes and on rocky hillsides. Sandy soils. 0-465m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
glandular western flax	<i>Hesperolinon adenophyllum</i>	None	None	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Serpentine soils; generally found in serpentine chaparral. 425-1315m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
globose cymopterus	<i>Cymopterus globosus</i>	None	None	2.2	Great Basin scrub.	Sandy, open flats. 1200-2135m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
golden alpine draba	<i>Draba aureola</i>	None	None	1B.3	Alpine boulder and rock field, subalpine coniferous forest.	On serpentine or volcanic outcrops. 2000-3355m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
golden larkspur	<i>Delphinium luteum</i>	Endangered	Rare	1B.1	Chaparral, coastal prairie, coastal scrub.	North-facing rocky slopes. 0-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
golden violet	<i>Viola aurea</i>	None	None	2.2	Great Basin scrub, pinyon-juniper woodland.	Dry, sandy slopes. 835-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
golden-spined cereus	<i>Bergerocactus emoryi</i>	None	None	2.2	Coastal scrub, sometimes chaparral margins.	Limited to the coastal belt. Usually on clay soils. 3-395m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Great Basin claytonia	<i>Claytonia umbellata</i>	None	None	2.3	Subalpine coniferous forest.	Talus slopes, stony flats, crevices. 1285(?) - 3520m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Great Basin lousewort	<i>Pedicularis centranthera</i>	None	None	2.3	Great Basin scrub.	Alluvial fans; dry, ashy loam w/ <i>Artemisia tridentata</i> , <i>Juniperus</i> , <i>Chrysothamnus</i> , etc. 1300-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Great Basin onion	<i>Allium atrorubens</i> var. <i>atrorubens</i>	None	None	2.3	Great Basin scrub, pinyon-juniper woodland.	In sandy, rocky, gravelly, or sometimes clay soils in the White Mountains. 1200-2100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Page 43 of 149

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Greata's aster	<i>Symphyotrichum greatae</i>	None	None	1B.3	Chaparral, cismontane woodland.	Mesic canyons. 800-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
green jewel-flower	<i>Streptanthus breweri</i> var. <i>hesperidis</i>	None	None	1B.2	Chaparral, cismontane woodland.	Openings in chaparral or woodland; serpentine, rocky sites. 130-760m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Greene's mariposa-lily	<i>Calochortus greenei</i>	None	None	1B.2	Meadows, pinyon and juniper woodland, upper montane coniferous forest.	On volcanic outcrops and open, dry, gravelly soils. 1035-1890m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Greene's narrow-leaved daisy	<i>Erigeron greenei</i>	None	None	1B.2	Chaparral.	Serpentine and volcanic substrates, generally in shrubby vegetation. 75-1060m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Greenhorn fritillary	<i>Fritillaria brandegeei</i>	None	None	1B.3	Lower montane coniferous forest.	Loamy, granitic soils; often in mixed conifer-black oak community. 1200-1910m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
grey-leaved violet	<i>Viola pinetorum</i> ssp. <i>grisea</i>	None	None	1B.3	Subalpine coniferous forest, upper montane coniferous forest.	Dry mountain peaks and slopes. 1800-2600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
hairy erioneuron	<i>Erioneuron pilosum</i>	None	None	2.3	Pinyon-juniper woodland.	Rocky or gravelly places; can be on	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						carbonate. 1500-2000m.	occupied habitat or substantially impact suitable habitat.
hairy marsh hedge-nettle	<i>Stachys palustris ssp. pilosa</i>	None	None	2.3	Great Basin scrub.	Mesic sites. 1200-1525m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hall's bush-mallow	<i>Malacothamnus hallii</i>	None	None	1B.2	Chaparral.	Some populations on serpentine. 10-550m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hall's daisy	<i>Erigeron aequifolius</i>	None	None	1B.3	Broadleaved upland forest, lower montane coniferous forest, pinyon & juniper woodland, upper montane coniferous forest.	On dry rock outcrops in granite walls and canyons. 1500-2440m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hall's harmonia	<i>Harmonia hallii</i>	None	None	1B.2	Chaparral.	Serpentine hills and ridges. Open, rocky areas within chaparral. 500-900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hall's meadow hawksbeard	<i>Crepis runcinata ssp. hallii</i>	None	None	2.1	Mojavean desert scrub, pinyon-juniper woodland.	Moist, alkaline valley bottoms. 375-2100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hall's monardella	<i>Monardella macrantha ssp.</i>	None	None	1B.3	Broadleaved upland forest, chaparral,	Dry slopes and ridges in openings within the	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
	<i>hallii</i>				lower montane coniferous forest, cismontane woodland, valley & foothill grassland.	above communities. 695-2195m.	occupied habitat or substantially impact suitable habitat.
Hall's rupertia	<i>Rupertia hallii</i>	None	None	1B.2	Cismontane woodland, lower montane coniferous forest.	On disturbed soils of roadsides and logged forests. 1000-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hall's tarplant	<i>Deinandra halliana</i>	None	None	1B.1	Cismontane woodland, chenopod scrub, valley and foothill grassland.	Reported from a variety of substrates incl. clay, sand, and alkaline soils. 300-950m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hammitt's clay-cress	<i>Sibaropsis hammittii</i>	None	None	1B.2	Valley and foothill grassland, chaparral.	Mesic microsites in open areas on clay soils in stipa grassland. Often surrounded by <i>Adenostoma</i> chaparral. 730-1065m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hanaupah rock daisy	<i>Perityle villosa</i>	None	None	1B.3	Pinyon and juniper woodland.	Shaded rock crevices. 2120-2410m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hardham's bedstraw	<i>Galium hardhamiae</i>	None	None	1B.3	Closed-cone coniferous forest.	On serpentine with <i>Cupressus sargentii</i> . 390-975m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Page 46 of 149

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Hardham's evening-primrose	<i>Camissonia hardhamiae</i>	None	None	1B.2	Chaparral, cismontane woodland.	Decomposed carbonate. 330-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Harwood's eriastrum	<i>Eriastrum harwoodii</i>	None	None	1B.2	Desert dunes.	200-915m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Harwood's milk-vetch	<i>Astragalus insularis var. harwoodii</i>	None	None	2.2	Desert dunes.	Open sandy flats and sandy or stony desert washes; mostly in creosote bush scrub. - 50-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
heart-leaved pitcher sage	<i>Lepechinia cardiophylla</i>	None	None	1B.2	Closed-cone coniferous forest, chaparral, cismontane woodland.	550-1370m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
heartscale	<i>Atriplex cordulata</i>	None	None	1B.2	Chenopod scrub, valley and foothill grassland, meadows.	Alkaline flats and scalds in the Central Valley, sandy soils. 1-150(600)m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Heckner's lewisia	<i>Lewisia cotyledon var. heckneri</i>	None	None	1B.2	Lower montane coniferous forest.	Rocky places. 225-1970m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Henderson's fawn lily	<i>Erythronium hendersonii</i>	None	None	2.3	Lower montane coniferous forest.	300-1600m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							occupied habitat or substantially impact suitable habitat.
Henderson's horkelia	<i>Horkelia hendersonii</i>	None	None	1B.1	Upper montane coniferous forest.	Granitic peaks and talus slopes at high elevations. 2000-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Henderson's lomatium	<i>Lomatium hendersonii</i>	None	None	2.3	Pinyon-juniper woodland, Great Basin scrub.	Rocky, clay soils. 1400-2440m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Henderson's triteleia	<i>Triteleia hendersonii</i> var. <i>hendersonii</i>	None	None	2.2	Cismontane woodland.	Open slopes and roadbanks. 760-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hernandez spineflower	<i>Chorizanthe biloba</i> var. <i>immemora</i>	None	None	1B.2	Chaparral, cismontane woodland.	Sandy and gravelly soils on the east slope of the Diablo Range. 695-750m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hickman's checkerbloom	<i>Sidalcea hickmanii</i> ssp. <i>hickmanii</i>	None	None	1B.3	Chaparral.	Grassy openings in chaparral, and on dry ridges. 330-1640m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hickman's onion	<i>Allium hickmanii</i>	None	None	1B.2	Closed-cone coniferous forest, chaparral, coastal scrub, valley and	Sandy loam, damp ground and vernal swales; mostly in grassland though can be	Low. Suction dredging not likely to occur in occupied habitat or substantially impact



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					foothill grassland, coastal prairie.	assoc. with chaparral or woodland. 20-200m	suitable habitat.
Hillsborough chocolate lily	<i>Fritillaria biflora</i> var. <i>ineziana</i>	None	None	1B.1	Cismontane woodland, valley and foothill grassland.	Probably on serpentine; most recent site is in serpentine grassland. 90-160m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
hillside arnica	<i>Arnica fulgens</i>	None	None	2.2	Great Basin scrub, lower montane coniferous forest, meadows.	Open, damp depressions and meadows in sagebrush scrub or juniper woodland. 1470-2700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
hillside wheat grass	<i>Leymus salinus</i> ssp. <i>mojavensis</i>	None	None	2.3	Pinyon-juniper woodland.	Rocky sites. 1350-2135m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hirshberg's rock-cress	<i>Arabis hirshbergiae</i>	None	None	1B.2	Pebble (or pavement) plains.	1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hitchcock's blue-eyed grass	<i>Sisyrinchium hitchcockii</i>	None	None	1B.1	Cismontane woodland, valley and foothill grassland.	Openings in woodland or in grassland. 305 m in California.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hockett Meadows lupine	<i>Lupinus lepidus</i> var. <i>culbertsonii</i>	None	None	1B.3	Meadows, upper montane coniferous forest.	Mesic, rocky sites. One site states: "level, dry site, surrounded by Jeffrey pines." 2425-3000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Hoffmann's rock-cress	<i>Arabis hoffmannii</i>	Endangered	None	1B.1	Coastal bluff scrub.	Volcanic cliff edges. 75-380m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hoffmann's slender-flowered gilia	<i>Gilia tenuiflora ssp. hoffmannii</i>	Endangered	None	1B.1	Coastal dunes, coastal scrub.	Island dunes; sandy soil. 5-30m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hoffman's bristly jewel-flower	<i>Streptanthus glandulosus var. hoffmannii</i>	None	None	1B.3	Chaparral, cismontane woodland, valley and foothill grassland.	Moist, steep rocky banks, in serpentine and non-serpentine soil. 120-475m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
hooked popcorn-flower	<i>Plagiobothrys uncinatus</i>	None	None	1B.2	Chaparral, cismontane woodland, valley and foothill grassland, coastal bluff scrub.	Sandstone outcrops and canyon sides; often in burned or disturbed areas. 300-820m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hoover's bent grass	<i>Agrostis hooveri</i>	None	None	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Sandy sites. 60-600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hoover's calycadenia	<i>Calycadenia hooveri</i>	None	None	1B.3	Cismontane woodland, valley and foothill grassland.	On exposed, rocky, barren soil. 65-260m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hoover's eriastrum	<i>Eriastrum hooveri</i>	Delisted	None	4.2	Chenopod scrub, valley and foothill	On sparsely vegetated alkaline alluvial fans;	Low. Suction dredging not likely to occur in

TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					grassland, pinyon and juniper woodland.	also in the Temblor Range on sandy soils. 50-915m.	occupied habitat or substantially impact suitable habitat.
Hospital Canyon larkspur	<i>Delphinium californicum ssp. interius</i>	None	None	1B.2	Cismontane woodland, chaparral.	In wet, boggy meadows, openings in chaparral and in canyons. 225-1060m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Howell's fawn lily	<i>Erythronium howellii</i>	None	None	1B.3	Lower montane coniferous forest.	200-1145m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Howell's jewel-flower	<i>Streptanthus howellii</i>	None	None	1B.2	Lower montane coniferous forest.	Dry serpentine slopes, in open pine woods or in brushy areas; on rocky soil. 300-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Howell's sandwort	<i>Minuartia howellii</i>	None	None	1B.3	Lower montane coniferous forest, chaparral.	Dry open places, often on serpentine hillsides and ridges, near Jeffrey pines. 550-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Howell's spineflower	<i>Chorizanthe howellii</i>	Endangered	Threatened	1B.2	Coastal dunes, coastal prairie, coastal scrub.	Sand dunes, sandy slopes, and sandy areas in coastal prairie. 0-35m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Howell's tauschia	<i>Tauschia howellii</i>	None	None	1B.3	Subalpine coniferous forest, upper montane coniferous forest.	Hot dry ridge summits and slopes in decomposed granite gravel and red sand.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						1705-2500m.	suitable habitat.
Howell's triteleia	<i>Triteleia grandiflora</i> var. <i>howellii</i>	None	None	2.1	Great Basin scrub, pinyon-juniper woodland.	In rocky areas in sagebrush scrub, and in woodland. 700-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Howe's hedgehog cactus	<i>Echinocereus engelmannii</i> var. <i>howei</i>	None	None	1B.1	Mojavean desert scrub.	On desert hills and flats on well-drained rocky ledges and steep gravelly slopes. 500-770m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Humboldt Bay wallflower	<i>Erysimum menziesii</i> ssp. <i>eurekaense</i>	Endangered	Endangered	1B.1	Coastal dunes.	Foredunes w/ <i>Artemisia pycnocephala</i> , <i>Solidago spathulata</i> , <i>Lathyrus</i> sp., etc. 0-10m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Humboldt milk-vetch	<i>Astragalus agnicidus</i>	None	Endangered	1B.1	Broadleafed upland forest, redwood forest.	Disturbed openings in partially timbered forest lands; also along ridgelines; south aspects. 575-750m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Hutchinson's larkspur	<i>Delphinium hutchinsoniae</i>	None	None	1B.2	Broadleafed upland forest, chaparral, coastal prairie, coastal scrub.	On semi-shaded, slightly moist slopes, usually west-facing. 0-365m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Indian Valley brodiaea	<i>Brodiaea coronaria</i> ssp. <i>rosea</i>	None	Endangered	1B.1	Closed-cone coniferous forest, chaparral, cismontane woodland, valley and foothill grassland,	Serpentine gravelly creek bottoms, and in meadows and swales. 335-1450m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					meadows.		
Indian Valley bush-mallow	<i>Malacothamnus aboriginum</i>	None	None	1B.2	Cismontane woodland, chaparral.	Granitic outcrops and sandy bare soil, often in disturbed soils. 150-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Indian Valley spineflower	<i>Aristocapsa insignis</i>	None	None	1B.2	Cismontane woodland.	300-600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
intermediate mariposa-lily	<i>Calochortus weedii</i> var. <i>intermedius</i>	None	None	1B.2	Coastal scrub, chaparral, valley and foothill grassland.	Dry, rocky open slopes and rock outcrops. 120-850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
intermontane lupine	<i>Lupinus pusillus</i> var. <i>intermontanus</i>	None	None	2.3	Great Basin scrub.	Sandy soils. 1220-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
intermountain milkwort	<i>Polygala intermontana</i>	None	None	2.3	Pinyon-juniper woodland.	2010-3080m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Inyo blazing star	<i>Mentzelia inyoensis</i>	None	None	1B.3	Great Basin scrub, pinyon-juniper woodland.	Rocky sites. 1150-1980m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Inyo County star-tulip	<i>Calochortus excavatus</i>	None	None	1B.1	Chenopod scrub, meadows (alkaline).	Mostly on fine, sandy loam soils with alkaline salts, grassy meadows in shadscale scrub. 1150-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Inyo hulsea	<i>Hulsea vestita ssp. inyoensis</i>	None	None	2.2	Pinyon-juniper woodland, Great Basin scrub.	In volcanic ash on steep slopes. 1635-3000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Ione buckwheat	<i>Eriogonum apricum var. apricum</i>	Endangered	Endangered	1B.1	Chaparral.	In gravelly openings on Ione formation soil. 80-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Irish Hill buckwheat	<i>Eriogonum apricum var. prostratum</i>	Endangered	Endangered	1B.1	Chaparral.	Gravelly openings on Ione formation soils. 90-120m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
island alumroot	<i>Heuchera maxima</i>	None	None	1B.2	Coastal bluff scrub, chaparral, coastal scrub.	Moist north-facing canyon walls, rocky banks, and sea-cliffs. 5-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
island mallow	<i>Lavatera assurgentiflora ssp. assurgentiflora</i>	None	None	1B.1	Coastal bluff scrub, coastal scrub.	Sandy flats and rocky places. Mainland and Todos Santos Island plants probably planted. 15-245m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
island rush-rose	<i>Helianthemum greenei</i>	Threatened	None	1B.2	Chaparral, coastal scrub, closed-cone	Rocky sites; usually in open places among	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					coniferous forest.	pinos or chaparral. 15-480m.	occupied habitat or substantially impact suitable habitat.
island wallflower	<i>Erysimum insulare ssp. insulare</i>	None	None	1B.3	Coastal bluff scrub, coastal dunes.	Mesas and cliffs. 0-180m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
island white-felted paintbrush	<i>Castilleja lanata ssp. hololeuca</i>	None	None	1B.2	Chaparral, coastal scrub.	Rocky slopes. 5-400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Jack's wild buckwheat	<i>Eriogonum luteolum var. saltuarium</i>	None	None	1B.2	Upper montane coniferous forest, Great Basin scrub.	Sandy, granitic substrates. 1700-2400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Jacumba milk-vetch	<i>Astragalus douglasii var. perstrictus</i>	None	None	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Stony hillsides and gravelly or sandy flats in open oak woodland. 900-1370m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Jaeger's milk-vetch	<i>Astragalus pachypus var. jaegeri</i>	None	None	1B.1	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland.	Dry ridges and valleys and open sandy slopes; often in grassland and oak-chaparral. 365-915m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Janish's beardtongue	<i>Penstemon janishiae</i>	None	None	2.2	Great Basin scrub, lower montane coniferous forest, pinyon-juniper	Volcanic soils; gravelly sites. 1065-2350m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					woodland.		suitable habitat.
Jared's pepper-grass	<i>Lepidium jaredii</i> <i>ssp. jaredii</i>	None	None	1B.2	Valley and foothill grassland.	Alkali flats and sinks. Sandy, alkaline, sometimes adobe soils.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Jepson's leptosiphon	<i>Leptosiphon jepsonii</i>	None	None	1B.2	Chaparral, cismontane woodland.	Open to partially shaded grassy slopes. on volcanics or the periphery of serpentine substrates. 100-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Jepson's milk-vetch	<i>Astragalus rattanii</i> var. <i>jepsonianus</i>	None	None	1B.2	Cismontane woodland, valley and foothill grassland, chaparral.	Commonly on serpentine in grassland or openings in chaparral. 320-700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Jepson's onion	<i>Allium jepsonii</i>	None	None	1B.2	Cismontane woodland, lower montane coniferous forest.	On serpentine soils in Sierra foothills, volcanic soil on Table Mtn. on slopes and flats; usu in an open area. 450-1130m	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Johnson's bee-hive cactus	<i>Sclerocactus johnsonii</i>	None	None	2.2	Mojavean desert scrub.	Granitic soils. 500-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Johnston's buckwheat	<i>Eriogonum microthecum</i> var. <i>johnstonii</i>	None	None	1B.3	Subalpine coniferous forest, upper montane coniferous forest.	Slopes and ridges on granite or limestone. 2210-2900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Johnston's rock-cress	<i>Arabis johnstonii</i>	None	None	1B.2	Chaparral, lower montane coniferous forest.	Granitic soil with pleistocene, non-marine clay deposits. With <i>Adenostoma</i> , <i>Quercus wislizenii</i> . 1350-2150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Jolon clarkia	<i>Clarkia jolonensis</i>	None	None	1B.2	Cismontane woodland.	500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Jones' layia	<i>Layia jonesii</i>	None	None	1B.2	Chaparral, valley and foothill grassland.	Clay soils and serpentine outcrops. 5-155m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Josephine horkelia	<i>Horkelia congesta ssp. nemorosa</i>	None	None	2.1	North Coast coniferous forest.	Vernally moist rock, clay. Generally serpentine. 300-800 m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kaweah brodiaea	<i>Brodiaea insignis</i>	None	Endangered	1B.2	Cismontane woodland, valley and foothill grassland.	Granite substrates in deep, clayey soils on S-SW facing slopes; usu in grassland surr by foothill woodland. 150-1220m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kaweah fawn lily	<i>Erythronium pusaterii</i>	None	None	1B.3	Subalpine coniferous forest, meadows.	On granitic loam soils and granite outcrops; also on metamorphics. 2200-2775m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
Kaweah monkeyflower	<i>Mimulus norrisii</i>	None	None	1B.3	Chaparral, cismontane woodland.	Marble outcrops, soil pockets, moss-covered ledges, cracks in outcrops, sometimes on S-facing cliffs. 360-1300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Keck's checkerbloom	<i>Sidalcea keckii</i>	Endangered	None	1B.1	Cismontane woodland, valley and foothill grassland	Grassy slopes in blue oak woodland. 180-425m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
keil's daisy	<i>Erigeron inornatus var. keilii</i>	None	None	1B.3	Meadows, lower montane coniferous forest.	Dry slopes, meadows, in coniferous forest. 695-1820m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kellman's bristle moss	<i>Orthotrichum kellmanii</i>	None	None	1B.2	Chaparral, cismontane oak woodland.	Sandstone outcrops with high calcium concentrations from eroded boulders out of non-calcareous sandstone bedrock. Rock outcrops in small openings within dense chaparral with overstory of scattered <i>Pinus attenuata</i> . 343-685m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kellogg's buckwheat	<i>Eriogonum kelloggii</i>	Candidate	Endangered	1B.2	Lower montane coniferous forest, chaparral.	Rocky, serpentine sites. 925-1220m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
Kellogg's horkelia	<i>Horkelia cuneata ssp. sericea</i>	None	None	1B.1	Closed-cone coniferous forest, coastal scrub, chaparral.	Old dunes, coastal sandhills; openings. 10-200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kelso Creek monkeyflower	<i>Mimulus shevockii</i>	None	None	1B.2	Joshua tree woodland, pinyon-juniper woodland.	Mostly known from Joshua tree-xeric conifer woodland in the high desert, in loose, granitic sandy soil. 825-1340m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kern buckwheat	<i>Eriogonum kennedyi var. pinicola</i>	None	None	1B.1	Chaparral, pinyon and juniper woodland.	Open places on clay soil. 1400-1890m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kern mallow	<i>Eremalche kernensis</i>	Endangered	None	1B.1	Chenopod scrub, valley and foothill grassland.	On dry, open sandy to clayey soils; usually within valley saltbush scrub; often at edge of balds. 70-515m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kern Plateau bird's-beak	<i>Cordylanthus eremicus ssp. kernensis</i>	None	None	1B.3	Upper montane coniferous forest, pinyon-juniper woodland.	2100-3000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kern Plateau horkelia	<i>Horkelia tularensis</i>	None	None	1B.3	Upper montane coniferous forest.	Metamorphic gravel along an exposed ridge top. 2280-2875m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kern Plateau	<i>Astragalus</i>	None	None	1B.2	Meadows, subalpine	Dry, gravelly or sandy	Low. Suction dredging

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Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
milk-vetch	<i>lentiginosus var. kernensis</i>				coniferous forest.	slopes or flats. 2350-2600m.	not likely to occur in occupied habitat or substantially impact suitable habitat.
Kern River daisy	<i>Erigeron multiceps</i>	None	None	1B.2	Joshua tree woodland, meadows, upper montane coniferous forest.	River banks and dry meadow borders; usually in open, grassy areas. 1780-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kern River evening-primrose	<i>Camissonia integrifolia</i>	None	None	1B.3	Chaparral.	700-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
King's eyelash grass	<i>Blepharidachne kingii</i>	None	None	2.3	Pinyon-juniper woodland, Mojavean desert scrub.	Rocky benches and alluvial fans on limestone. 480-2125m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kings gold	<i>Tropidocarpum californicum</i>	None	None	1B.1	Chenopod scrub.	65m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Kings River buckwheat	<i>Eriogonum nudum var. regirivum</i>	None	None	1B.2	Cismontane woodland.	Rocky limestone slopes along the Kings River. 210-610m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
kitten-tails	<i>Synthyris missurica ssp. missurica</i>	None	None	2.3	Lower montane coniferous forest, subalpine coniferous	2000-2500m.	Low. Suction dredging not likely to occur in occupied habitat or

TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					forest, upper montane coniferous forest.		substantially impact suitable habitat.
Klamath Mountain buckwheat	<i>Eriogonum hirtellum</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forest.	Dry serpentine rocky outcrops and ridges. 600-1900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Klamath Mountain catchfly	<i>Silene salmonacea</i>	None	None	1B.2	Lower montane coniferous forest.	Openings in serpentine. 775-1045m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Koch's cord moss	<i>Entosthodon kochii</i>	None	None	1B.3	Cismontane woodland.	Moss growing on soil. 500-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Koehler's stipitate rock-cress	<i>Arabis koehleri</i> var. <i>stipitata</i>	None	None	1B.3	Chaparral, lower montane coniferous forest.	Rocky, serpentine substrate. 155-1810m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
La Panza mariposa-lily	<i>Calochortus obispoensis</i>	None	None	1B.2	Chaparral, coastal scrub, valley and foothill grassland.	Often in serpentine grassland. 75-665m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Laguna Beach dudleya	<i>Dudleya stolonifera</i>	Threatened	Threatened	1B.1	Chaparral, cismontane woodland, coastal scrub, valley and	In thin soil on north-facing sandstone cliffs. 10-260m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					foothill grassland.		suitable habitat.
Laguna Mountains goldenbush	<i>Ericameria cuneata</i> var. <i>macrocephala</i>	None	None	1B.3	Chaparral.	Endemic to the Laguna Mountains. Among boulders; in crevices in granitic outcrops and in rocky soil. 1185-1850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Lake County western flax	<i>Hesperolinon didymocarpum</i>	None	Endangered	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Serpentine soil in open grassland and near chaparral. 330-365m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Lancaster milk-vetch	<i>Astragalus preussii</i> var. <i>laxiflorus</i>	None	None	1B.1	Chenopod scrub.	Alkaline clay flats or gravelly or sandy washes and along draws in gullied badlands. 725m in California.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
lance-leaved scurf-pea	<i>Psoraleidium lanceolatum</i>	None	None	2.3	Great Basin scrub.	Sandy clearings in Great Basin and winter fat scrub, and, outside of California, on alluvial plains. 1220-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
large-flowered fiddleneck	<i>Amsinckia grandiflora</i>	Endangered	Endangered	1B.1	Cismontane woodland, valley and foothill grassland.	Annual grassland in various soils. 275-550m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Las Animas colubrina	<i>Colubrina californica</i>	None	None	2.3	Mojavean desert scrub.	On narrow, steep, rocky ravines or washes. 10-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
Lassen Peak copper moss	<i>Mielichhoferia tehamensis</i>	None	None	1B.3	Alpine boulder and rock field.	Moss on volcanic rock and soil; mesic sites. 2500-2800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
late-flowered mariposa-lily	<i>Calochortus weedii</i> var. <i>vestus</i>	None	None	1B.2	Chaparral, cismontane woodland.	Dry, open coastal woodland, chaparral; on serpentine. 270-1910m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Lavin's milk-vetch	<i>Astragalus oophorus</i> var. <i>lavinii</i>	None	None	1B.2	Great Basin scrub.	Dry, open areas. 2450-3050m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Layne's ragwort	<i>Packera layneae</i>	Threatened	Rare	1B.2	Chaparral, cismontane woodland.	Ultramafic soil; occasionally along streams. 200-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
leafy reed grass	<i>Calamagrostis foliosa</i>	None	Rare	4.2	Coastal bluff scrub, North Coast coniferous forest.	Rocky cliffs and ocean-facing bluffs. 0-1220m. State-listed Rare. Element occurrences archived; CNPS List 4.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
leafy tarplant	<i>Deinandra increscens</i> ssp. <i>foliosa</i>	None	None	1B.2	Valley and foothill grassland.	300-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Lemmon's jewelflower	<i>Caulanthus coulteri</i> var.	None	None	1B.2	Pinyon-juniper woodland, valley and	80-1220m.	Low. Suction dredging not likely to occur in

TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
	<i>lemmonii</i>				foothill grassland.		occupied habitat or substantially impact suitable habitat.
lens-pod milk-vetch	<i>Astragalus lentiformis</i>	None	None	1B.2	Great Basin scrub, lower montane coniferous forest.	Shallow, volcanic soils among sagebrush, sometimes with Jeffrey pine. 1450-1925m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
lesser saltscale	<i>Atriplex minuscula</i>	None	None	1B.1	Chenopod scrub, playas, valley and foothill grassland.	In alkali sink and grassland in sandy, alkaline soils. 20-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Letterman's blue grass	<i>Poa lettermanii</i>	None	None	2.3	Alpine boulder and rock field.	Sandy or rocky sites. 3500-4265m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Lewis Rose's ragwort	<i>Packera eurycephala</i> var. <i>lewisrosei</i>	None	None	1B.2	Cismontane woodland, lower montane coniferous forest, chaparral.	Steep slopes and in canyons in serpentine soil, often along or near roads. 420-1515m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
lilliput lupine	<i>Lupinus uncialis</i>	None	None	2.2	Great Basin scrub, pinyon-juniper woodland.	Hilltops, bluffs, barrens, & talus in sagebrush scrub and p-j wldnd. on limestone, rhyolite, volc ash, etc. 1300-14005m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
limestone beardtongue	<i>Penstemon calcareus</i>	None	None	1B.3	Mojavean desert scrub, pinyon-juniper woodland, Joshua tree woodland.	Rocky limestone cliffs and canyon bottoms. 1065-2040m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact



TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
little bulrush	<i>Trichophorum pumilum</i>	None	None	2.2	Alpine dwarf scrub?	Wet sites, limestone soils. 2875-3250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
little hulsea	<i>Hulsea nana</i>	None	None	2.3	Alpine boulder and rock field, subalpine coniferous forest.	Rocky or gravelly sites; on volcanic substrates. 1920-3355m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
little ricegrass	<i>Oryzopsis exigua</i>	None	None	2.3	Great Basin scrub.	2345-2420m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Little San Bernardino Mtns. linanthus	<i>Linanthus maculatus</i>	None	None	1B.2	Desert dunes, Sonoran desert scrub, Mojavean desert scrub, Joshua tree woodland.	Sandy places; microhab difficult to pin down. Usu. in light-colored quartz sand; often in wash or bajada. 195-2075m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
little-leaved huckleberry	<i>Vaccinium scoparium</i>	None	None	2.2	Subalpine coniferous forest.	Rocky, subalpine woods; one site near Gasquet in "Boggy Creek." (135)1800-2365m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
lobed ground-cherry	<i>Physalis lobata</i>	None	None	2.3	Mojavean desert scrub, playas.	Decomposed granite soil, alkaline dry lakes. 500-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
Loma Prieta hoita	<i>Hoita strobilina</i>	None	None	1B.1	Chaparral, cismontane woodland, riparian woodland.	Serpentine; mesic sites.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Lompoc yerba santa	<i>Eriodictyon capitatum</i>	Endangered	Rare	1B.2	Closed-cone coniferous forest, chaparral.	Sandy soils on terraces. 40-455m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
long bluebells	<i>Mertensia longiflora</i>	None	None	2.2	Great Basin scrub, lower montane coniferous forest.	1525-2200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Long Valley milk-vetch	<i>Astragalus johannis-howellii</i>	None	Rare	1B.2	Great Basin scrub.	In sandy volcanic ash or pumice with sagebrush scrub. 2030-2530m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
long-petaled lewisia	<i>Lewisia longipetala</i>	None	None	1B.3	Alpine boulder and rock field, subalpine coniferous forest.	Mesic rocky sites; in cracks of granite or gravelly volcanic soils. 2480-2925m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
long-spined spineflower	<i>Chorizanthe polygonoides var. longispina</i>	None	None	1B.2	Chaparral, coastal scrub, meadows, valley and foothill grassland.	Gabbroic clay. 30-1450m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
long-stiped campion	<i>Silene occidentalis ssp. longistipitata</i>	None	None	1B.2	Chaparral, lower montane coniferous forest, upper montane coniferous forest.	1000-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Lyall's tonestus	<i>Tonestus lyallii</i>	None	None	2.3	Alpine boulder and rock field.	Alpine talus, barrens. 2500-2700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Lyon's pentachaeta	<i>Pentachaeta lyonii</i>	Endangered	Endangered	1B.1	Chaparral, valley and foothill grassland.	Edges of clearings in chap., usually at the ecotone btwn grassland and chaparral or edges of firebreaks. 30-630m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Macdougals lomatium	<i>Lomatium foeniculaceum var. macdougalii</i>	None	None	2.2	Chenopod scrub, Great Basin scrub, lower montane coniferous forest, pinyon-juniper woodland.	Volcanic soil. 1200-1900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Madera leptosiphon	<i>Leptosiphon serrulatus</i>	None	None	1B.2	Cismontane woodland, lower montane coniferous forest.	Dry slopes; often on decomposed granite in woodland. 80-1575m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
maidenhair spleenwort	<i>Asplenium trichomanes ssp. trichomanes</i>	None	None	2.3	Lower montane coniferous forest.	On rocks. 185-200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Page 67 of 149

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
male fern	<i>Dryopteris filix-mas</i>	None	None	2.3	Upper montane coniferous forest.	In granite crevices. 2400-3100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
many-flowered thelypodium	<i>Thelypodium milleflorum</i>	None	None	2.2	Great Basin scrub, chenopod scrub.	Big sagebrush & rabbitbrush/bitterbrush scrubs in sandy soils; often w/other sand-related herbs. 1200-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
many-stemmed dudleya	<i>Dudleya multicaulis</i>	None	None	1B.2	Chaparral, coastal scrub, valley and foothill grassland.	In heavy, often clayey soils or grassy slopes. 0-790m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Marble Mountain campion	<i>Silene marmorensis</i>	None	None	1B.2	Broadleafed upland forest, lower montane coniferous forest, cismontane woodland.	Openings with little vegetation, shady areas, often along trails; can be on serpentine. 165-1250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
marble rockmat	<i>Petrophyton caespitosum ssp. acuminatum</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forest.	Limestone or granite. rocky sites. 1200-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
marbled wild-ginger	<i>Asarum marmoratum</i>	None	None	2.3	Lower montane coniferous forest.	Understory of coniferous forests. 200-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

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Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
marcescent dudleya	<i>Dudleya cymosa ssp. marcescens</i>	Threatened	Rare	1B.2	Chaparral.	On sheer rock surfaces and rocky volcanic cliffs. 180-520m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Marin checkerbloom	<i>Sidalcea hickmanii ssp. viridis</i>	None	None	1B.3	Chaparral.	Serpentine or volcanic soils; sometimes appears after burns. 0-430m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Marin County navarretia	<i>Navarretia rosulata</i>	None	None	1B.2	Closed-cone coniferous forest, chaparral.	Dry, open rocky places; can occur on serpentine. 200-635m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Marin western flax	<i>Hesperolinon congestum</i>	Threatened	Threatened	1B.1	Chaparral, valley and foothill grassland.	In serpentine barrens and in serpentine grassland and chaparral. 30-365m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mariposa clarkia	<i>Clarkia biloba ssp. australis</i>	None	None	1B.2	Chaparral, cismontane woodland.	Several EO's occur in the foothill woodland/riparian ecotone. 300-945m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
Mariposa cryptantha	<i>Cryptantha mariposae</i>	None	None	1B.3	Chaparral.	On serpentine outcrops. 200-650m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

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Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Mariposa lupine	<i>Lupinus citrinus var. deflexus</i>	None	Threatened	1B.2	Chaparral, cismontane woodland.	Decomposed granitic sand on hilltops and hillsides on western slope of the Sierra Nevada, mostly S. exp. 400-640m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mariposa pussypaws	<i>Calyptridium pulchellum</i>	Threatened	None	1B.1	Cismontane woodland.	On granite domes, restricted to exposed sites. 400-1100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
marsh microseris	<i>Microseris paludosa</i>	None	None	1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland.	5-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Masonic Mountain jewel-flower	<i>Streptanthus oliganthus</i>	None	None	1B.2	Pinyon-juniper woodland.	Volcanic or decomposed granite soils, along roadsides and in old mine dumps. 1965-3050m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Masonic rock-cress	<i>Arabis cobrensis</i>	None	None	2.3	Great Basin scrub, pinyon-juniper woodland.	Sandy soils. 1375-2800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mason's neststraw	<i>Stylocline masonii</i>	None	None	1B.1	Chenopod scrub, pinyon-juniper woodland.	Sandy washes. 100-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
Mason's sky pilot	<i>Polemonium chartaceum</i>	None	None	1B.3	Alpine boulder and rock field, subalpine coniferous forest.	Gravelly slopes and rocky ledges on granite or volcanic soils. 1800-4215m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mcdonald's rock-cress	<i>Arabis macdonaldiana</i>	Endangered	Endangered	1B.1	Lower montane coniferous forest, upper montane coniferous forest.	Rocky outcrops, ridges, slopes, and flats on serpentine. 135-1455m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mcgee Meadows lupine	<i>Lupinus magnificus var. hesperius</i>	None	None	1B.3	Great Basin scrub, upper montane coniferous forest.	Sandy substrates. 1260-1830m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mecca-aster	<i>Xylorhiza cognata</i>	None	None	1B.2	Sonoran desert scrub.	Steep canyon slopes, in sandstone and clay. 20-305m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mendocino Coast paintbrush	<i>Castilleja mendocinensis</i>	None	None	1B.2	Coastal bluff scrub, coastal scrub, coastal prairie, closed-cone coniferous forest, coastal dunes.	Often on sea bluffs or cliffs in coastal bluff scrub or prairie. 0-160m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Menzies' wallflower	<i>Erysimum menziesii ssp. menziesii</i>	Endangered	Endangered	1B.1	Coastal dunes.	Localized on dunes and coastal strand. 0-35m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Merced clarkia	<i>Clarkia lingulata</i>	None	Endangered	1B.1	Closed-cone coniferous forest,	Metamorphic gravels and talus and in red clay	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					chaparral, cismontane woodland.	on north-facing slopes and in canyon bottoms. 400-455m.	occupied habitat or substantially impact suitable habitat.
Merced phacelia	<i>Phacelia ciliata</i> var. <i>opaca</i>	None	None	1B.2	Valley and foothill grassland.	Adobe or clay soils of valley floors, open hills, or alkaline flats. 60-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
mesa horkelia	<i>Horkelia cuneata</i> ssp. <i>puberula</i>	None	None	1B.1	Chaparral, cismontane woodland, coastal scrub.	Sandy or gravelly sites. 70-810m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Metcalf Canyon jewel-flower	<i>Streptanthus albidus</i> ssp. <i>albidus</i>	Endangered	None	1B.1	Valley and foothill grassland.	Relatively open areas in dry grassy meadows on serpentine soils; also on serpentine balds. 45-245m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mielichhofer's copper moss	<i>Mielichhoferia mielichhoferiana</i>	None	None	2.3	Subalpine coniferous forest.	1975m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mildred's clarkia	<i>Clarkia mildrediae</i> ssp. <i>mildrediae</i>	None	None	1B.3	Cismontane woodland, lower montane coniferous forest.	On decomposed granite; sometimes on roadsides. 245-1710m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Miles' milk-vetch	<i>Astragalus didymocarpus</i> var. <i>milesianus</i>	None	None	1B.2	Coastal scrub.	Clay soils. 20-90m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
Milo Baker's lupine	<i>Lupinus milo-bakeri</i>	None	Threatened	1B.1	Cismontane woodland, valley and foothill grassland.	In roadside ditches, dry gravelly areas along roads, and along small streams. 360-440m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mineral King draba	<i>Draba cruciata</i>	None	None	1B.3	Subalpine coniferous forest.	On steep rocky slopes with clayey soils, or sometimes on light sandy soils. 2500-3315m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
mingan moonwort	<i>Botrychium minganense</i>	None	None	2.2	Lower montane coniferous forest.	Creekbanks in mixed conifer forest. 1500-2275m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
Modoc bedstraw	<i>Galium glabrescens ssp. modocense</i>	None	None	1B.2	Great Basin scrub.	Gravelly slopes and under the edges of rocks; sandy clay soil. 1575-2800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mojave Desert plum	<i>Prunus eremophila</i>	None	None	1B.2	Mojavean desert scrub.	Granitic or rhyolitic substrates; usually in washes. 975-1175m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mojave milkweed	<i>Asclepias nyctaginifolia</i>	None	None	2.1	Mojavean desert scrub, pinyon-juniper woodland.	1000-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Mojave monkeyflower	<i>Mimulus mohavensis</i>	None	None	1B.2	Joshua tree woodland, Mojavean desert scrub.	Dry sandy or rocky washes along the Mojave River. 600-1175m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Monarch gilia	<i>Gilia yorkii</i>	None	None	1B.2	Chaparral, cismontane woodland.	Limestone outcrops. 1290-1830m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Monarch golden-aster	<i>Heterotheca monarchensis</i>	None	None	1B.3	Cismontane woodland.	Limestone. 1095-1850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mono County phacelia	<i>Phacelia monoensis</i>	None	None	1B.1	Great Basin scrub, pinyon and juniper woodland, meadows and seeps.	Ridgetops in alkaline mountain meadows in clay soils; also roadsides. 1900-2900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mono Hot Springs evening-primrose	<i>Camissonia sierrae ssp. alticola</i>	None	None	1B.2	Upper montane coniferous forest.	In sand or gravel over granite in mixed conifer forest; with <i>Gayophytum</i> , <i>Collinsia</i> , etc. 2120-2335m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mono Lake lupine	<i>Lupinus duranii</i>	None	None	1B.2	Great Basin scrub, subalpine coniferous forest, upper montane coniferous forest.	Pumice sand flats, coarse barren soils of volcanic origin. 2000-3000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mono milk-vetch	<i>Astragalus monoensis</i>	None	Rare	1B.2	Great Basin scrub, upper montane	Pumice flats with sparse vegetative cover. 2110-	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					coniferous forest.	3355m.	occupied habitat or substantially impact suitable habitat.
Monterey spineflower	<i>Chorizanthe pungens var. pungens</i>	Threatened	None	1B.2	Coastal dunes, chaparral, cismontane woodland, coastal scrub.	Sandy soils in coastal dunes or more inland within chaparral or other habitats. 0-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Morefield's cinquefoil	<i>Potentilla morefieldii</i>	None	None	1B.3	Alpine boulder and rock field.	Low areas in alpine calcareous (or granite?) rocks. 3300-4100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Moreno currant	<i>Ribes canthariforme</i>	None	None	1B.3	Chaparral.	Among boulders in oak-manzanita thickets; shaded or partially shaded sites. 340-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mormon needle grass	<i>Achnatherum aridum</i>	None	None	2.3	Joshua tree woodland, pinyon-juniper woodland.	Rocky limestone ridges. 500-2570m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mosquin's clarkia	<i>Clarkia mosquinii</i>	None	None	1B.1	Cismontane woodland, lower montane coniferous forest.	Usually on steep, rocky cutbanks and slopes. 185-1170m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
most beautiful jewel-flower	<i>Streptanthus albidus ssp. peramoenus</i>	None	None	1B.2	Chaparral, valley and foothill grassland, cismontane woodland.	Serpentine outcrops, on ridges and slopes. 120-730m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
Mount Laguna aster	<i>Dieteria asteroides var. lagunensis</i>	None	Rare	2.1	Cismontane woodland, lower montane coniferous forest.	Openings in woodland or forest. 800-2400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mount Patterson senecio	<i>Senecio pattersonensis</i>	None	None	1B.3	Alpine boulder and rock field.	2900-3700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mount Tamalpais bristly jewel-flower	<i>Streptanthus glandulosus ssp. pulchellus</i>	None	None	1B.2	Chaparral, valley and foothill grassland.	Serpentine slopes. 150-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mountain Springs bush lupine	<i>Lupinus excubitus var. medius</i>	None	None	1B.3	Pinyon and juniper woodland, Sonoran desert scrub.	Dry, sandy, gently sloping canyon washes, sandy soil pockets, and flats in steeper slopes and drainages. 425-1370m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
mouse buckwheat	<i>Eriogonum nudum var. murinum</i>	None	None	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Dry sandy loam slopes in the Kaweah River drainage. 360-1130m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
mouse-gray dudleya	<i>Dudleya abramsii ssp. murina</i>	None	None	1B.3	Chaparral, cismontane woodland.	Serpentine outcrops. 90-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

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<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
Mt. Diablo buckwheat	<i>Eriogonum truncatum</i>	None	None	1B.1	Chaparral, coastal scrub, valley and foothill grassland.	Dry, exposed clay or sandy substrates. 100-600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mt. Diablo fairy-lantern	<i>Calochortus pulchellus</i>	None	None	1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland.	On wooded and brushy slopes. 200-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mt. Diablo phacelia	<i>Phacelia phacelioides</i>	None	None	1B.2	Chaparral, cismontane woodland.	Adjacent to trails, on rock outcrops and talus slopes; sometimes on serpentine. 500-1370m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mt. Eddy draba	<i>Draba carnosula</i>	None	None	1B.3	Subalpine coniferous forest, upper montane coniferous forest.	On talus or small boulder-fields; known from both serpentine and granite. 1920-2730m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mt. Hamilton coreopsis	<i>Coreopsis hamiltonii</i>	None	None	1B.2	Cismontane woodland.	On steep shale talus with open southwestern exposure. 530-1300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mt. Hamilton fountain thistle	<i>Cirsium fontinale var. campylon</i>	None	None	1B.2	Cismontane woodland, chaparral, valley and foothill grassland.	In seasonal and perennial drainages on serpentine. 95-890m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mt. Hamilton jewel-flower	<i>Streptanthus callistus</i>	None	None	1B.3	Chaparral, cismontane	Open talus slopes on shale with grey pine	Low. Suction dredging not likely to occur in

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					woodland.	and/or black oak. 600-790m.	occupied habitat or substantially impact suitable habitat.
Mt. Hamilton lomatium	<i>Lomatium observatorium</i>	None	None	1B.2	Cismontane woodland.	Open to partially shaded openings in Pinus coulteri-oak woodland. Sedimentary franciscan rocks & volcanics. 1219-1330m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mt. Pinos onion	<i>Allium howellii</i> var. <i>clokeyi</i>	None	None	1B.3	Great Basin scrub, pinyon-juniper woodland.	1300-1850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mt. Tamalpais thistle	<i>Cirsium hydrophilum</i> var. <i>vaseyi</i>	None	None	1B.2	Broadleafed upland forest, chaparral.	Serpentine seeps and streams in chaparral and woodland. 265-620m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Mt. Whitney draba	<i>Draba sharsmithii</i>	None	None	1B.3	Alpine boulder and rock field.	Protected rock crevices. 3330-3940m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Muir's tarplant	<i>Carlquistia muirii</i>	None	None	1B.3	Chaparral, lower montane coniferous forest, upper montane coniferous forest.	Crevices of granite ledges and dry sandy soils. 1100-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Munro's desert mallow	<i>Sphaeralcea munroana</i>	None	None	2.2	Great Basin scrub.	2000m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
Munz's cholla	<i>Opuntia munzii</i>	None	None	1B.3	Sonoran desert scrub.	Sandy and rocky desert flats and hills.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Munz's iris	<i>Iris munzii</i>	None	None	1B.3	Cismontane woodland.	Granitic moist sandy loam soil, often along streams. 335-800m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
Munz's onion	<i>Allium munzii</i>	Endangered	Threatened	1B.1	Chaparral, coastal scrub, cismontane woodland, pinyon-juniper woodland, valley and foothill grassland.	Heavy clay soils; grows in grasslands & openings within shrublands or woodlands. 300-1035m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Munz's sage	<i>Salvia munzii</i>	None	None	2.2	Coastal scrub, chaparral.	Rolling hills and slopes, in rocky soil. 120-1090m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Munz's tidy-tips	<i>Layia munzii</i>	None	None	1B.2	Chenopod scrub, valley and foothill grassland.	Hillsides, in white-grey alkaline clay soils, w/grasses and chenopod scrub associates. 45-760m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
naked flag moss	<i>Discelium nudum</i>	None	None	2.2	Coastal bluff scrub.	Moss that grows on soil on clay banks. 10-50m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
Napa bluecurls	<i>Trichostema ruygtii</i>	None	None	1B.2	Cismontane woodland, chaparral, valley and foothill grassland, vernal pools, lower montane coniferous forest.	Often in open, sunny areas. Also has been found in vernal pools. 30-590m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Napa checkerbloom	<i>Sidalcea hickmanii ssp. napensis</i>	None	None	1B.1	Chaparral.	Rhyolitic substrates. 415-610m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Napa false indigo	<i>Amorpha californica var. napensis</i>	None	None	1B.2	Broadleafed upland forest, chaparral, cismontane woodland.	Openings in forest or woodland or in chaparral. 150-2000m	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Napa western flax	<i>Hesperolinon sp. nov. "serpentinum"</i>	None	None	1B.1	Chaparral.	Mostly found in serpentine chaparral. 225-850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
narrow-anthered California brodiaea	<i>Brodiaea californica var. leptandra</i>	None	None	1B.2	Broadleafed upland forest, chaparral, lower montane coniferous forest.	110-915m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
narrow-leaved psorothamnus	<i>Psorothamnus fremontii var. attenuatus</i>	None	None	2.3	Sonoran desert scrub.	Granitic or volcanic soils. 365-900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
narrow-leaved yerba santa	<i>Eriodictyon angustifolium</i>	None	None	2.3	Pinyon-juniper woodland.	1500-1900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Nelson's evening-primrose	<i>Camissonia minor</i>	None	None	2.3	Chenopod scrub, Great Basin scrub.	Sandy slopes, flats. 1200-1220m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Nevada daisy	<i>Erigeron nevadincola</i>	None	None	2.3	Great Basin scrub, lower montane coniferous forest, pinyon-juniper woodland.	1400-2900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Nevada onion	<i>Allium nevadense</i>	None	None	2.3	Pinyon-juniper woodland.	Sandy or gravelly slopes in desert mountains. 1300-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Nevada oryctes	<i>Oryctes nevadensis</i>	None	None	2.1	Chenopod scrub, Mojavean desert scrub.	Dry sites in loose sandy soil in washes and desert foothills in the Owens Valley. 1100-2535m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Nevin's woolly sunflower	<i>Constancea nevinii</i>	None	None	1B.3	Coastal bluff scrub, coastal scrub.	Slopes and cliffs. 5-410m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
Niles' harmonia	<i>Harmonia doris-nilesiae</i>	None	None	1B.1	Lower montane coniferous forest, chaparral, cismontane woodland.	Serpentine barrens. 650-1660m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Nine Mile Canyon phacelia	<i>Phacelia novenmillensis</i>	None	None	1B.2	Broadleafed upland forest, pinyon and juniper woodland, upper montane coniferous forest, cismontane woodland.	Dry disturbed banks, granitic or metamorphic soils. 1635-2530m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
nine-awned pappus grass	<i>Enneapogon desvauxii</i>	None	None	2.2	Pinyon and juniper woodland.	On decomposed granite, or in gravelly limestone soils. 1240-1825m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Nipomo Mesa lupine	<i>Lupinus nipomensis</i>	Endangered	Endangered	1B.1	Coastal dunes.	Dry sandy flats, restricted to back dunes, assoc. with central dune scrub habitat - a rare community type. 10-50m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
None	<i>Shasta orthocarpus</i>	None	None	1B.1	Great Basin scrub, meadows and seeps (?), valley and foothill grassland.	Alluvial plains, hillsides. 830-995m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Norris' beard moss	<i>Didymodon norrisii</i>	None	None	2.2	Cismontane woodland, lower montane coniferous	Moss from intermittently mesic sites; on rocks. 600-	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					forest.	1700m.	substantially impact suitable habitat.
North Coast phacelia	<i>Phacelia insularis var. continentis</i>	None	None	1B.2	Coastal bluff scrub, coastal dunes.	Open maritime bluffs, sandy soil. 10-160m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
northern clarkia	<i>Clarkia borealis ssp. borealis</i>	None	None	1B.3	Chaparral, cismontane woodland, lower montane coniferous forest.	400-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
northern spleenwort	<i>Asplenium septentrionale</i>	None	None	2.3	Chaparral, lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest.	Forms grass-like tufts in granitic rock crevices. 1615-3350m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
northwestern moonwort	<i>Botrychium pinnatum</i>	None	None	2.3	Lower montane coniferous forest, meadows, upper montane coniferous forest.	Creekbanks. 1770-2010m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
Nuttall's lotus	<i>Lotus nuttallianus</i>	None	None	1B.1	Coastal dunes, coastal scrub.	On sand dunes; plants are threatened by encroachment of exotics. 0-10m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
oil neststraw	<i>Stylocline citroleum</i>	None	None	1B.1	Chenopod scrub, coastal scrub?	Flats, clay soils in oil-producing areas. 50-300m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
Ojai fritillary	<i>Fritillaria ojaiensis</i>	None	None	1B.2	Broadleaved upland forest (mesic), chaparral, lower montane coniferous forest.	Rocky sites; one reported as "moist shale talus." 300-670m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Ojai navarretia	<i>Navarretia ojaiensis</i>	None	None	1B.1	Chaparral, coastal scrub, valley and foothill grassland.	Openings in shrublands or grasslands. 275-620m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Onyx Peak bedstraw	<i>Galium angustifolium ssp. onycense</i>	None	None	1B.3	Cismontane woodland.	Grows from under and between large granite rocks and outcrops with scattered grey pines and oaks. 950-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
opposite-leaved lewisia	<i>Lewisia oppositifolia</i>	None	None	2.2	Lower montane coniferous forest.	In open, rocky, shallow soils; sometimes on serpentine. Mesic sites. 300-1220m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
orange lupine	<i>Lupinus citrinus var. citrinus</i>	None	None	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest.	Rocky, decomposed granitic outcrops, usually open areas, on flat to rolling terrain. 600-1350m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Orcutt's bird's-beak	<i>Cordylanthus orcuttianus</i>	None	None	2.1	Coastal scrub.	Found in coastal scrub associations on slopes; also reported from intermittently moist swales, and in washes.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						100-200m	
Orcutt's linanthus	<i>Linanthus orcuttii</i>	None	None	1B.3	Chaparral, lower montane coniferous forest.	Sometimes in disturbed areas; often in gravelly clearings. 1060-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Orcutt's pincushion	<i>Chaenactis glabriuscula var. orcuttiana</i>	None	None	1B.1	Coastal bluff scrub, coastal dunes.	Sandy sites. 3-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Orcutt's spineflower	<i>Chorizanthe orcuttiana</i>	Endangered	Endangered	1B.1	Coastal scrub, chaparral, closed-cone coniferous forest.	Sandy sites and openings; sometimes in transition zones. 3-125m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Orcutt's woody-aster	<i>Xylorhiza orcuttii</i>	None	None	1B.2	Sonoran desert scrub.	Arid canyons; often in washes. 265-365m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Oregon campion	<i>Silene oregana</i>	None	None	2.3	Great Basin scrub, subalpine coniferous forest.	1500-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Oregon coast paintbrush	<i>Castilleja affinis ssp. litoralis</i>	None	None	2.2	Coastal bluff scrub, coastal dunes, coastal scrub.	Sandy sites. 15-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
Oregon meconella	<i>Meconella oregana</i>	None	None	1B.1	Coastal prairie, coastal scrub.	Open, moist places. 250-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Oregon polemonium	<i>Polemonium carneum</i>	None	None	2.2	Coastal prairie, coastal scrub, lower montane coniferous forest.	0-1830m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Oregon sedge	<i>Carex halliana</i>	None	None	2.3	Pinyon-juniper woodland, meadows.	Often on pumice. 1370-2060m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Orocopia sage	<i>Salvia greatae</i>	None	None	1B.3	Mojavean desert scrub, Sonoran desert scrub.	Broad alluvial bajadas and fans adjacent to desert washes in gravelly or rocky soil, rocky slopes of canyons. -40-825m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Otay tarplant	<i>Deinandra conjugens</i>	Threatened	Endangered	1B.1	Coastal scrub, valley and foothill grassland.	Coastal plains, mesas, and river bottoms; often in open, disturbed areas; clay soils. 25-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Pacific gilia	<i>Gilia capitata ssp. pacifica</i>	None	None	1B.2	Coastal bluff scrub, coastal prairie, valley and foothill grassland.	5-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Page 86 of 149

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Pacific Grove clover	<i>Trifolium polyodon</i>	None	Rare	1B.1	Closed-cone coniferous forest, meadows and seeps, coastal prairie.	Along small springs and seeps in grassy openings. 5-120m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
pale peat moss	<i>Sphagnum strictum</i>	None	None	2.3	Subalpine coniferous forest.	Moss growing on soil at lake margins. 2600-2800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
pale-yellow layia	<i>Layia heterotricha</i>	None	None	1B.1	Cismontane woodland, pinyon-juniper woodland, valley and foothill grassland.	Alkaline or clay soils; open areas. 270-1365 (2675)m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
pallid bird's-beak	<i>Cordylanthus tenuis ssp. pallescens</i>	None	None	1B.2	Lower montane coniferous forest.	Gravelly openings in brush patches next to coniferous forest; on volcanic alluvium. 690-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
palmate-bracted bird's-beak	<i>Cordylanthus palmatus</i>	Endangered	Endangered	1B.1	Chenopod scrub, valley and foothill grassland.	Usually on Pescadero silty clay which is alkaline, with <i>Distichlis</i> , <i>Frankenia</i> , etc. 5-155m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Palmer's goldenbush	<i>Ericameria palmeri var. palmeri</i>	None	None	1B.1	Coastal scrub, chaparral.	On granitic soils, on steep hillsides. Mesic sites. 30-600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Palmer's monardella	<i>Monardella palmeri</i>	None	None	1B.2	Cismontane woodland, chaparral.	On serpentine, often found associated with	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						Sargent cypress forests. 200-800m.	occupied habitat or substantially impact suitable habitat.
Panamint daisy	<i>Enceliopsis covillei</i>	None	None	1B.2	Mojavean desert scrub.	In deposits of subalkaline, clayish soil on dry canyon floors or slopes. 400-1830m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Panamint dudleya	<i>Dudleya saxosa ssp. saxosa</i>	None	None	1B.3	Mojavean desert scrub, pinyon and juniper woodland.	In exposed crevices of cliffs and rocks, on decomposed granite or on limestone. 1100-2200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Panoche pepper-grass	<i>Lepidium jaredii ssp. album</i>	None	None	1B.2	Valley and foothill grassland.	Alkali bottoms, slopes, washes, alluvial fans; clay and gypsum-rich soils. 65-910m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parish's alumroot	<i>Heuchera parishii</i>	None	None	1B.3	Lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest, alpine boulder & rock field.	Rocky places. 1500-3800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parish's chaenactis	<i>Chaenactis parishii</i>	None	None	1B.3	Chaparral.	Rocky sites. 1300-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parish's checkerbloom	<i>Sidalcea hickmanii ssp.</i>	None	Rare	1B.2	Chaparral, lower montane coniferous	Disturbed burned or cleared areas on dry,	Low. Suction dredging not likely to occur in



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
	<i>parishii</i>				forest.	rocky slopes, in fuel breaks & fire roads along the mtn summits. 1000-2135m.	occupied habitat or substantially impact suitable habitat.
Parish's club-cholla	<i>Grusonia parishii</i>	None	None	2.2	Mojavean desert scrub, Sonoran desert scrub, Joshua tree woodland.	Sandy sites. 300-1524m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parish's daisy	<i>Erigeron parishii</i>	Threatened	None	1B.1	Mojavean desert scrub, pinyon-juniper woodland, Joshua tree woodland.	Often on carbonate; limestone mountain slopes; often assoc. with drainages. 1090-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parish's desert-thorn	<i>Lycium parishii</i>	None	None	2.3	Coastal scrub, Sonoran desert scrub.	300-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parish's phacelia	<i>Phacelia parishii</i>	None	None	1B.1	Mojavean desert scrub, playas.	Alkaline flats and slopes or on clay soils. 535-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parish's popcorn-flower	<i>Plagiobothrys parishii</i>	None	None	1B.1	Great Basin scrub, Joshua tree woodland.	Alkaline soils; mesic sites. 750-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parish's rock-cress	<i>Arabis parishii</i>	None	None	1B.2	Pebble plain, pinyon-juniper woodland, upper montane	Generally found on pebble plains on clay soil w/quartzite	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					coniferous forest.	cobbles; sometimes on limestone. 1770-2900m.	substantially impact suitable habitat.
Parry's horkelia	<i>Horkelia parryi</i>	None	None	1B.2	Chaparral, cismontane woodland.	Openings in chaparral or woodland; especially known from the Lone formation in Amador County. 80-1035m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parry's sedge	<i>Carex parryana var. hallii</i>	None	None	2.3	Meadows, subalpine coniferous forest.	One collection in California near Station Peak in the White Mtns. 2850-3200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parry's spineflower	<i>Chorizanthe parryi var. parryi</i>	None	None	1B.1	Coastal scrub, chaparral.	Dry slopes and flats; sometimes at interface of 2 veg types, such as chap and oak wdland; dry, sandy soils. 40-1705m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parry's spurge	<i>Chamaesyce parryi</i>	None	None	2.3	Desert dunes, Mojavean desert scrub.	Sandy sites. 395-730m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Parry's tetracoccus	<i>Tetracoccus dioicus</i>	None	None	1B.2	Chaparral, coastal scrub.	Stony, decomposed gabbro soil. 150-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Peck's lomatium	<i>Lomatium peckianum</i>	None	None	2.2	Cismontane woodland, lower montane coniferous	Rocky slopes, flats, & sometimes grassy openings, in yellow	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					forest, pinyon and juniper woodland.	pine-black oak woodland, on volcanic soils. 700-1800m.	substantially impact suitable habitat.
Peirson's lupine	<i>Lupinus peirsonii</i>	None	None	1B.3	Joshua tree woodland, pinyon-juniper woodland, upper montane coniferous forest.	Decomposed granite slide and talus, on slopes and ridges. 1000-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Peirson's milk-vetch	<i>Astragalus magdalenae</i> var. <i>peirsonii</i>	Threatened	Endangered	1B.2	Desert dunes.	Slopes and hollows in mobile dunes, usually to the lee of the prevailing winds. -55-250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Peirson's pincushion	<i>Chaenactis carphoclinia</i> var. <i>peirsonii</i>	None	None	1B.3	Sonoran desert scrub.	Open rocky or sandy sites. 3-80m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Peninsular nolina	<i>Nolina cismontana</i>	None	None	1B.2	Chaparral, coastal scrub.	Primarily on sandstone and shale substrates; also known from gabbro. 140-1275m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Pennell's bird's-beak	<i>Cordylanthus tenuis</i> ssp. <i>capillaris</i>	Endangered	Rare	1B.2	Closed-cone coniferous forest, chaparral.	In open or disturbed areas on serpentine within forest or chaparral. 45-230m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
perennial goldfields	<i>Lasthenia californica</i> ssp. <i>macrantha</i>	None	None	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub.	5-520m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
Philbrick's malacothrix	<i>Malacothrix foliosa ssp. philbrickii</i>	None	None	1B.2	Coastal scrub.	60-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Pierpoint Springs dudleya	<i>Dudleya cymosa ssp. costafolia</i>	None	None	1B.2	Chaparral, cismontane woodland.	On limestone on S-facing slope w/ Arabis, Cercocarpus, Fremontodendron, etc. 1030-1455m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Pilot Ridge fawn lily	<i>Erythronium taylorii</i>	None	None	1B.2	Lower montane coniferous forest.	Steep, metamorphic rock outcrops in Douglas-fir/mixed conifer/black oak forest. 1340-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
pine rose	<i>Rosa pinetorum</i>	None	None	1B.2	Closed-cone coniferous forest.	2-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
pink creamsacs	<i>Castilleja rubicundula ssp. rubicundula</i>	None	None	1B.2	Chaparral, meadows and seeps, valley and foothill grassland.	Openings in chaparral or grasslands. On serpentine. 20-900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
pink fairy-duster	<i>Calliandra eriophylla</i>	None	None	2.3	Sonoran desert scrub.	Sandy or rocky sites in the desert. 120-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
pink sand-verbena	<i>Abronia umbellata ssp. breviflora</i>	None	None	1B.1	Coastal dunes and coastal strand.	Foredunes and interdunes with sparse cover. <i>A. umb. breviflora</i> is usually the plant closest to the ocean. 0-12m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Pinnacles buckwheat	<i>Eriogonum nortonii</i>	None	None	1B.3	Chaparral, valley and foothill grassland.	Sandy soils; often on recent burns; western Santa Lucias. 390-975m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
pinyon rock-cress	<i>Arabis dispar</i>	None	None	2.3	Joshua tree woodland, pinyon-juniper woodland, Mojavean desert scrub.	Granitic, gravelly slopes & mesas. Often under desert shrubs which support it as it grows. 1200-2400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Pismo clarkia	<i>Clarkia speciosa ssp. immaculata</i>	Endangered	Rare	1B.1	Chaparral, cismontane woodland, valley and foothill grassland.	On ancient sand dunes not far from the coast. sandy soils, openings. 25-185m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Piute Mountains jewel-flower	<i>Streptanthus cordatus var. piutensis</i>	None	None	1B.2	Broadleafed upland forests, closed-cone coniferous forest, pinyon-juniper woodland.	Along roadbanks and cliffs, metamorphic-red clay soils. 1095-1735m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Piute Mountains navarretia	<i>Navarretia setiloba</i>	None	None	1B.1	Cismontane woodland, pinyon-juniper woodland, valley and foothill grassland.	Red clay soils, other clay soils (?), or on gravelly loam. 300-1110m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
plains bee balm	<i>Monarda pectinata</i>	None	None	2.3	Joshua tree woodland, pinyon-juniper woodland.		Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
plains flax	<i>Linum puberulum</i>	None	None	2.3	Pinyon and juniper woodland, Great Basin scrub, Joshua tree woodland, Mojavean desert scrub.	Dry ridges. 1000-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
playa milk-vetch	<i>Astragalus allochrous var. playanus</i>	None	None	2.2	Mojavean desert scrub.	Sandy flats, in creosote bush scrub. 780-805m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Pleasant Valley mariposa-lily	<i>Calochortus clavatus var. avius</i>	None	None	1B.2	Lower montane coniferous forest.	Josephine silt loam and volcanically derived soil; often in rocky areas. 305-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Plumas ivesia	<i>Ivesia sericoleuca</i>	None	None	1B.2	Great Basin scrub, lower montane coniferous forest, meadows, vernal pools.	Vernally mesic areas; usually volcanic substrates. 1450-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Plummer's mariposa-lily	<i>Calochortus plummerae</i>	None	None	1B.2	Coastal scrub, chaparral, valley and foothill grassland, cismontane woodland, lower montane coniferous	Occurs on rocky and sandy sites, usually of granitic or alluvial material. Can be very common after fire. 90-1610m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					forest.		
Point Reyes blennosperma	<i>Blennosperma nanum var. robustum</i>	None	Rare	1B.2	Coastal prairie, coastal scrub.	On open coastal hills in sandy soil. 10-145m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Point Reyes horkelia	<i>Horkelia marinensis</i>	None	None	1B.2	Coastal dunes, coastal prairie, coastal scrub.	Sandy flats and dunes near coast; in grassland or scrub plant communities. 5-30m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
pointed broom sedge	<i>Carex scoparia</i>	None	None	2.2	Great Basin scrub.	Wet, open places. 130-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
prostrate buckwheat	<i>Eriogonum prociduum</i>	None	None	1B.2	Great Basin scrub, pinyon-juniper woodland, upper montane coniferous forest.	Dry volcanic slopes and hills, (Jepson Manual says granite). 1300-2705m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Pulsifer's milk-vetch	<i>Astragalus pulsiferae var. pulsiferae</i>	None	None	1B.2	Great Basin scrub, lower montane coniferous forest, pinyon-juniper woodland.	Volcanic substrate, sometimes in clay; sandy or rocky soil, often with pines or sagebrush. 1340-1880m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
purple amole	<i>Chlorogalum purpureum var. purpureum</i>	Threatened	None	1B.1	Cismontane woodland, valley and foothill grassland.	Often in grassy areas with blue oaks in foothill woodland. 300-330m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Page 95 of 149

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
purple mountain-parsley	<i>Oreonana purpurascens</i>	None	None	1B.2	Subalpine coniferous forest, upper montane coniferous forest, broadleafed upland forest.	Open, metamorphic ridgetops in red fir forest. 2360-2900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
purple stemodia	<i>Stemodia durantifolia</i>	None	None	2.1	Sonoran desert scrub.	Sandy soils; mesic sites. 180-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
purple-nerve cymopterus	<i>Cymopterus multinervatus</i>	None	None	2.2	Mojavean desert scrub, pinyon and juniper woodland, Joshua tree woodland.	Sandy or gravelly places. 790-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
purple-stemmed checkerbloom	<i>Sidalcea malviflora ssp. purpurea</i>	None	None	1B.2	Broadleafed upland forest, coastal prairie.	15-65m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
pygmy hulsea	<i>Hulsea vestita ssp. pygmaea</i>	None	None	1B.3	Alpine boulder and rock field, subalpine coniferous forest.	Gravelly sites; on granite. 2835-3900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
pygmy lotus	<i>Lotus haydonii</i>	None	None	1B.3	Sonoran desert scrub, pinyon-juniper woodland.	Creosote bush scrub to pinyon-juniper woodland; rocky sites. 600-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
pygmy pussypaws	<i>Calyptidium pygmaeum</i>	None	None	1B.2	Upper montane coniferous forest,	Sandy or gravelly sites. 1980-3110m.	Low. Suction dredging not likely to occur in



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					subalpine coniferous forest.		occupied habitat or substantially impact suitable habitat.
pyrola-leaved buckwheat	<i>Eriogonum pyrolifolium</i> var. <i>pyrolifolium</i>	None	None	2.3	Alpine boulder and rock field.	Sandy or gravelly sites; on pumice. 1675-3200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
rabbit-ear rockcress	<i>Boechea pendulina</i>	None	None	2.3	Great Basin scrub.	Gravelly or rocky substrates. 3050m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Raiche's red ribbons	<i>Clarkia concinna</i> ssp. <i>raichei</i>	None	None	1B.1	Coastal bluff scrub.	Highly exposed rocky bluffs with a near-vertical slope. 15m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Ramona horkelia	<i>Horkelia truncata</i>	None	None	1B.3	Chaparral, cismontane woodland.	Habitats in California include: mixed chaparral, vernal streams, and disturbed areas near roads. Clay soil. 400-1300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Raven's lomatium	<i>Lomatium ravenii</i>	None	None	2.3	Great Basin scrub.	Open, slightly alkaline flats, poorly drained adobe soils. Often with <i>Artemisia tridentata</i> , <i>Grayia</i> , etc. 1000-3000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Raven's milk-vetch	<i>Astragalus ravenii</i>	None	None	1B.3	Alpine boulder and rock field, upper	Gravelly flats and slopes on metamorphosed	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					montane coniferous forest.	sedimentary and volcanic bedrock. 3355-3460.	occupied habitat or substantially impact suitable habitat.
Rawhide Hill onion	<i>Allium tuolumnense</i>	None	None	1B.2	Cismontane woodland.	Restricted to serpentine soil, usu in grey pine chaparral. steep, rocky, S-facing slopes or small drainages. 300-600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
rayless layia	<i>Layia discoidea</i>	None	None	1B.1	Chaparral, cismontane woodland, lower montane coniferous forest.	On serpentine alluvium and serpentine talus. 785-1585m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
recurved larkspur	<i>Delphinium recurvatum</i>	None	None	1B.2	Chenopod scrub, valley and foothill grassland, cismontane woodland.	On alkaline soils; often in valley saltbush or valley chenopod scrub. 3-685m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Red Bluff dwarf rush	<i>Juncus leiospermus var. leiospermus</i>	None	None	1B.1	Chaparral, valley and foothill grassland, cismontane woodlands, vernal pools.	Vernally mesic sites. Sometimes on edges of vernal pools. 30-1020m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
red four o'clock	<i>Mirabilis coccinea</i>	None	None	2.3	Pinyon-juniper woodland.	1070-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Red Hills ragwort	<i>Senecio clevelandii var. heterophyllus</i>	None	None	1B.2	Cismontane woodland.	Drying serpentine soils; often along streams. 255-385m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
Red Hills soaproot	<i>Chlorogalum grandiflorum</i>	None	None	1B.2	Cismontane woodland, chaparral, lower montane coniferous forest.	Occurs frequently on serpentine or gabbro, but also on non-ultramafic substrates; often on "historically disturbed" sites. 240-760m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Red Hills vervain	<i>Verbena californica</i>	Threatened	Threatened	1B.1	Cismontane woodland, valley and foothill grassland.	Mesic sites on serpentine; usually serpentine seeps or creeks. 255-400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Red Mountain catchfly	<i>Silene campanulata ssp. campanulata</i>	None	Endangered	4.2	Lower montane coniferous forest, chaparral. State-listed endangered, but CNPS List 4; EO's mostly archived.	Rocky dry shallow serpentine soil. 420-1200m. Element occurrences archived; CNPS List 4.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Red Mountain stonecrop	<i>Sedum eastwoodiae</i>	Candidate	None	1B.2	Lower montane coniferous forest.	Serpentine soils among rocks. 600-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Red Rock poppy	<i>Eschscholzia minutiflora ssp. twisselmannii</i>	None	None	1B.2	Mojavean desert scrub.	Volcanic tuff; with Larrea, Lycium, Eriogonum, Isomeris, Hemizonia. 680-1230m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
red-flowered bird's-foot-trefoil	<i>Lotus rubriflorus</i>	None	None	1B.1	Valley and foothill grassland, cismontane	Most recent sighting from sterile, red soils-volcanic mudflow	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					woodland.	deposits. 200-425m.	substantially impact suitable habitat.
red-flowered buckwheat	<i>Eriogonum grande var. rubescens</i>	None	None	1B.2	Coastal bluff scrub, coastal scrub, chaparral.	10-165m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
red-wool saxifrage	<i>Saxifraga rufidula</i>	None	None	2.3	Upper montane coniferous forest.	Moist, rocky areas. 1850-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
rigid pea	<i>Lathyrus rigidus</i>	None	None	2.2	Great Basin scrub, pinyon-juniper woodland.	Often in disturbed areas. 800-1525m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Ripley's aliciella	<i>Aliciella ripleyi</i>	None	None	2.3	Mojavean desert scrub.	On limestone; rocky slopes, rock/cliff bases, and rock crevices. 305-1770m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Robinson's pepper-grass	<i>Lepidium virginicum var. robinsonii</i>	None	None	1B.2	Chaparral, coastal scrub.	Dry soils, shrubland. 1-945m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Robison's monardella	<i>Monardella robinsonii</i>	None	None	1B.3	Pinyon-juniper woodland, Joshua tree woodland.	Rocky desert slopes, often among granitic boulders. 1000-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
robust false lupine	<i>Thermopsis robusta</i>	None	None	1B.2	North Coast coniferous forest, broadleaved upland forest.	Ridgetops; sometimes on serpentine. 360-1290m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
robust Hoffmann's buckwheat	<i>Eriogonum hoffmannii</i> var. <i>robustius</i>	None	None	1B.3	Mojavean desert scrub, pinyon and juniper woodland.	300-750m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
robust monardella	<i>Monardella villosa</i> ssp. <i>globosa</i>	None	None	1B.2	Broadleaved upland forest, chaparral, cismontane woodland, valley and foothill grassland.	Openings. 30-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
robust spineflower	<i>Chorizanthe robusta</i> var. <i>robusta</i>	Endangered	None	1B.1	Cismontane woodland, coastal dunes, coastal scrub.	Sandy terraces and bluffs or in loose sand. 3-120m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
rock sandwort	<i>Arenaria lanuginosa</i> ssp. <i>saxosa</i>	None	None	2.3	Subalpine coniferous forest, upper montane coniferous forest.	Mesic, sandy sites. 1800-2600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
rock-loving oxytrope	<i>Oxytropis oreophila</i> var. <i>oreophila</i>	None	None	2.3	Alpine boulder and rock field, subalpine coniferous forest.	Gravelly or rocky sites. 3400-3800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Roderick's fritillary	<i>Fritillaria roderickii</i>	None	Endangered	1B.1	Coastal bluff scrub, coastal prairie, valley	Grassy slopes, mesas. 15-610m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					and foothill grassland.		occupied habitat or substantially impact suitable habitat.
rose leptosiphon	<i>Leptosiphon rosaceus</i>	None	None	1B.1	Coastal bluff scrub.	0-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
rose-flowered larkspur	<i>Delphinium purpusii</i>	None	None	1B.3	Chaparral, cismontane woodland, pinyon-juniper woodland.	On shady rocky slopes, often on carbonates. 300-1300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
rosette cushion cryptantha	<i>Cryptantha circumscissa</i> var. <i>rosulata</i>	None	None	1B.2	Alpine boulder and rock fields, subalpine coniferous forests.	Gravelly, granitic substrates. 2950-3660m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
rough menodora	<i>Menodora scabra</i>	None	None	2.3	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland.	Rocky soils; canyons. 1200-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
round-headed Chinese-houses	<i>Collinsia corymbosa</i>	None	None	1B.2	Coastal dunes, coastal prairie.	Dunes and coastal prairie. 10-30m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
round-leaved filaree	<i>California macrophylla</i>	None	None	1B.1	Cismontane woodland, valley and foothill grassland.	Clay soils. 15-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
Rusby's desert-mallow	<i>Sphaeralcea rusbyi</i> var. <i>eremicola</i>	None	None	1B.2	Mojavean desert scrub, Joshua tree woodland.	In creosote bush scrub, blackbush scrub, Joshua tree woodland; sometimes on carbonate; sometimes in washes. 965-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sagebrush bluebells	<i>Mertensia oblongifolia</i> var. <i>oblongifolia</i>	None	None	2.2	Great Basin scrub, lower montane coniferous forest, meadows and seeps, subalpine coniferous forest.	Usually in mesic sites. 1000-3000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sagebrush loeflingia	<i>Loeflingia squarrosa</i> var. <i>artemisiarum</i>	None	None	2.2	Great Basin scrub, Sonoran desert scrub, desert dunes.	Sandy flats and dunes. Sandy areas around clay slicks w/Sarcobatus, Atriplex, Tetradymia, etc. 700-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
saguaro	<i>Carnegiea gigantea</i>	None	None	2.2	Sonoran desert scrub.	Rocky sites. 50-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Antonio milk-vetch	<i>Astragalus lentiginosus</i> var. <i>antonius</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forest.	Dry slopes in open yellow pine forest. 1500-2600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Benito evening-primrose	<i>Camissonia benitensis</i>	Threatened	None	1B.1	Chaparral, cismontane woodland.	On gravelly serpentine alluvial terraces. 750-1280m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
San Benito fritillary	<i>Fritillaria viridea</i>	None	None	1B.2	Chaparral.	Serpentine slopes. 200-1525m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Benito pentachaeta	<i>Pentachaeta exilis ssp. aeolica</i>	None	None	1B.2	Cismontane woodland, valley and foothill grassland.	Grassy areas. 635-855m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Bernardino gilia	<i>Gilia leptantha ssp. leptantha</i>	None	None	1B.3	Lower montane coniferous forest.	Sandy or gravelly sites. 1500-2350m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Bernardino Mountains bladderpod	<i>Lesquerella kingii ssp. bernardina</i>	Endangered	None	1B.1	Pinyon and juniper woodland, lower montane coniferous forest.	Dry sandy to rocky carbonate soils. 2030-2485m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Bernardino Mountains dudleya	<i>Dudleya abramsii ssp. affinis</i>	None	None	1B.2	Pebble (pavement) plain, upper montane coniferous forest, pinyon and juniper woodland.	Outcrops, granite or quartzite, rarely limestone. 1270-2600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Bernardino rock-cress	<i>Arabis breweri var. pecuniaria</i>	None	None	1B.2	Subalpine coniferous forest.	On cliffs and talus slopes. 2700-3200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.



TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
San Diego ambrosia	<i>Ambrosia pumila</i>	Endangered	None	1B.1	Chaparral, coastal scrub, valley and foothill grassland.	Sandy loam or clay soil. in valleys; persists where disturbance has been superficial. Sometimes on margins or near vernal pools. 20-415m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Diego barrel cactus	<i>Ferocactus viridescens</i>	None	None	2.1	Chaparral, Diegan coastal scrub, valley and foothill grassland.	Often on exposed, level or south-sloping areas; often in coastal scrub near crest of slopes. 3-485m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Diego bur-sage	<i>Ambrosia chenopodiifolia</i>	None	None	2.1	Coastal scrub, mostly associated with maritime succulent scrub.	Slopes of canyons in open succulent scrub usually with little herbaceous cover. 55-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Diego County alumroot	<i>Heuchera rubescens</i> var. <i>versicolor</i>	None	None	2.3	Chaparral, lower montane coniferous forest.	Rocky outcrops. 1500-4000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Diego goldenstar	<i>Bloomeria clevelandii</i>	None	None	1B.1	Chaparral, coastal scrub, valley and foothill grassland, vernal pools.	Mesa grasslands, scrub edges; clay soils. Often on mounds between vernal pools in fine, sandy loam. 50-1090m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Diego gumplant	<i>Grindelia hirsutula</i> var. <i>hallii</i>	None	None	1B.2	Meadows, valley and foothill grassland, chaparral, lower montane coniferous forest.	Frequently occurs in low moist areas in meadows; assoc spp commonly incl <i>Wyethia</i> , <i>Ranunculus</i> , <i>Sidalcea</i> .	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						180-1660m.	
San Diego hulsea	<i>Hulsea californica</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forest, chaparral.	Coarse to fine sandy loam in disturbed chaparral openings at high elevations. 1000-2915m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Diego milk-vetch	<i>Astragalus oocarpus</i>	None	None	1B.2	Chaparral, cismontane woodland, meadows.	Openings in chaparral or on gravelly flats and slopes in thin oak woodland. 305-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Diego sand aster	<i>Corethrogyne filaginifolia</i> var. <i>incana</i>	None	None	1B.1	Coastal scrub, coastal bluff scrub, chaparral.	Most sites are disturbed, so hard to tell: possibly in disturbed sites and ecotones. 3-115m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Diego thorn-mint	<i>Acanthomintha ilicifolia</i>	Threatened	Endangered	1B.1	Chaparral, coastal scrub, valley and foothill grassland, vernal pools.	Endemic to active vertisol clay soils of mesas & valleys. Usu on clay lenses w/in grassland or chap communities. 10-935m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Felipe monardella	<i>Monardella nana</i> ssp. <i>leptosiphon</i>	None	None	1B.2	Chaparral, lower montane coniferous forest.	Sometimes in openings and fuelbreaks or in the understory of forest or chaparral. 1200-1855m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Fernando Valley spineflower	<i>Chorizanthe parryi</i> var. <i>fernandina</i>	Candidate	Endangered	1B.1	Coastal scrub.	Sandy soils. 3-1035m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
San Francisco Bay spineflower	<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	None	None	1B.2	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub.	Closely related to <i>C. pungens</i> . Sandy soil on terraces and slopes. 5-550m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Francisco campion	<i>Silene verecunda</i> ssp. <i>verecunda</i>	None	None	1B.2	Coastal scrub, valley and foothill grassland, coastal bluff scrub, chaparral, coastal prairie.	Often on mudstone or shale; one site on serpentine. 30-645m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Francisco collinsia	<i>Collinsia multicolor</i>	None	None	1B.2	Closed-cone coniferous forest, coastal scrub.	On decomposed shale (mudstone) mixed with humus. 30-250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Francisco gumplant	<i>Grindelia hirsutula</i> var. <i>maritima</i>	None	None	1B.2	Coastal scrub, coastal bluff scrub, valley and foothill grassland.	Sandy or serpentine slopes, sea bluffs. 15-400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Francisco lessingia	<i>Lessingia germanorum</i>	Endangered	Endangered	1B.1	Coastal scrub.	From remnant dunes. Open sandy soils relatively free of competing plants. 20-125m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Francisco owl's-clover	<i>Triphysaria floribunda</i>	None	None	1B.2	Coastal prairie, valley and foothill grassland.	On serpentine and nonserpentine substrate (such as at Pt. Reyes). 10-160m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Francisco popcorn-	<i>Plagiobothrys diffusus</i>	None	Endangered	1B.1	Valley and foothill grassland, coastal	Historically from grassy slopes with marine	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
flower					prairie.	influence. 60-485m.	occupied habitat or substantially impact suitable habitat.
San Gabriel bedstraw	<i>Galium grande</i>	None	None	1B.2	Cismontane woodland, chaparral, broadleaved upland forest, lower montane coniferous forest.	Open chaparral and low, open oak forest; on rocky slopes; probably undercollected due to inaccessible hab. 425-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Gabriel linanthus	<i>Linanthus concinnus</i>	None	None	1B.2	Lower montane coniferous forest, upper montane coniferous forest.	Dry rocky slopes, often in Jeffrey pine/canyon oak forest. 1575-2545m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Gabriel Mountains dudleya	<i>Dudleya densiflora</i>	None	None	1B.1	Chaparral, coastal scrub, lower montane coniferous forest.	In crevices and on decomposed granite on cliffs and canyon walls. 300-520m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Jacinto linanthus	<i>Linanthus jaegeri</i>	None	None	1B.2	Subalpine coniferous forest, upper montane coniferous forest.	Dry rocky granitic outcrops; sheer, vertical habitat. 1815-3050m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Jacinto mariposa-lily	<i>Calochortus palmeri var. munzii</i>	None	None	1B.2	Lower montane coniferous forest, chaparral, meadows.	Seen in open Jeffrey pine forest as well as in chaparral. 900-1640m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Jacinto Mountains bedstraw	<i>Galium angustifolium ssp. jacinticum</i>	None	None	1B.3	Lower montane coniferous forest.	Open mixed forest. 1630-1940m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
San Joaquin adobe sunburst	<i>Pseudobahia peirsonii</i>	Threatened	Endangered	1B.1	Valley and foothill grassland, cismontane woodland.	Grassy valley floors and rolling foothills in heavy clay soil. 85-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Joaquin woollythreads	<i>Monolopia congdonii</i>	Endangered	None	1B.2	Chenopod scrub and valley and foothill grassland.	Alkaline or loamy plains; sandy soils, often with grasses and within chenopod scrub. 60-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Luis Obispo County lupine	<i>Lupinus ludovicianus</i>	None	None	1B.2	Chaparral, cismontane woodland.	Open areas in sandy soil, Santa Margarita formation. 50-525m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Luis Obispo mariposa-lily	<i>Calochortus simulans</i>	None	None	1B.3	Valley and foothill grassland, cismontane woodland, chaparral.	Decomposed granite. 395-1100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Luis Obispo monardella	<i>Monardella frutescens</i>	None	None	1B.2	Coastal dunes, coastal scrub.	Stabilized sand of the immediate coast. 10-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Luis Obispo owl's-clover	<i>Castilleja densiflora ssp. obispoensis</i>	None	None	1B.2	Valley and foothill grassland.	10-215m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
San Luis Obispo sedge	<i>Carex obispoensis</i>	None	None	1B.2	Closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland.	Usually in transition zone on sand, clay, or serpentine; in seeps. 5-790m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Mateo thorn-mint	<i>Acanthomintha duttonii</i>	Endangered	Endangered	1B.1	Chaparral, valley and foothill grassland, coastal scrub.	Extant populations only known from very uncommon serpentinite vertisol clays; in relatively open areas. 50-200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Mateo woolly sunflower	<i>Eriophyllum latilobum</i>	Endangered	Endangered	1B.1	Cismontane woodland.	Often on roadcuts; found on and off of serpentine. 45-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Miguel savory	<i>Satureja chandleri</i>	None	None	1B.2	Chaparral, cismontane woodland, coastal scrub, rip woodland, valley and foothill grassland.	Rocky, gabbroic or metavolcanic substrate. 120-1005m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
San Nicolas Island lomatium	<i>Lomatium insulare</i>	None	None	1B.2	Coastal bluff scrub.	Sandy slopes, "lower sea terraces." 15-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
San Simeon baccharis	<i>Baccharis plummerae ssp. glabrata</i>	None	None	1B.2	Coastal scrub.	In open shrub-grassland associations. 90-375m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
sand dune cryptantha	<i>Cryptantha fendleri</i>	None	None	2.3	Great Basin scrub.	1950-2210m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sand dune phacelia	<i>Phacelia argentea</i>	None	None	1B.1	Coastal dunes.	Stabilized and recently moving sand dunes. 3-25m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sand evening-primrose	<i>Camissonia arenaria</i>	None	None	2.2	Sonoran desert scrub.	Sandy or rocky sites. -70-915m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sand food	<i>Pholisma sonorae</i>	None	None	1B.2	Desert dunes.	Loose, deep sand dunes, usu on the more stable, windward face. 0-200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sand gilia	<i>Gilia tenuiflora ssp. arenaria</i>	Endangered	Threatened	1B.2	Coastal dunes, coastal scrub, chaparral (maritime), cismontane woodland.	Bare, wind-sheltered areas often near dune summit or in the hind dunes; 2 records from Pleistocene inland dunes. 0-245m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sand-loving wallflower	<i>Erysimum ammophilum</i>	None	None	1B.2	Chaparral (maritime), coastal dunes, coastal scrub.	Sandy openings. 0-130m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Santa Ana River woollystar	<i>Eriastrum densifolium ssp. sanctorum</i>	Endangered	Endangered	1B.1	Coastal scrub, chaparral.	In sandy soils on river floodplains or terraced fluvial deposits. 150-610m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Barbara honeysuckle	<i>Lonicera subspicata var. subspicata</i>	None	None	1B.2	Chaparral, cismontane woodland, coastal scrub.	35-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Barbara Island buckwheat	<i>Eriogonum giganteum var. compactum</i>	None	Rare	1B.3	Coastal bluff scrub.	Seabluffs; dry rocky outcrops and cliffs. 10-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Barbara Island dudleya	<i>Dudleya traskiae</i>	Endangered	Endangered	1B.2	Coastal scrub, coastal bluff scrub.	In shallow soil pockets on rocky cliffs, and on coastal terraces. 15-110m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Catalina figwort	<i>Scrophularia villosa</i>	None	None	1B.2	Chaparral, coastal scrub.	Rocky canyons; "canyon floor." 45-510m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Catalina Island bedstraw	<i>Galium catalinense ssp. catalinense</i>	None	None	1B.2	Chaparral, coastal scrub.	5-300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Catalina Island currant	<i>Ribes viburnifolium</i>	None	None	1B.2	Chaparral.	Among shrubs in canyons. 30-300m.	Low. Suction dredging not likely to occur in



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							occupied habitat or substantially impact suitable habitat.
Santa Clara Valley dudleya	<i>Dudleya setchellii</i>	Endangered	None	1B.1	Valley and foothill grassland, cismontane woodland.	On rocky serpentine outcrops and on rocks within grassland or woodland. 80-335m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Cruz clover	<i>Trifolium buckwestiorum</i>	None	None	1B.1	Coastal prairie, broadleafed upland forest, cismontane woodland.	Moist grassland. 60-545m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Cruz Island bird's-foot trefoil	<i>Lotus argophyllus var. niveus</i>	None	Endangered	4.2	Chaparral, coastal scrub.	Dry rocky places and canyon walls of interior coastal sage\chaparral on Santa Cruz Island. 5-650m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Cruz Island bush-mallow	<i>Malacothamnus fasciculatus var. nesioticus</i>	Endangered	Endangered	1B.1	Coastal scrub, chaparral.	Steep slopes and outcrops. 30-215m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Cruz Island malacothrix	<i>Malacothrix indecora</i>	Endangered	None	1B.1	Coastal dunes, coastal bluff scrub, chaparral.	Exposed sites on dry ridges and sea bluffs. 5-60m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Cruz microseris	<i>Stebbinsoseris decipiens</i>	None	None	1B.2	Broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal	Open areas in loose or disturbed soil, usu. derived from sandstone, shale or serp., on	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					prairie, coastal scrub.	seaward slopes. 10-500m.	suitable habitat.
Santa Cruz Mountains beardtongue	<i>Penstemon rattanii</i> var. <i>kleei</i>	None	None	1B.2	Chaparral, lower montane coniferous forest.	Sandy shale slopes; sometimes in the transition between forest and chaparral. 400-1100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Cruz Mountains pussypaws	<i>Calyptridium parryi</i> var. <i>hesseae</i>	None	None	1B.1	Chaparral, cismontane woodland.	Sandy or gravelly openings. 305-1530m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Cruz tarplant	<i>Holocarpha macradenia</i>	Threatened	Endangered	1B.1	Coastal prairie, valley and foothill grassland.	Light, sandy soil or sandy clay; often with nonnatives. 10-260m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Cruz wallflower	<i>Erysimum teretifolium</i>	Endangered	Endangered	1B.1	Lower montane coniferous forest, chaparral.	Inland marine sands (Zayante coarse sand). 120-610m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Lucia bedstraw	<i>Galium clementis</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forest.	Forming soft mats in shady rocky patches; on granite or serpentine; mostly on exposed peaks. 1130-1780m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Lucia bush-mallow	<i>Malacothamnus palmeri</i> var. <i>palmeri</i>	None	None	1B.2	Chaparral.	Dry rocky slopes, mostly near summits, but occasionally extending down canyons to the sea. 60-365m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Santa Rosa Island dudleya	<i>Dudleya blochmaniae ssp. insularis</i>	None	None	1B.1	Coastal bluff scrub.	Coastal bluffs; on rock flat near beach near mouth of creek. 3m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Rosa Mountains leptosiphon	<i>Leptosiphon floribundus ssp. hallii</i>	None	None	1B.3	Sonoran desert scrub.	Desert canyons. 900-1275m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Susana tarplant	<i>Deinandra minthornii</i>	None	Rare	1B.2	Chaparral, coastal scrub.	On sandstone outcrops and crevices, in shrubland. 280-760m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Ynez false lupine	<i>Thermopsis macrophylla</i>	None	Rare	1B.3	Chaparral. Includes <i>T. macrophylla</i> var. <i>agnina</i> , State-listed Rare.	In open areas such as fuel breaks, after burns; on sandstone. 420-2050m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Santa Ynez groundstar	<i>Ancistrocarphus keilii</i>	None	None	1B.1	Chaparral, cismontane woodland.	Sandy soils. 40-130m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
saw-toothed lewisia	<i>Lewisia serrata</i>	None	None	1B.1	Broadleafed upland forest, lower montane coniferous forest, riparian forest.	Shaded, north-facing moss-covered, metamorphic rock cliffs. 900-1435m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
scabrid alpine tarplant	<i>Anisocarpus scabridus</i>	None	None	1B.3	Upper montane coniferous forest.	Open stony ridges, metamorphic scree slopes of mountain peaks, and cliffs in or near red fir forest. 1650-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Schoolcraft's wild buckwheat	<i>Eriogonum microthecum var. schoolcraftii</i>	None	None	1B.2	Pinyon and juniper woodland, Great Basin scrub.	Sandy to rocky substrates. 1300-1750m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Scott Mountain bedstraw	<i>Galium serpenticum ssp. scotticum</i>	None	None	1B.2	Lower montane coniferous forest.	Generally on N-facing slopes on serpentine in mixed conifer forest. 1000-2075m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Scott Mountain sandwort	<i>Minuartia stolonifera</i>	None	None	1B.3	Lower montane coniferous forest.	Serpentine soils, Jeffrey pine forest. 1250-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Scott Mountains fawn lily	<i>Erythronium citrinum var. roderickii</i>	None	None	1B.3	Lower montane coniferous forest.	Serpentine. 815-1220m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Scott Valley buckwheat	<i>Eriogonum umbellatum var. lautum</i>	None	None	1B.1	Cismontane (oak) woodlands, lower montane coniferous forest.	Sandy to gravelly flats. 800-900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Scott Valley phacelia	<i>Phacelia greenei</i>	None	None	1B.2	Closed-cone coniferous forest, lower montane coniferous forest, subalpine coniferous forest, upper montane conif forest.	Bare serpentine ridges and openings in yellow pine and red fir forest communities. 800-2440m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Scotts Valley spineflower	<i>Chorizanthe robusta var. hartwegii</i>	Endangered	None	1B.1	Meadows, valley and foothill grassland.	In grasslands with mudstone and sandstone outcrops. 230-245m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Scribner's wheat grass	<i>Elymus scribneri</i>	None	None	2.3	Alpine boulder and rock field.	On rocky slopes. 2900-4200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sea dahlia	<i>Coreopsis maritima</i>	None	None	2.2	Coastal scrub, coastal bluff scrub.	Occurs on a variety of soil types, including sandstone. 5-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
seacoast ragwort	<i>Packera bolanderi var. bolanderi</i>	None	None	2.2	Coastal scrub, North Coast coniferous forest.	30-650m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
seaside bird's-beak	<i>Cordylanthus rigidus ssp. littoralis</i>	None	Endangered	1B.1	Closed-cone coniferous forest, chaparral, cismontane woodland, coastal	Sandy, often disturbed sites, usually within chaparral or coastal scrub. 0-215m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					scrub, coastal dunes.		
seaside pea	<i>Lathyrus japonicus</i>	None	None	2.1	Coastal dunes.	1-30m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
seaside tarplant	<i>Hemizonia congesta ssp. congesta</i>	None	None	1B.2	Coastal scrub, valley and foothill grassland.	Grassy valleys and hills, often in fallow fields. 25-200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
seep kobresia	<i>Kobresia bellardii</i>	None	None	2.3	Alpine boulder and rock field (mesic), meadows, subalpine coniferous forest.	Moist places in alpine and subalpine meadows; can be on limestone substrate. 2955-3230m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Sequoia gooseberry	<i>Ribes tulareense</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forest.	In sandy loam derived from granitics or deep clays. With Abies, Pinus, Ribes, etc. 1500-2075m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
serpentine catchfly	<i>Silene serpentinicola</i>	None	None	1B.2	Chaparral, lower montane coniferous forest.	Serpentine openings, gravelly or rocky soils. 145-1650m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
serpentine cryptantha	<i>Cryptantha clevelandii var. dissita</i>	None	None	1B.1	Chaparral.	Serpentine outcrops. 330-730m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
serpentine daisy	<i>Erigeron serpentinus</i>	None	None	1B.3	Chaparral.	Serpentine shrubland; one site known. 210m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
serrated balsamroot	<i>Balsamorhiza serrata</i>	None	None	2.3	Great Basin scrub.	Rocky sites. 1400-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
shaggyhair lupine	<i>Lupinus spectabilis</i>	None	None	1B.2	Chaparral, cismontane woodland.	Open rocky slopes of serpentine. Mostly in serpentine chaparral surr. by grey pine woodland. 260-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
shaggy-haired alumroot	<i>Heuchera hirsutissima</i>	None	None	1B.3	Subalpine coniferous forest, upper montane coniferous forest.	Often near large rocks. 1500-3500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Sharsmith's onion	<i>Allium sharsmithiae</i>	None	None	1B.3	Cismontane woodland.	Rocky, serpentine slopes. 400-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Sharsmith's stickseed	<i>Hackelia sharsmithii</i>	None	None	2.3	Subalpine coniferous forest, alpine boulder and rock fields.	Cracks, crevices in granite cliffs; large boulder talus. 3000-3700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Shasta ageratina	<i>Ageratina shastensis</i>	None	None	1B.2	Chaparral, lower montane coniferous	Rocky, sometimes limestone. 400-1800m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					forest.		occupied habitat or substantially impact suitable habitat.
Shasta chaenactis	<i>Chaenactis suffrutescens</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forest.	Sandy or serpentine soils. 760-2100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Shevock's bristle moss	<i>Orthotrichum shevockii</i>	None	None	1B.3	Joshua tree woodland, pinyon-juniper woodland.	Moss growing on granitic rocks. 750-2100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Shevock's copper moss	<i>Schizymerium shevockii</i>	None	None	1B.2	Cismontane woodland.	Moss on metamorphic rocks, mesic sites. On rocks along roads, in same habitat as <i>Mielichhoferia elongata</i> . 750-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Shevock's milk-vetch	<i>Astragalus shevockii</i>	None	None	1B.3	Upper montane coniferous forest.	Open Jeffrey pine forest, in granitic sand or volcanic soils and in pine-needle duff. 1875-1965m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
shining navarretia	<i>Navarretia nigelliformis ssp. radians</i>	None	None	1B.2	Cismontane woodland, valley and foothill grassland, vernal pools.	Apparently in grassland, and not necessarily in vernal pools. 200-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Shirley Meadows star-tulip	<i>Calochortus westonii</i>	None	None	1B.2	Broadleaved upland forest, lower montane coniferous	Meadows, open woodlands; granite substrates. 1500-	Low. Suction dredging not likely to occur in occupied habitat or



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					forest, meadows.	2060m.	substantially impact suitable habitat.
Shockley's milk-vetch	<i>Astragalus serenoii</i> var. <i>shockleyi</i>	None	None	2.2	Chenopod scrub, pinyon and juniper woodland, Great Basin scrub.	Coarse, granitic alluvium. 1500-2250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Shockley's rock-cress	<i>Arabis shockleyi</i>	None	None	2.2	Pinyon and juniper woodland.	On ridges, rocky outcrops and openings on limestone or quartzite; usually in pinyon or p-j series. 875-2205m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
short-fruited willow	<i>Salix brachycarpa</i> ssp. <i>brachycarpa</i>	None	None	2.3	Alpine dwarf scrub, meadows and seeps, subalpine coniferous forest.	Edges of lakes, and in wet meadows, on limestone, marble, and metamorphic substrates. 3150-3500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
short-joint beavertail	<i>Opuntia basilaris</i> var. <i>brachyclada</i>	None	None	1B.2	Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon-juniper woodland, riparian woodland.	Sandy soil or coarse, granitic loam. 425-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
short-leaved evax	<i>Hesper-evax sparsiflora</i> var. <i>brevifolia</i>	None	None	1B.2	Coastal bluff scrub, coastal dunes.	Sandy bluffs and flats. 0-200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
short-leaved hulsea	<i>Hulsea brevifolia</i>	None	None	1B.2	Upper montane coniferous forest.	Granitic or volcanic soil of forest openings and	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
						road cuts. 1500-2700m.	occupied habitat or substantially impact suitable habitat.
showy golden madia	<i>Madia radiata</i>	None	None	1B.1	Valley and foothill grassland, cismontane woodland, chenopod scrub.	Mostly on adobe clay in grassland or among shrubs. 25-1125m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
showy island snapdragon	<i>Galvezia speciosa</i>	None	None	1B.2	Coastal scrub.	Rocky cliffs and canyons. 0-365m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
showy rancheria clover	<i>Trifolium amoenum</i>	Endangered	None	1B.1	Valley and foothill grassland, coastal bluff scrub.	Sometimes on serpentine soil, open sunny sites, swales. Most recently sited on roadside and eroding cliff face. 5-560m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Shuteye Peak fawn lily	<i>Erythronium pluriflorum</i>	None	None	1B.3	Upper montane coniferous forest, meadows, subalpine coniferous forest.	Rocky granitic outcrops and slopes. 2060-2550m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Sierra draba	<i>Draba sierrae</i>	None	None	1B.3	Alpine boulder and rock field.	In coarse sandy and gravelly soil; granitic or carbonate substrate. 3500-4265m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Sierra Valley ivesia	<i>Ivesia aperta</i> var. <i>aperta</i>	None	None	1B.2	Great Basin scrub, pinyon and juniper woodland, lower	Usually in loamy soils derived from volcanics. Grassy areas w/in	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					montane coniferous forest, meadows.	sagebrush scrub or other communities. 1475-2300m.	substantially impact suitable habitat.
silver-haired ivesia	<i>Ivesia argyrocoma</i>	None	None	1B.2	Meadows, pebble plains, upper montane coniferous forest.	In pebble plains and meadows with other rare plants. 1480-2680m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
simple androsace	<i>Androsace occidentalis var. simplex</i>	None	None	2.3	Upper montane coniferous forest.	Usually in mesic sites. 1675-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
singlewhorl burrobrush	<i>Ambrosia monogyra</i>	None	None	2.2	Chaparral, Sonoran desert scrub.	Sandy soils. 10-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Siskiyou checkerbloom	<i>Sidalcea malviflora ssp. patula</i>	None	None	1B.2	Coastal prairie, broadleafed upland forest.	Open coastal forest. 15-65m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Siskiyou fireweed	<i>Epilobium siskiyouense</i>	None	None	1B.3	Subalpine coniferous forest, upper montane coniferous forest.	On slopes in gravelly, serpentine soils. 1700-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sky-blue phacelia	<i>Phacelia coerulea</i>	None	None	2.3	Mojavean desert scrub, pinyon-juniper woodland.	1400-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
slender collomia	<i>Collomia tenella</i>	None	None	2.2	Upper montane coniferous forest.	Volcanic soils. 2170m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
slender cottonheads	<i>Nemacaulis denudata var. gracilis</i>	None	None	2.2	Coastal dunes, desert dunes, Sonoran desert scrub.	In dunes or sand. 0-560m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
slender lupine	<i>Lupinus gracilentus</i>	None	None	1B.3	Subalpine coniferous forest.	Semi-moist shaded areas. 2500-3500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
slender mariposa-lily	<i>Calochortus clavatus var. gracilis</i>	None	None	1B.2	Chaparral, coastal scrub.	Shaded foothill canyons; often on grassy slopes within other habitat. 420-760m	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
slender moonwort	<i>Botrychium lineare</i>	None	None	1B.3	Upper coniferous forest.	2600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
slender silver moss	<i>Anomobryum julaceum</i>	None	None	2.2	Broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest.	Moss which grows on damp rocks and soil; usually seen on roadcuts. 100-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Page 124 of 149

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
slender-horned spineflower	<i>Dodecahema leptoceras</i>	Endangered	Endangered	1B.1	Chaparral, coastal scrub (alluvial fan sage scrub).	Flood deposited terraces and washes; assoc include <i>Encelia</i> , <i>Dalea</i> , <i>Lepidospartum</i> , etc. 200-760m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
slender-leaved ipomopsis	<i>Ipomopsis tenuifolia</i>	None	None	2.3	Chaparral, pinyon and juniper woodland, Sonoran desert scrub.	Dry rocky or gravelly slopes. 100-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
slender-stalked monkeyflower	<i>Mimulus gracilipes</i>	None	None	1B.2	Chaparral.	Disturbed places such as burns and RR grades; also on thin granitic soil in cracks in large granite rocks. 500-1300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
slender-stemmed monkeyflower	<i>Mimulus filicaulis</i>	None	None	1B.2	Cismontane woodland, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest.	Within the transition zone of the Sierra Nevada, moist granitic sand and meadow edges; vernal mesic sites. 680-1750m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
small groundcone	<i>Boschniakia hookeri</i>	None	None	2.3	North Coast coniferous forest.	Open woods, shrubby places, generally on <i>Gaultheria shallon</i> . 90-885m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
small mousetail moss	<i>Myurella julacea</i>	None	None	2.3	Alpine boulder and rock field, subalpine coniferous forest.	Moss growing on damp rock and soil. 2700-3000m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
small-flowered androstephium	<i>Androstephium breviflorum</i>	None	None	2.2	Mojavean desert scrub, desert dunes.	Bajadas. One site known from sand dunes. 270-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
small-flowered bird's-beak	<i>Cordylanthus parviflorus</i>	None	None	2.3	Joshua tree woodland, pinyon-juniper woodland, Mojavean desert scrub.	700-2200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
small-flowered calycadenia	<i>Calycadenia micrantha</i>	None	None	1B.2	Chaparral, valley and foothill grassland, meadows and seeps, lower montane coniferous forest.	Rocky talus or scree; sparsely vegetated areas. occasionally on roadsides; sometimes on serpentine. 5-1500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
small-flowered fescue	<i>Festuca minutiflora</i>	None	None	2.3	Alpine boulder and rock field.	3200-4050m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
small-flowered sand-verbena	<i>Tripterocalyx micranthus</i>	None	None	2.3	Desert dunes, Mojavean desert scrub.	Sandy sites. 550-855m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Small's southern clarkia	<i>Clarkia australis</i>	None	None	1B.2	Cismontane woodland, lower montane coniferous forest.	Open, rocky sites in conifer forest or oak woodland. 900-2060m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Page 126 of 149

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
smooth lessingia	<i>Lessingia micradenia</i> var. <i>glabrata</i>	None	None	1B.2	Chaparral.	Serpentine; often on roadsides. 120-485m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
snake cholla	<i>Opuntia californica</i> var. <i>californica</i>	None	None	1B.1	Chaparral, coastal scrub.	30-150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
snow dwarf bramble	<i>Rubus nivalis</i>	None	None	2.3	North Coast coniferous forest.	Deep soil, with Douglas-fir overstory. 1075-1250m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Snow Mountain buckwheat	<i>Eriogonum nervulosum</i>	None	None	1B.2	Chaparral.	Dry serpentine outcrops, balds, and barrens. 300-2100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Snow Mountain willowherb	<i>Epilobium nivium</i>	None	None	1B.2	Upper montane coniferous forest, chaparral.	In crevices of rocky outcrops, and dry talus and shale slopes. 785-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
snow willow	<i>Salix nivalis</i>	None	None	2.3	Alpine dwarf scrub.	In California, on lakeshore with <i>Potentilla</i> , <i>Salix</i> spp., <i>Penstemon</i> , etc. 3100-3500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Sodaville milk-vetch	<i>Astragalus lentiginosus</i> var.	None	Endangered	1B.1	Meadows.	In open areas and under shrubs on alkaline clay	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
	<i>sesquimetralis</i>					soil surrounding springs. 950m.	occupied habitat or substantially impact suitable habitat.
soft-leaved paintbrush	<i>Castilleja mollis</i>	Endangered	None	1B.1	Coastal dunes, coastal bluff scrub.	5-20m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Sonoma beardtongue	<i>Penstemon newberryi</i> var. <i>sonomensis</i>	None	None	1B.3	Chaparral.	Crevice in rock outcrops and talus slopes. 180-1390m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Sonoma spineflower	<i>Chorizanthe valida</i>	Endangered	Endangered	1B.1	Coastal prairie.	Sandy soil. 10-50m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
South Coast saltscale	<i>Atriplex pacifica</i>	None	None	1B.2	Coastal scrub, coastal bluff scrub, playas, chenopod scrub.	Alkali soils. 1-500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
South Fork Mtn. lupine	<i>Lupinus elmeri</i>	None	None	1B.2	Lower montane coniferous forest.	1370-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
southern alpine buckwheat	<i>Eriogonum kennedyi</i> var. <i>alpigenum</i>	None	None	1B.3	Alpine boulder and rock fields, subalpine coniferous forest.	Dry granitic gravel. 2600-3500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
Southern California rock draba	<i>Draba corrugata var. saxosa</i>	None	None	1B.3	Alpine boulder and rock fields, subalpine coniferous forest, upper montane coniferous forest.	Rocky sites. 2440-3600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
southern jewel-flower	<i>Streptanthus campestris</i>	None	None	1B.3	Chaparral, lower montane coniferous forest, pinyon-juniper woodland.	Open, rocky areas. 600-2790m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
southern mountain buckwheat	<i>Eriogonum kennedyi var. austromontanum</i>	Threatened	None	1B.2	Pebble (pavement) plain, lower montane coniferous forest.	Usually found in pebble plain habitats. 1755-2375m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Spanish Needle onion	<i>Allium shevockii</i>	None	None	1B.3	Pinyon-juniper woodland, upper montane coniferous forest.	In soil pockets on rock outcrops and talus slopes; bulbs mostly on margins of outcrops. 2000-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
spear-fruited draba	<i>Draba lonchocarpa var. lonchocarpa</i>	None	None	2.3	Alpine boulder and rock fields.	On limestone scree. 3000-3295m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
spear-leaf matelea	<i>Matelea parvifolia</i>	None	None	2.3	Mojavean desert scrub, Sonoran desert scrub.	Dry rocky ledges and slopes. 440-1095m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
spiked larkspur	<i>Delphinium stachydeum</i>	None	None	2.3	Upper montane coniferous forest, Great Basin scrub.	Known in CA only from the Warner Mtns, on a dry, rocky ridge. 1950-2600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
spiny cliff-brake	<i>Pellaea truncata</i>	None	None	2.3	Pinyon-juniper woodland.	Granitic boulders and fissures in granite cliffs, also in volcanic or sandy limestone soils. 1200-2150m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
spiny milkwort	<i>Polygala subspinosa</i>	None	None	2.2	Great Basin scrub, pinyon-juniper woodland.	Volcanic mesas, gravelly soils; often in sagebrush scrub. 1270-1705m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Spjut's bristle moss	<i>Orthotrichum spjutii</i>	None	None	1B.3	Lower montane coniferous forest, pinyon-juniper woodland, subalpine coniferous forest, upper montane coniferous forest.	Moss growing on granitic rock; known only from near Sonora Pass. 2100-2400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Springville clarkia	<i>Clarkia springvillensis</i>	Threatened	Endangered	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Cutbanks and openings in blue oak woodland. Decomposed granite loam. 330-1220m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
squarestem phlox	<i>Phlox muscoides</i>	None	None	2.3	Alpine boulder and rock field, subalpine coniferous forest, Great Basin scrub.	Open rocky slopes. 1270-2700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
starved daisy	<i>Erigeron miser</i>	None	None	1B.3	Upper montane coniferous forest.	Rocky, granitic outcrops. 1755-2260m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Stebbins' harmonia	<i>Harmonia stebbinsii</i>	None	None	1B.2	Chaparral, lower montane coniferous forest.	Ultramafic soils, often along roads. 400-1580m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Stebbins' lewisia	<i>Lewisia stebbinsii</i>	None	None	1B.2	Upper montane coniferous forest, lower montane coniferous forest.	Relatively barren exposed ridges and slopes in nutrient poor soils (mostly serpentine). 1680-2050m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Stebbins' lomatium	<i>Lomatium stebbinsii</i>	None	None	1B.1	Lower montane coniferous forest, chaparral.	Thin, gravelly volcanic clay in open yellow pine forest. Grows where other vegetation is absent. 1235-1850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Stebbins' monardella	<i>Monardella stebbinsii</i>	None	None	1B.2	Broadleaved upland forest, chaparral, lower montane coniferous forest.	On steep, loose slopes of generally reddish serpentine talus and boulders. 750-1100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Stebbins' morning-glory	<i>Calystegia stebbinsii</i>	Endangered	Endangered	1B.1	Chaparral, cismontane woodland.	On red clay soils of the Pine Hill formation; gabbro or serpentine; open areas. 180-725m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Stebbins' phacelia	<i>Phacelia stebbinsii</i>	None	None	1B.2	Lower montane coniferous forest, cismontane woodland, meadows and seeps, riparian woodland.	Among rocks and rubble on metamorphic rock benches. 605-2050m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
Stephens' beardtongue	<i>Penstemon stephensii</i>	None	None	1B.3	Mojavean desert scrub, pinyon-juniper woodland.	Dry granitic or limestone rocky slopes and crevices. 1160-2120m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sticky dudleya	<i>Dudleya viscida</i>	None	None	1B.2	Coastal scrub, coastal bluff scrub, chaparral.	On north and south-facing cliffs and banks. 10-550m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sticky geraea	<i>Geraea viscida</i>	None	None	2.3	Chaparral.	Loamy coarse sand to gravelly sand soils; often in post burned areas and in bulldozed areas. 450-1700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Stony Creek spurge	<i>Chamaesyce ocellata ssp. rattanii</i>	None	None	1B.2	Valley and foothill grassland.	Sandy or rocky soils. 85-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
straight-awned spineflower	<i>Chorizanthe rectispina</i>	None	None	1B.3	Chaparral, cismontane woodland, coastal scrub.	Often on granite in chaparral. 355-1035m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
striped adobe-lily	<i>Fritillaria striata</i>	None	Threatened	1B.1	Cismontane woodland, valley and foothill grassland.	Heavy clay adobe soils in oak grassland. 135-1455m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
subalpine aster	<i>Eurybia merita</i>	None	None	2.3	Upper montane coniferous forest.	1300-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
subalpine cryptantha	<i>Cryptantha cymophila</i>	None	None	1B.3	Subalpine coniferous forest.	On dry talus of volcanic formation. 2600-3200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
subtle orache	<i>Atriplex subtilis</i>	None	None	1B.2	Valley and foothill grassland.	Little info available. Madrono Vol. 44 No.2 only source currently. 40-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Suksdorf's broom-rape	<i>Orobanche ludoviciana var. arenosa</i>	None	None	2.3	Great Basin scrub.	1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Suksdorf's milk-vetch	<i>Astragalus pulsiferae var. suksdorfii</i>	None	None	1B.2	Great Basin scrub, lower montane coniferous forest, pinyon and juniper woodland.	Volcanic or clay soil; often gravelly or rocky. 1300-1930m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
supple daisy	<i>Erigeron supplex</i>	None	None	1B.2	Coastal bluff scrub, coastal prairie.	Usually in grassy sites. 5-50m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							occupied habitat or substantially impact suitable habitat.
surf thistle	<i>Cirsium rhotophilum</i>	None	Threatened	1B.2	Coastal dunes, coastal bluff scrub.	Open areas in central dune scrub; usually in coastal dunes. 3-60m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Susanville beardtongue	<i>Penstemon sudans</i>	None	None	1B.3	Great Basin scrub, lower montane coniferous forest, pinyon-juniper woodland.	1200-1775m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
sweet-smelling monardella	<i>Monardella beneolens</i>	None	None	1B.3	Alpine boulder and rock field, subalpine coniferous forest, upper montane coniferous forest.	Granitic soils; open conifer forest with <i>Eriogonum</i> spp., <i>Trifolium</i> , <i>Erigeron</i> , etc. 2500-3500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Sweetwater Mountains draba	<i>Draba incrassata</i>	None	None	1B.3	Alpine boulder and rock field.	Endemic to the rhyolite substrates of the Sweetwater Mtns, on loose, steep talus slopes. 2500-3500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tahoe draba	<i>Draba asterophora</i> var. <i>asterophora</i>	None	None	1B.2	Alpine boulder and rock field, subalpine coniferous forest.	On open talus slopes, rock outcrops and crevices. On decomposed granite. 2500-3505m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
talus fritillary	<i>Fritillaria falcata</i>	None	None	1B.2	Chaparral, cismontane woodland, lower montane coniferous	On shale, granite, or serpentine talus. 300-1525m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					forest.		suitable habitat.
Tamalpais jewel-flower	<i>Streptanthus batrachopus</i>	None	None	1B.3	Closed-cone coniferous forest, chaparral.	Talus serpentine outcrops. 410-650m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tamalpais lessingia	<i>Lessingia micradenia</i> var. <i>micradenia</i>	None	None	1B.2	Chaparral, valley and foothill grassland.	Usually on serpentine, in serpentine grassland or serpentine chaparral. often on roadsides. 100-305m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
tear drop moss	<i>Dacryophyllum falcifolium</i>	None	None	1B.3	Coast redwood forest.	Limestone substrates and rock outcrops. 50-275m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tecate tarplant	<i>Deinandra floribunda</i>	None	None	1B.2	Chaparral, coastal scrub.	Often in little drainages or disturbed areas. 70-1220m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tehachapi monardella	<i>Monardella linooides</i> ssp. <i>oblonga</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forest, pinyon-juniper woodland.	On dry slopes of yellow pine forest, decomposed granitic soils; also in roadside disturbed areas. 1695-2470m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tehama County western flax	<i>Hesperolinon tehamense</i>	None	None	1B.3	Chaparral, cismontane woodland.	Serpentine barrens in chaparral. 545-1155m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Tehipite Valley jewel-flower	<i>Streptanthus fenestratus</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forst.	Granite gravels and dry open sandy areas. 605-1760m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tejon poppy	<i>Eschscholzia lemmonii ssp. kernensis</i>	None	None	1B.1	Valley and foothill grassland.	Little information available on habitat. 250-750m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Temblor buckwheat	<i>Eriogonum temblorense</i>	None	None	1B.2	Valley and foothill grassland.	Barren clay or sandstone substrates. 300-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
The Cedars fairy-lantern	<i>Calochortus raichei</i>	None	None	1B.2	Closed-cone coniferous forest, chaparral.	On serpentine. Usually on shaded slopes, but also on barrens and talus. 200-395m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
The Lassics lupine	<i>Lupinus constancei</i>	None	None	1B.2	Lower montane coniferous forest.	Serpentine barrens. 1500-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
The lassics sandwort	<i>Minuartia decumbens</i>	None	None	1B.2	Lower montane coniferous forest, upper montane coniferous forest.	Endemic to serpentine, only known from upper, north-facing slopes under Jeffrey pines. 1500-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
thin-lobed horkelia	<i>Horkelia tenuiloba</i>	None	None	1B.2	Coastal scrub, chaparral.	Sandy soils; mesic openings. 45-500m.	Low. Suction dredging not likely to occur in



**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							occupied habitat or substantially impact suitable habitat.
thorny milkwort	<i>Polygala acanthoclada</i>	None	None	2.3	Chenopod scrub, Joshua tree woodland, pinyon-juniper woodland.	760-2285m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
thread-leaved beardtongue	<i>Penstemon filiformis</i>	None	None	1B.3	Cismontane woodland, lower montane coniferous forest, meadows and seeps.	Dry stony sites, grassy openings, & meadows, often along trails & logging roads; sometimes on serpentine. 450-2125m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
three-awned grama	<i>Bouteloua trifida</i>	None	None	2.3	Mojavean desert scrub.	Limestone ravines and rocky hills, sometimes in narrow crevices. Assoc incl Agave utahensis, Salvia funerea. 700-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
three-bracted onion	<i>Allium tribracteatum</i>	None	None	1B.2	Chaparral, lower montane coniferous forest, upper montane coniferous forest.	Volcanic slopes and ridges. 1100-2750m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tiburon buckwheat	<i>Eriogonum luteolum var. caninum</i>	None	None	1B.2	Chaparral, valley and foothill grassland, cismontane woodland, coastal prairie.	Serpentine soils; sandy to gravaelly sites. 0-700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tiburon paintbrush	<i>Castilleja affinis ssp. neglecta</i>	Endangered	Threatened	1B.2	Valley and foothill grassland.	Rocky serpentine sites. 75-400m.	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							occupied habitat or substantially impact suitable habitat.
Tidestrom's lupine	<i>Lupinus tidestromii</i>	Endangered	Endangered	1B.1	Coastal dunes. Includes <i>Lupinus tidestromii</i> var. <i>tidestromii</i> , State-listed Endangered.	Partially stabilized dunes, immediately near the ocean. 0-35m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tidestrom's milk-vetch	<i>Astragalus tidestromii</i>	None	None	2.2	Mojavean desert scrub.	Washes; limestone. 600-1585m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tiehm's rock-cress	<i>Arabis tiehmii</i>	None	None	1B.3	Alpine boulder and rock field.	On windswept rocky ridges and in crevices on rocky slopes; in cushion plant community on granite. 2970-3590m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tompkins' sedge	<i>Carex tompkinsii</i>	None	Rare	4.3	Chaparral, cismontane woodland, lower montane coniferous forest, upper montane coniferous forest.	Often on granitic substrate; sometimes also on soils from metamorphic rock. 420-1800m. Occ's archived; CNPS List 4.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
tongue-leaf copper moss	<i>Scopelophila cataractae</i>	None	None	2.2	Cismontane woodland.	Moss on metamorphic substrate; on soil. 400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Torrey's blazing star	<i>Mentzelia torreyi</i>	None	None	2.2	Great Basin scrub, Mojavean desert	Sandy or rocky sites; alkaline, usually	Low. Suction dredging not likely to occur in

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					scrub, pinyon-juniper woodland.	volcanic soils. 1170-2835m.	occupied habitat or substantially impact suitable habitat.
Tracy's beardtongue	<i>Penstemon tracyi</i>	None	None	1B.3	Upper montane coniferous forest.	Dry rocky ridges, ledges, and cliffs, often in crevices. 1785-2145m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tracy's eriastrum	<i>Eriastrum tracyi</i>	None	Rare	1B.2	Chaparral, cismontane woodland.	Gravelly shale or clay; often in open areas. 315-760m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tracy's romanzoffia	<i>Romanzoffia tracyi</i>	None	None	2.3	Coastal bluff scrub, coastal scrub.	Rocky sites. 15-30m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Trask's milk-vetch	<i>Astragalus traskiae</i>	None	Rare	1B.2	Coastal bluff scrub, coastal dunes, coastal scrub.	Sandy, windswept ocean bluffs, gullied banks, and coastal dunes. 5-245m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
tree-anemone	<i>Carpenteria californica</i>	None	Threatened	1B.2	Cismontane woodland, chaparral.	An very localized endemic found on well-drained granitic soils, mostly on N-facing ravines and drainages. 340-1340m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Trinity buckwheat	<i>Eriogonum alpinum</i>	None	Endangered	1B.2	Subalpine coniferous forest, upper montane coniferous	Rocky soils and scree slopes in open and windswept areas on	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
					forest, alpine boulder and rock field.	serpentine substrate. 2200-2610m.	substantially impact suitable habitat.
triple-ribbed milk-vetch	<i>Astragalus tricarinatus</i>	Endangered	None	1B.2	Joshua tree woodland, Sonoran desert scrub.	Hot, rocky slopes in canyons and along edge of boulder-strewn desert washes, w/ Larrea and Encelia. 450-790m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tulare cryptantha	<i>Cryptantha incana</i>	None	None	1B.3	Lower montane coniferous forest.	Gravelly or rocky sites. 1430-2000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
tundra thread moss	<i>Pohlia tundrae</i>	None	None	2.3	Alpine boulder and rock field.	Moss growing on gravelly, damp soil. 2700-3000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tuolumne fawn lily	<i>Erythronium tuolumnense</i>	None	None	1B.2	Broadleaved upland forest, chaparral, lower montane coniferous forest.	Often on clay soils; on cliffs and near drainages. 510-1460m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Tuolumne iris	<i>Iris hartwegii</i> ssp. <i>columbiana</i>	None	None	1B.2	Cismontane woodland, lower montane coniferous forest.	600-1400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Twisselmann's buckwheat	<i>Eriogonum twisselmannii</i>	None	Rare	1B.2	Upper montane coniferous forest.	Dry, granitic outcrops. 2255-2800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							suitable habitat.
two-carpellate western flax	<i>Hesperolinon bicarpellatum</i>	None	None	1B.2	Serpentine chaparral.	Serpentine barrens at edge of chaparral. 150-820m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
umbrella larkspur	<i>Delphinium umbraculorum</i>	None	None	1B.3	Cismontane woodland.	Mesic sites. 400-1600m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Umpqua green-gentian	<i>Swertia umpquaensis</i>	None	None	2.2	Lower montane coniferous forest, meadows and seeps, chaparral, North Coast coniferous forest.	Mountain meadows; openings in forest. 1555-1900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
upswept moonwort	<i>Botrychium ascendens</i>	None	None	2.3	Lower montane coniferous forest.	Grassy fields, coniferous woods near springs and creeks. 1500-2060m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Utah beardtongue	<i>Penstemon utahensis</i>	None	None	2.3	Chenopod scrub, Great Basin scrub, Mojavean desert scrub, pinyon-juniper woodland.	Rocky sites. 1065-2500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Utah daisy	<i>Erigeron utahensis</i>	None	None	2.3	Pinyon-juniper woodland.	Limestone. 1500-2320m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

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Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
Vandenberg monkeyflower	<i>Mimulus fremontii</i> var. <i>vandenbergensis</i>	None	None	1B.1	Cismontane woodland, chaparral (Burton Mesa).	Sandy, often disturbed areas. 75-120m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
vanishing wild buckwheat	<i>Eriogonum evanidum</i>	None	None	1B.1	Chaparral, lower montane coniferous forest, pinyon and juniper woodland.	Sandy sites. 970-2200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
variegated dudleya	<i>Dudleya variegata</i>	None	None	1B.2	Chaparral, coastal scrub, cismontane woodland, valley and foothill grassland.	In rocky or clay soils; sometimes associated with vernal pool margins. 3-550m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Vasek's clarkia	<i>Clarkia tembloriensis</i> ssp. <i>calientensis</i>	None	None	1B.1	Valley and foothill grassland.	North-facing slopes with Isomeris, other Clarkia spp. 270-335m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
veiny monardella	<i>Monardella douglasii</i> ssp. <i>venosa</i>	None	None	1B.1	Valley and foothill grassland, cismontane woodland.	In heavy clay; mostly with grassland associates. Rediscovered in 1992. 60-410m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Verity's dudleya	<i>Dudleya verityi</i>	Threatened	None	1B.2	Chaparral, cismontane woodland, coastal scrub.	On volcanic rock outcrops in the Santa Monica Mountains. 60-120m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
violet twining snapdragon	<i>Maurandya antirrhiniflora</i>	None	None	2.3	Joshua tree woodland, Mojavean	Steep rocky carbonate slopes. 760-1525m.	Low. Suction dredging not likely to occur in

TABLE 4.3-6. UPLAND PLANT SPECIES

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
	<i>ssp. antirrhiniflora</i>				desert scrub.		occupied habitat or substantially impact suitable habitat.
virgate halimolobos	<i>Halimolobos virgata</i>	None	None	2.3	Meadows, pinyon and juniper woodland.	2000-3000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
viviparous foxtail cactus	<i>Coryphantha vivipara var. rosea</i>	None	None	2.2	Mojavean desert scrub, pinyon and juniper woodland.	On gravelly limestone or volcanic slopes and brushy hillsides. 1250-2700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Waldo daisy	<i>Erigeron bloomeri var. nudatus</i>	None	None	2.3	Lower montane coniferous forest, upper montane coniferous forest.	In open areas on dry rocky outcrops on serpentine. 600-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Waldo rock-cress	<i>Arabis aculeolata</i>	None	None	2.2	Broadleafed upland forest, lower montane coniferous forest, upper montane coniferous forest.	Serpentine slopes and ridges. 410-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Waldo wild buckwheat	<i>Eriogonum pendulum</i>	None	None	2.2	Lower montane coniferous forest, upper montane coniferous forest.	On dry, rocky ultramafic soils; open somewhat grassy areas w/in pine forest. 225-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Wallace's nightshade	<i>Solanum wallacei</i>	None	None	1B.1	Chaparral, cismontane woodland.	Canyons; rocky sites. 3-410m.	Low. Suction dredging not likely to occur in occupied habitat or

**TABLE 4.3-6. UPLAND PLANT SPECIES**

Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
							substantially impact suitable habitat.
Warner Mountains bedstraw	<i>Galium serpticum ssp. warnerense</i>	None	None	1B.2	Subalpine coniferous forest, meadows.	In talus or in rock crevices or at base of rocks. 1450-2750m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Warner Mountains buckwheat	<i>Eriogonum umbellatum var. glaberrimum</i>	None	None	1B.3	Lower montane coniferous forest, upper montane coniferous forest.	Sandy or gravelly sites. 1600-2300m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Warner Springs lessingia	<i>Lessingia glandulifera var. tomentosa</i>	None	None	1B.3	Chaparral.	Along roadsides, sandy soil, in high desert chaparral. 860-1220m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
wayside aster	<i>Eucephalus vialis</i>	None	None	1B.2	Lower montane coniferous forest, upper montane coniferous forest.	Gravelly substrates. 910-1545m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Webber's ivesia	<i>Ivesia webberi</i>	Candidate	None	1B.1	Great Basin scrub, lower montane coniferous forest.	Rocky, volcanic soils. 1500-2075m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Webber's milk-vetch	<i>Astragalus webberi</i>	None	None	1B.2	Lower montane coniferous forest.	Open brushy slopes and flats in xeric pine forest or mixed pine-oak forest. 800-1220m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.



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western goblin	<i>Botrychium montanum</i>	None	None	2.1	Lower montane coniferous forest.	Creekbanks in old-growth forest. 1500-1830m.	Moderate. In the absence of the proposed regulations, suction dredging activities may adversely impact species or their habitat.
western valerian	<i>Valeriana occidentalis</i>	None	None	2.3	Lower montane coniferous forest.	Mesic sites. 1500-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Wheeler's dune-broom	<i>Chaetadelpa wheeleri</i>	None	None	2.2	Desert dunes, Great Basin scrub, Mojavean desert scrub.	Sandy sites. 850-1900m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
white bear poppy	<i>Arctomecon merriamii</i>	None	None	2.2	Chenopod scrub, Mojavean desert scrub.	Rocky slopes, calcareous soil, loose shale, or sandy washes. 490-1585m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
White Mountains horkelia	<i>Horkelia hispidula</i>	None	None	1B.3	Great Basin scrub, subalpine coniferous forest, alpine dwarf scrub.	Mostly in ancient bristlecone forest. 3000-3400m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
white-bracted spineflower	<i>Chorizanthe xanti var. leucotheca</i>	None	None	1B.2	Mojavean desert scrub, pinyon-juniper woodland.	300-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

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Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
white-flowered rein orchid	<i>Piperia candida</i>	None	None	1B.2	North coast coniferous forest, lower montane coniferous forest, broadleaved upland forest.	Coast ranges from Santa Cruz County north; on serpentine. Forest duff, mossy banks, rock outcrops & muskeg. 0-1200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
white-margined beardtongue	<i>Penstemon albomarginatus</i>	None	None	1B.1	Mojavean desert scrub, desert dunes.	Deep stabilized desert sand, in washes and along roadsides. 635-1065m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
white-margined everlasting	<i>Antennaria marginata</i>	None	None	2.3	Lower montane coniferous forest, upper montane coniferous forest.	Dry woods. 2120-3330m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
white-rayed pentachaeta	<i>Pentachaeta bellidiflora</i>	Endangered	Endangered	1B.1	Valley and foothill grassland.	Open dry rocky slopes and grassy areas, often on soils derived from serpentine bedrock. 35-620m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
white-stemmed clarkia	<i>Clarkia gracilis ssp. albicaulis</i>	None	None	1B.2	Chaparral, cismontane woodland.	Dry, grassy openings in chaparral or foothill woodland. Sometimes on serpentine. 300-850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Whitney's farewell-to-spring	<i>Clarkia amoena ssp. whitneyi</i>	None	None	1B.1	Coastal bluff scrub, coastal scrub.	10-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

<b>Common name</b>	<b>Scientific Name</b>	<b>Federal listing status*</b>	<b>State listing status*</b>	<b>RPR List</b>	<b>General Habitat</b>	<b>Micro-Habitat</b>	<b>Potential for Significant Impact prior to Program Regulations</b>
Wiggins' croton	<i>Croton wigginsii</i>	None	Rare	2.2	Desert dunes, Sonoran desert scrub.	On sand dunes and sandy arroyos. 50-100m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
willow monardella	<i>Monardella viminea</i>	Endangered	Endangered	1B.1	Coastal scrub/alluvial ephemeral washes with adjacent coastal scrub, chaparral, or sycamore woodland.	In canyons, in rocky and sandy places, sometimes in washes or floodplains; w/Baccharis, Iva, etc. 50-225m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
winged dock	<i>Rumex venosus</i>	None	None	2.3	Great Basin scrub.	Sandy substrates; broadly distributed; just barely gets into California at Honey Lake Valley. 1200-1800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Wolf's evening-primrose	<i>Oenothera wolfii</i>	None	None	1B.1	Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forest.	Sandy substrates; usually mesic sites. 3-800m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
woolly balsamroot	<i>Balsamorhiza lanata</i>	None	None	1B.2	Cismontane woodland.	Open woods, grassy slopes. (575)800-1050m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
woolly mountain-parsley	<i>Oreonana vestita</i>	None	None	1B.3	Subalpine coniferous forest, upper montane coniferous forest.	High ridges; on scree, talus, or gravel. 2410-3500m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

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Common name	Scientific Name	Federal listing status*	State listing status*	RPR List	General Habitat	Micro-Habitat	Potential for Significant Impact prior to Program Regulations
woolly stenotus	<i>Stenotus lanuginosus</i>	None	None	2.2	Pinyon-juniper woodland, Great Basin scrub.	Exposed ridges and flats in shallow, rocky soil. Often in sagebrush at edges of other vegetation types. 1500-1850m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
woolly-headed gilia	<i>Gilia capitata ssp. tomentosa</i>	None	None	1B.1	Coastal bluff scrub.	Rocky outcrops on the coast. 15-155m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
woolly-headed spineflower	<i>Chorizanthe cuspidata var. villosa</i>	None	None	1B.2	Coastal scrub, coastal dunes, coastal prairie.	Sandy places near the beach. 3-60m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Yadon's rein orchid	<i>Piperia yadonii</i>	Endangered	None	1B.1	Closed-cone coniferous forest, chaparral, coastal bluff scrub.	On sandstone and sandy soil, but poorly drained and often dry. 10-415m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Yadon's wallflower	<i>Erysimum menziesii ssp. yadonii</i>	Endangered	Endangered	1B.1	Coastal dunes.	Foredunes. 0-15m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Yakima bird's-beak	<i>Cordylanthus capitatus</i>	None	None	2.2	Lower montane coniferous forest, pinyon-juniper woodland.	On open dry slopes and woodlands. 1800-2095m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

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yellow-flowered eriastrum	<i>Eriastrum luteum</i>	None	None	1B.2	Broadleaved upland forest, cismontane woodland, chaparral.	On bare sandy decomposed granite slopes. 360-1000m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
yellow-tubered toothwort	<i>Cardamine nuttallii</i> var. <i>gemmata</i>	None	None	1B.3	Lower montane coniferous forest, North Coast coniferous forest.	On serpentine in a variety of aspects. 100-700m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Yosemite lewisia	<i>Lewisia disepala</i>	None	None	1B.2	Lower montane coniferous forest, pinyon-juniper woodland, upper montane coniferous forest.	Fine gravel on rock outcrops, ridges, or domes. Granitic soils. 1560-2610m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Yosemite onion	<i>Allium yosemitense</i>	None	Rare	1B.3	Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest.	In pockets of wet soil or in wet cracks of metamorphic rock; also on slopes and walls. 535-2200m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Yosemite woolly sunflower	<i>Eriophyllum nubigenum</i>	None	None	1B.3	Chaparral, lower montane coniferous forest, upper montane coniferous forest.	South facing slopes on granitic slabs and domes; gravelly soils. 1500-2365m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.
Yucaipa onion	<i>Allium marvinii</i>	None	None	1B.1	Chaparral.	In openings on clay soils. 760-1065m.	Low. Suction dredging not likely to occur in occupied habitat or substantially impact suitable habitat.

**TABLE 4.3-6. UPLAND PLANT SPECIES**

*\* List of Abbreviations for Federal and State Species Status follow below:*

<i>FC</i>	<i>Federal candidate for listing</i>
<i>FE</i>	<i>Federal endangered</i>
<i>FP</i>	<i>State fully protected species</i>
<i>FPT</i>	<i>Federal proposed: threatened</i>
<i>SSC</i>	<i>State species of special concern</i>
<i>FSC</i>	<i>Federal species of concern (per NOAA or USFWS website)</i>
<i>SCE</i>	<i>State candidate: endangered</i>
<i>SE</i>	<i>State endangered</i>
<i>SSC</i>	<i>State species of special concern</i>
<i>ST</i>	<i>State threatened</i>