Appendix A

Draft Waste Discharge Requirements for Nonpoint Discharges Related to Certain Activities Conducted by the USFS and BLM on Federal Lands

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Appendix B

Federal Agency BMP Manuals

U.S. Forest Service National BMPs for Water Quality Management on National Forest System Lands – Volume 1: National Core BMP Technical Guide

Document available here: https://www.fs.usda.gov/naturalresources/watershed/bmp.shtml

U.S. Forest Service Handbook, Southwest Region (Region 5) – Chapter 10: Water Quality Management Handbook

FOREST SERVICE HANDBOOK
SOUTHWEST REGION (REGION 5)
VALLEJO, CA

R5 FSH 2509.22 - SOIL AND WATER CONSERVATION HANDBOOK

CHAPTER 10 - WATER QUALITY MANAGEMENT HANDBOOK

Amendment No.: 2509.22-2011-1

Effective Date: December 5, 2011

Duration: This amendment expires 5 years from the effective date unless superseded or remove earlier.

Approved: RANDY MOORE
Regional Forester

Date Approved: 12/5/2011

Posting Instructions: Amendments are numbered consecutively by Handbook number and calendar year. Post by document; remove the entire document and replace it with this amendment. Retain this transmittal as the first page(s) of this document. The last amendment to this Handbook was 2509.22-2 (7/16/1990) to chapter 50.

New Document	2509.22_10	237 Pages
Superseded Document(s) by Issuance Number and Effective Date	None	

Digest:

New issuance.

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This handbook provides guidance for protection and improvement of water quality on National Forest System lands in California.

01 - AUTHORITY

As a Federal agency, the Forest Service is bound by Federal laws, Executive orders, and Department of Agriculture directives, which are the basis for Forest Service programs and operations. Federal laws and Executive orders of direct and specific application to water-quality management include the following:

1. Organic Administration Act of 1897 (16 U.S.C. 475). This law defines original national forest purposes to improve and protect the forests; to secure favorable conditions of water flows; and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States.

2. Multiple Use Sustained-Yield Act of 1960 (16 U.S.C. 528). This law expands national forest purposes to include watershed, wildlife and fish, outdoor recreation, range, and timber. Renewable surface resources are to be managed for multiple use and sustained yield of the several products and services that they provide. The principles of multiple use and sustained yield include the provision that the productivity of the land shall not be impaired.

3. Wild and Scenic Rivers Act of 1968 (16 U.S. C. 1271.1287; PL 90-452) requires that the Forest Service manage for nondegradation and enhancement of water quality in designated rivers on national forests.

4. National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321, 4331.4335, 4341.4346, 4346a-b, 4347). This law declares a national policy that encourages a "productive and enjoyable harmony between humans and their environment." All Federal agencies, including the Forest Service, are required to use a systematic interdisciplinary approach to planning and decision-making. In addition, Federal agencies are to prepare detailed statements assessing the environmental impact of and alternatives to major Federal actions significantly affecting the environment.

5. Environmental Quality Improvement Act of 1970 (42 U.S.C. 4371.4374). This act establishes a national policy for the environment, which provides for the enhancement of environmental quality.

6. Federal Water Pollution Control Act of 1972, as amended (33 U.S.C. 1251, 1254, 1323, 1324, 1329, 1342, 1344). This series of laws establishes goals, policies, and procedures for maintaining and improving the Nation's waters. It addresses both point and nonpoint sources of pollution and establishes or requires programs for controlling both sources of pollution. Section 208 requires area-wide waste-treatment management

plans and water-quality management plans for nonpoint sources of pollution. The act established specific roles for Federal, State and local authorities in the regulation, enforcement, planning, control, and management of water pollution. Section 313 requires Federal agencies to comply with water-quality regulations of state and local governments. Section 319 addresses nonpoint source pollution and also requires development of water-quality management plans.

7. Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1600-1614). This law provides for systematic, long-range planning in managing renewable resources. The plans are based on a national assessment conducted every 10 years. The plans are updated every 5 years and submitted to Congress.

8. National Forest Management Act of 1976 (16 U.S.C. 1600-1602, 1604, 1606, 1608.1614). This law amended the Forest and Rangeland Renewable Resources Planning Act, emphasizing interdisciplinary involvement in the preparation of land and resource management plans. The law reinforced the concept of multiple use management of NFS lands and added requirements for resource protection.

9. Executive Order 12088 of October 13, 1978. This order requires Federal agencies to comply with environmental laws to be consistent with requirements that apply to a private person. Compliance will be in line with authorities and responsibilities of other Federal agencies, State, interstate, and local authorities as specified and granted in each of the various environmental laws.

The Antideficiency Act, 31 U.S.C. §1341. This act prohibits federal agency officials from obligating funds in advance or in excess of Congressional appropriations. As a result, a federal agency official cannot agree to commit the federal agency to future, indefinite, or potentially unlimited financial obligations or expenditures of funds for which there is no Congressional appropriation. All actions by the USFS as a federal agency are covered by this act. However, under this handbook, implementation and monitoring of BMPs are required for funded USFS projects.

02 - OBJECTIVES

The objectives of this Water Quality Management Handbook for NFS lands in California are:

1. To ensure that the quality and beneficial uses of water are maintained where they are in good condition, consistent with the Federal and State anti-degradation/non-degradation policies, and the principles of conservation biology.

2. To protect the quality and beneficial uses of water from further degradation in water bodies that are trending toward impairment, as defined by Clean Water Act Section 303 (d).

3. To make substantial progress toward eventual delisting of water body segments listed pursuant to Clean Water Act Section 303(d).

4. To remediate legacy sources of pollution.

5. To ensure compliance with Federal and State water-quality objectives and legal requirements in the most efficient manner.

6. To enhance Forest Service performance as a water-quality management agency, and increase and improve its responsibility, transparency and accountability in its relationships with the Water Boards and the public.

03 - POLICY

The Forest Service will comply with the objectives, policies, and procedures of agency directives, handbooks and manuals, including, but not limited to, those required in FSM 2532. The Forest Service will comply with applicable forest plan standards and guidelines.

The Forest Service will be responsive, in an ongoing and cooperative manner, to the environmental intent, goals and objectives provided by the Clean Water Act, the Coastal Zone Act Reauthorization Amendments, and related EPA regulations.

The Forest Service will comply with the State's Porter-Cologne Water Quality Control Act, applicable water-quality control plans and policies enacted by the Water Boards, and regulatory mechanisms imposed by the Water Boards.

The following actions will be used to manage water quality on NFS lands in California:

1. Implement BMPs during all current management activities on all NFS lands in California.

2. Review and revise BMPs as needed to reflect the most recent state-of-the-art methods and techniques of BMP implementation and changes in Forest Service policy and direction.

3. Implement an iterative adaptive management process for BMP implementation (14).

4. Correct legacy water-quality problems (15).

5. Establish a monitoring program (16) to determine the effectiveness of the Water Quality Management Handbook for protecting and improving water quality.

04 - RESPONSIBILITY

See FSM 2504 and 2530.4 for the water quality management responsibilities for the Regional Forester, Forest Supervisors and District Rangers.

04.1 - Regional Forester

The Regional Forester will conduct Forest Service activities in accordance with the Regional USFS Water Quality Management Handbook and the 2011 Memorandum of Understanding with the State Water Resources Control Board.

04.2 - Regional Staff Director

The Regional Staff Director will:

1. Review the reference section of the BMP handbooks needed to verify that the directives cited as references for BMPs are still valid source documents. In most cases this will involve the review of multiple BMP reference sets.

2. Continue to refine and update existing BMPs to keep pace with state-of-the-art knowledge and to develop new practices where voids exist or as needs arise.

04.3 - Forest Supervisor

The Forest Supervisors shall:

1. Apply BMPs for water quality protection and improvement in day-to-day management activities.

2. Evaluate attainment of water quality management goals through formal and informal reviews of project planning, and through monitoring using BMPEP protocols.

3. Conduct BMP training annually on an as needed basis, before each field season for new employees, new line officers, and new resource personnel. Training of a new resource person shall include practical instruction in the application of BMPs for planning and administration of various management activities.

05 - DEFINITIONS

Amendment. Revised sections of the Forest Service Manual and the Forest Service Handbook system to keep the text updated.

Apron. A reinforcement mechanism that protects soil from erosional and gravitational displacement.

Armoring. Protective coverings or structures used to dissipate the erosive energy of water. Aprons and rip-rap are types of armoring.

Beneficial Use. A use of the waters of the state to be protected against quality degradation, including but not necessarily limited to domestic, municipal, agricultural, industrial supply, power generation, recreation, esthetic enjoyment, navigation, conservation and enhancement of fish, wildlife, and aquatic resources.

Best Management Practice (BMP). A practice, or a combination of practices, that is determined by the State (or designated area-wide planning agency) after problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing, or reducing the amount of pollution generated by nonpoint sources to a level compatible with water-quality goals.

Best Management Practice Evaluation Program. The field evaluation process developed and used by Region 5, to systematically evaluate the implementation and effectiveness of BMP.

Cross Drain. A ditch constructed to intercept surface water runoff and divert it before the runoff concentrates to erosive volumes and velocities.

Crowning. Forming a convex road surface, which allows runoff to drain from the running surface to either side of the road prism.

Designated Stream. A stream or portion of a stream identified as warranting special consideration in management decisions and project activities. See also Stream or Streamcourse.

Designated Swimming Waters. Those waters in which swimming, wading, dabbling, diving, and other forms of primary water-contact recreation are specifically encouraged by signs, or public notice.

Earth Scientist Air resource specialists, geologists, hydrologists, and soil scientists working for the Forest Service in the field of natural sciences. These personnel, with knowledge and skills in the fields of soil-precipitation-runoff relationships, are primarily concerned with on-site productivity and protection of water quality.

Erosion Hazard Rating (EHR). A relative rating of the potential for soil erosion on a given site. Commonly used to estimate the erosion response expected from a given land management activity. Ratings are the result of a composite analysis of the following factors: soil, topography, climate, soil cover.

Extremely Unstable Lands. Land areas exhibiting one, or more of the following characteristics:

1. Active landslides.

2. Erosion hazard rating is greater than a score of "29" on the R-5 rating scale.

3. Inner gorges.

4. Portions of shear zones and dormant landslides having slope gradients that are typically steeper than 60 to 65 percent.

5. Unconsolidated deposits with slope gradients at, or steeper than the stable angle of repose.

6. Lands with slope gradients at, or steeper than the mechanical strength of the underlying soil and rock materials.

Floodplain. The areas adjoining inland streams and standing bodies of water and coastal waters, including debris cones and flood-prone areas of offshore islands, including at a minimum, that area subject to a 1.percent chance of flooding in any given year.

Ground Cover. Material on the soil surface that impedes raindrop impact and overland flow of water. Material may include duff and organic matter such as needles, sticks, and limbs, in addition to exposed roots, stumps, surface gravels, and living vegetation

Hazardous Substances. Any of a wide variety of materials—solid, liquid, or gas—which requires specific cautionary handling and procedures to permit their safe use. (Health and Safety Code 6709.11, chapter 9)

Horizontal Drains. Horizontal pipes installed in road cut slopes and fills to drain subsurface water and guard against landslides. Includes perforated metal or plastic pipes in horizontal drill holes in water-bearing formation.

Inner Gorge. A geomorphic feature that consists of the area of channel side slope situated immediately adjacent to the stream channel, and below the first break in the slope above the stream channel. Debris sliding and avalanching are the dominant mass wasting processes associated with the inner gorge.

Land and Resource Management Plan (LRMP). A forestwide document that provides direction for managing National Forest System lands within the forest boundaries, with the goal to fully integrate a mix of management actions that provide for multiple use and protection of forest resources, satisfy guiding legislation, and address local, regional, and national issues for the plan period. Also frequently referred to as LMP.

Legacy Site. A site disturbed by a previous land use that is causing or has potential to cause adverse effects to water quality.

National Pollutant Discharge Elimination Permit System (NPDES). The system for issuing, conditioning, and denying permits for the discharge of pollutants from point sources, by State water-quality regulatory authorities, or the Environmental Protection Agency. The program is administered by the Regional Water Quality Control Boards of California.

Nonpoint Source. Diffuse sources of water pollution that originate at indefinable sources, such as from silvicultural and recreational activities. Practically, nonpoint sources do not discharge at a specific, single location such a conveyance pipe.

Outsloping. Shaping a road prism without an inside drainage ditch to direct runoff to the outside shoulder, as opposed to insloping which directs runoff to an inside ditch. Emphasis is on maintaining flow at an angle across the road to avoid buildup of an erosive flow of water.

Permittee. Individual or entity that uses National Forest System resources by permit from the Forest Service.

Pesticide. A general term applied to a variety of chemical pest controls, including insecticides for insects, herbicides for plants, fungicides for fungi, and rodenticides for rodents.

Pipe Underdrains. A perforated pipe or fabric at the bottom of a narrow trench backfilled with filter material. This kind of installation is used where there is a need to lower the water table adjacent to the roadbed, or other structure.

Pitting. Making shallow pits or basins of adequate capacity and distribution to retain water from snowmelt and rainfall to enhance infiltration, augment soil moisture, and retard runoff.

Point Source. Water pollution originating from a discrete identifiable source, or conveyance.

Road Decommissioning. Activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1), (FSM 7703)

Sale Area Improvement Plan (SAI Plan). A plan of work for post sale enhancement and improvement of the sale project area. The plan addresses development, protection, and maintenance actions for the future production of renewable resources.

Sale Area Map. A map of suitable scale and detail to be legible, which is part of a timber sale contract. The map identifies sale area boundaries and contract requirements specific to the sale.

Sale Plan. The document used to identify the approved locations for timber harvest and transportation improvements in a given sale, including a description of project results to be accomplished. The sale plan also includes required mitigation measures that were identified in the environmental documentation process.

Specified Road. A forest development transportation-system road identified (specified) in a timber sale contract.

Stabilization Trenches. These are wide trenches with sloping sides and a blanket of filter material approximately 3 feet on the bottom and sides. Perforated drainpipes are installed on the bottom of the trench to transmit the collected water. Stabilization trenches are placed in swales or ravines and under side hill fills, to stabilize fill foundation areas that are saturated.

Standard Specifications. Standards and design requirements, from the current version of "Engineering Management (EM) 7720-100," Forest Service Standard specifications for constructing roads and bridges, which direct Forest Service construction activities.

Stream Classification. The ordering of streams in a manner that reflects (1) flow characteristics, (2) present and foreseeable downstream values of the water, and (3) physical characteristics of the stream environment—as evaluation criteria. Class I is the highest value stream, Class IV is the lowest value stream.

Streamside Management Zone (SMZ). An administratively designated zone adjacent to ephemeral, intermittent, and perennial channels; and around standing bodies of water, wetlands, springs, seeps and other wet or marshland areas. SMZ is also meant to include other naming conventions for streamside buffering areas such as stream protection zone, riparian reserves, riparian habitat conservation areas, and so forth. SMZs are designed and delineated for the application of special management controls aimed at the maintenance and/or improvement of water quality. SMZ delineation may include floodplains and riparian areas when present. SMZ delineation can have synergistic benefits with other resources such as maintenance and improvement of riparian area-dependent resources, visual and aesthetic quality, wildlife habitat, and recreation opportunities.

Suitable Forest Land. Land that is subject to being managed for timber production on a sustained scheduled basis. Some determinants of land suitability for harvesting are reforestation potential, timber growth rate, economics, and land stability. Also included are forest lands where the land and resource management plan recognized an emphasis for achieving other key resource objectives, such as recreation, visual, wildlife, water, and so forth, in addition to timber management.

Timber Sale Contract Provisions. Often referred to by the section of the timber sale contract in which they occur:

1. B Provisions - Standard provisions for Forest Service timber sale contracts, located in section "b" of the contract.

2. C Provisions - Special provisions needed to tailor the timber sale contract to meet specific management objectives in R-5, located in section "c" of the contract.

Unsuitable Forest Land. Forest land that is not currently suitable for timber production. Some reasons for classifying land as unsuitable include: potential soil productivity loss and potential, irreversible damage to soil which cannot be prevented using current technology, mineral withdrawals, low-volume growth rates, and inadequate assurance that the land can be restocked within 5 years after harvest.

Watershed Restoration. The process of assisting the recovery of resilience and adaptive capacity of ecosystems that have been degraded, damaged, or destroyed. Restoration focuses on establishing the composition, structure, pattern, hydrologic function and ecological processes necessary to make terrestrial and aquatic ecosystems sustainable, resilient, and healthy under current and future conditions.

Wetlands. Those areas that are inundated by surface or groundwater with a frequency sufficient to support a prevalence of vegetation, or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, springs, seeps, wet meadows, river overflows, mud flats, and natural ponds.

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06 Exhibit 01
BEST MANAGEMENT PRACTICES REFERENCES By BMP Number

1.1	FSH 1909.15
1.1	FSH 2409.13, Chap. 21.41
1.1	R5.FSH 2409.26 Section 13
1.1	FSH 2509.18
1.1	NFMA
1.1	NEPA
1.1	TSC
1.1	FSM 1950
1.1	FSM 2531
1.2	NFMA
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1.2	FSM 2471.2
1.2	TSC Prov. C6.601 - R5
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1.8 R-5 FSH 2409.15, Sec. 61.51
1.8 FSM 1950
1.8 FSM 2526
1.8 R-5 FSH 2409.15, Sec. 15.21
1.8 NEPA
1.8 NFMA
1.8 TSC 2400-3 Standard Provision 11
1.8 TSC Prov. C5.421
1.8 TSC Prov. C6.411
1.8 TSC Prov. C6.5

1.9 FSM 2521
1.9 FSH 2509 18
1.9 FORM R5.2500-14
1.9 Timber Sale Area/Project Map, all contract forms

1.10 R-5 FSH 2409.15, Sec 61.42
1.10 R-5 FSH 2409.15, Sec. 51
1.10 TSC Prov. B6.42
1.10 TSC Prov. B6.424
1.10 TSC Prov. C6.41
1.10 TSC Prov. C6.422
1.10 TSC Prov. C6.424 Provisions

1.11 R-5 FSH 2409.15 Sec 61.41
1.11 TSC Prov. B6.42
1.11 TSC Prov. C6.425
1.11 TSC Prov. C6.427
1.11 TSC Prov. C6.429
1.11 TSC 2400-3 Standard Provision 1 and special provisions approved for specific sales

1.12 R-5 FSH 2409.15, Sec. 6.42
1.12 TSC Prov. B6.42
1.12 TSC Prov. C6.63
1.12 TSC Prov. C9.2

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1.12 OSHA Regulations
1.12 TSC 2400-3 Special Provision 12

1.13 TSC Prov. B4.225
1.13 TSC Prov. C6.6
1.13 TSC Prov. C6.422
1.13 R-5 FSH 2409.15, Sec. 61.41 & 61.42
1.13 R-5 FSH 2409.15, Sec. 51.6
1.13 TSC 2400-3, Special Provision 10

1.14 TSC Prov. B6.6
1.14 TSC Prov. C6.6
1.14 TSC Prov. C6.602 - R5
1.14 R-5 FSH 2409.15, Sec. 6.42
1.14 FSH 2509.11
1.14 TSC 2400-3 Special Provision 9 & 10

1.15 R-5 FSH 2209.23, Cap. 50
1.15 R-5 FSH 2409.15, Sec. 6.42
1.15 TSC Prov. B6.6
1.15 TSC Prov. C6.6
1.15 TSC Prov. C6.601.R5

1.16 TSC Prov. B6.422
1.16 TSC Prov. B6.6
1.16 TSC Prov. B6.63
1.16 TSC prov. C6.428
1.16 TSC Prov. C6.6
1.16 TSC Prov. C.6.601.R5
1.16 TSC Prov. C6.602.R5
1.16 TSC prov. C6.63
1.16 R-5 FSH 2409.15, Sec. 51
1.16 TSC 2400-3, Special Provisions 10 & 12

1.17 TSC Prov. B6.6
1.17 TSC Prov. B6.66
1.17 TSC Prov. C6.601.R5
1.17 TSC Prov. C6.64
1.17 R-5 FSH 2409.15, Sec. 61.42
1.17 R-5 FSH 2409.15, Sec. 51.64

06 Exhibit 01--Continued
BEST MANAGEMENT PRACTICES REFERENCES By BMP Number

1.17 TSC 2400-3, Special Provision 10

1.18 TSC Prov. B6.61
1.18 TSC Prov. C6.5
1.18 TSC Prov. C6.61
1.18 TSC Prov. C6.62
1.18 R-5 FSM 2526
1.18 R-5 FSH 2409.15, Sec. 24.1
1.18 R-5 FSH 2409.15, Sec. 51.61
1.18 Executive Order 11990
1.18 TSC 2400-3, Special Provisions 9 & 12

1.19 FSH 2409.26, Sec. 13
1.19 R-5 FSH 2409.15, Sec. 15.54 and 61
1.19 R-5 FSH 2509.22, Cap. 30
1.19 R-5 FSM 2526
1.19 TSC Prov. B6.5
1.19 TSC Prov. B6.6
1.19 TSC Prov. C6.427
1.19 TSC Prov. C6.5
1.19 TSC Prov. C6.6
1.19 TSC 2400-3, Special Provision 11

1.20 TSC Prov. B4.225
1.20 TSC Prov. B6.6
1.20 TSC Prov. B6.66
1.20 TSC 2400-3, Special Provision 9

1.21 R-5 FSH 2409.15, Sec. 51, 54 & 61
1.21 R-5 FSH 2409.15, Sec. 15
1.21 TSC Prov. B6.6
1.21 TSC Prov. B6.63
1.21 TSC Prov. B6.64
1.21 TSC Prov. B6.65
1.21 TSC Prov. B6.66
1.21 TSC Prov. C6.601
1.21 TSC Prov. C6.602
1.21 TSC Prov. C6.603
1.21 TSC Prov. C6.6
1.21 TSC Prov. C6.63

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1.21 TSC 2400-3 Provision 9

1.22 R-5 FSH 2409.15, Sec. 61.5
1.22 R-5 FSH 2409.15, Sec.15
1.22 FSM 1950
1.22 TSC Prov. C6.7
1.22 TSC Prov. C6.73
1.22 TSC Prov. C6.76
1.22 TSC Prov. C6.77
1.22 TSC Prov. C6.78
1.22 TSC 2400-3, Prov. 7 & 11

1.23 FSH 2409.13, Chap. 21, 42
1.23 FSH 2409.26, Sec 12 & 13
1.23 FSM 2470.3
1.23 NFMA
1.23 TSPP

1.24 FSH 2409.18, Sec. 42.2 & 53.23
1.24 TSPP
1.24 TSC 2400-3. [page 1

1.25 TSC Prov. B8.3
1.25 TSC Prov. C8.2
1.25 TSC Prov. C8.3
1.25 CFR 223.113
1.25 CFR 223.116
1.25 TSC 2400-3, Prov. 3, 18 & 41

2.1 FSM 7700
2.1 FSM 7710
2.1 FSM 7709.55
2.1 FSM 7709.59, Chap. 10

2.2 FSH 7720
2.2 FSH 7709.56

2.3 FSH 7709.57
2.3 FP-03, Sections 105, 107, and 200

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2.4 FSM 7700
2.4 FSM 7710
2.4 FSM 7700, Chap. 30
2.4 FSH 7709.58
2.4 FSH 7709.59
2.4 Timber Sale T800 specifications

2.5 none

2.6 FSH 7709.59, Chap. 60

2.7 FSM 7734

2.8 FSM 7720
2.8 FSH 7709.56, Chap. 10
2.8 FP-03 Sections 157, 200, 550, and 600

2.9 FSM 7732.17
2.9 FSH 7732.25

2.10 none

2.11 FSM 2160
2.11 FSH 7109.19
2.11 FP-03 Section 107.10

2.12 FSM 2520 (R-5 supplement)
2.12 FSM 2853 (including R-5 supplement)
2.12 FP-03, Sections 105, 107, and 150

2.13 FSM 7700
2.13 FSH 7709.56
2.13 FSH 7709.57
2.13 FP-03 Sections 157 and 158
2.13 CASQA BMP Handbook
2.13 California DOT Stormwater and Water Pollution Control Guidelines

3.1 FSM 2817
3.1 FSM 2817.3
3.1 FSM 2810.1 & .4

06 Exhibit 01--Continued
BEST MANAGEMENT PRACTICES REFERENCES By BMP Number

3.1 FSM 2813.14 & .2
3.1 FSM 28.14.11 - .16
3.1 FSM 2509.15
3.1 FSH 2809.11
3.1 FSH 2809.12
3.1 30 CFR 212 Transportation regulations
3.1 30 USC 21.54 et. seq.
3.1 36 CFR 228.1; 228.4 (a), (e), (f) 228.8 (b), (c), (e), (f), (g); 228.5 (b)
3.1 36 CFR 261.10 (a)
3.1 16 USC 478
3.1 16 USC 551
3.1 16 USC 1151 et. seq.
3.1 NEPA
3.1 RCRA
3.1 CERCLA
3.1 30 USC 6112

3.2 FSM 1531.12d
3.2 FSM 2522.14
3.2 FSM 2822
3.2 FSH 2509.15
3.2 FSH 2809.11
3.2 FSH 2809.12
3.2 Mineral Leasing Act of February 25, 1920 (41 Stat. 437, as amended; 30 USC 181)
3.2 Federal Coal Leasing amendments Act of August 4, 1976 (90 Stat. 1083; 30 USC201 (a) 201(b), and 207; 17 USC 1276)
3.2 Act of March 4, 1917 (39 Stat. 1150, as supplemented; 16 USC 520)
3.2 Section 402 of Reorganization Plan No. 3, of July 16, 1946 (60 Stat. 1097, 1099; 5 USC Appendix)
3.2 Act of August 7, 1947 (61 Stat. 913; 30 USC 351, 352, 354, 359) as amended by PL 167 Geothermal steam Act

3.3 FSM 2522.14
3.3 FSM 2850
3.3 FSH 2509.15
3.3 FSH 2809.11
3.3 FSH 2809.12
3.3 36 CFR 228, Subpart c

06 Exhibit 01--Continued
BEST MANAGEMENT PRACTICES REFERENCES By BMP Number

3.3 Act of July 31, 1947 (61 Stat. 681), as amended by the Act of August 31, 1950 (64 Stat. 571), and the Act of July 23, 1955 (69 Stat. 367; 30 USC 601.603), and pursuant to the Act of June 11, 1960 (74 Stat. 205), and the Act of September 25, 1962 (76 Stat. 587)

4.1 FSM 2335.2
4.1 R-5 FSM 2335.2
4.1 EPA Water Quality criteria, 1976, pg. 44

4.2 Safe Drinking Water Act (PL 95.190)
4.2 State and Local Codes
4.2 National Interim Primary Drinking Water Regulations (40 CFR 141)
4.2 FSM 2332.2
4.2 FSM 2332.54
4.2 FSM 7420
4.2 R-5 FSM 7420
4.2 R-5 FSM 7421
4.2 FSM 7421
4.2 FSM 7422
4.2 R-5 FSM 7422
4.2 FSH 7409.11

4.3 FSM 7421.25
4.3 FSM 2335.2
4.3 R-5 FSM 2335.2
4.3 FSM 2532.03
4.3 R-5 FSM 7421

4.4 State and Local Codes such as; Regional Water Quality Control Board Basin Plans, Public Health Codes, and so on.
4.4 36 CFR 261.11(a)
4.4 FSM 2333.52
4.4 FSM 2332.3
4.4 FSM 7430.1
4.4 FSM 7441
4.4 FSM 7462
4.4 FSH 7409.11

4.5 36 CFR 261.11 (b,d,e)
4.5 Resource Conservation and Recovery Act (PL 94.580)
4.5 FSM 2332.41

06 Exhibit 01--Continued
BEST MANAGEMENT PRACTICES REFERENCES By BMP Number

4.5 FSM 2333.53
4.5 FSM 7462

4.6 FSM 2333.52 & .53
4.6 FSM 2332.3
4.6 FSM 2345
4.6 FSM 2334.28
4.6 FSM 7430.1
4.6 FSM 7441
4.6 FSH 7409.11

4.7 Executive Order 11644
4.7 FSM 2355
4.7 FSM 2355.5
4.7 FSM 2355.01
4.7 FSM 2532.5
4.7 36 CFR 261.13
4.7 36 CFR 261.56
4.7 36 CFR 295.5

4.7.1 FSM 7710
4.7.1 FSH 7709.55
4.7.1 FSH 7709.59 chapter 10

4.7.2 FSM 7720
4.7.2 FSH 7709.56

4.7.3 FSM 7722 and
4.7.3 FSH 7709.56b

4.7.4 FSH 7709.57

4.7.5 none

4.7.6 FSM 7732
4.7.6 FSH 7709.58
4.7.6 FSH 7709.59, chapter 60

4.7.7 none

06 Exhibit 01--Continued
BEST MANAGEMENT PRACTICES REFERENCES By BMP Number

4.7.8 FSM 7734

4.7.9 FSM 2160
4.7.9 FSH 7109.19 chapter 40

4.8 36 CFR 261.14(c)

4.9 36 CFR 261.11 (b), (c)
4.9 36 CFR 261.14(q)
4.9 36 CFR 261.50
4.9 36 CFR 261.58
4.9 FSM 2323.4
4.9 SM 2333.35
4.9 FSM 2502

4.10 FSM 2323.138

5.1 R-5 FSH 2209.23, Sec. 234.3
5.1 Brushland Management ES, 1972 Forest Reestablishment on National Forest in California ES, 1974

5.2 FSH 2209.23, Sec. 322
5.2 FSH 2209.23, Sec. 332
5.2 FSH 2209.23, Sec. 331.1
5.2 FSH 2409.15, Sec. 51, Sec. 41, 42 & 43
5.2 “Brushland Management” EIS, 1972 “Vegetation Management for Reforestation” Draft 1987

5.3 FSH 2521
5.3 FSM 2526
5.3 R-5 FSH 2209.23, Sec. 221
5.3 R-5 FSH 2209.23, Sec. 234.7
5.3 R-5 FSH 2409.15, Sec. 51.43
5.3 R-5 FSH 2409.15, Sec. 51.61
5.3 “Brushland Management” EIS, 1972
5.3 “Vegetation Management for Reforestation” Draft 1987

5.4 R-5 FSH 2209.23, Sec. 500
5.4 FSH 7709.56, Sec. 4

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BEST MANAGEMENT PRACTICES REFERENCES By BMP Number

5.4 FSH 7709.56, Sec. 5
5.4 FSM 2240.2
5.4 FSM 2240.3
5.4 FSM 2405.13
5.4 "Brushland Management" EIS, 1972
5.4 "Vegetation Management for Reforestation" Draft 1987

5.5 R-5 FSH 2209.23
5.5 R-5 FSH 2209.23, Sec. 232
5.5 R-5 FSH 2209.23, Sec.322
5.5 R-5 FSH 2209.23, Sec. 331.1
5.5 "Brushland Management: EIS, 1972
5.5 "Vegetation Management for Reforestation" Draft 1987

5.6 FSM 2521
5.6 R-5 FSH 2209.23
5.6 "Brushland management EIS, 1972
5.6 "Vegetation Management for Reforestation" Draft 1987

5.7 R-5 FSH 2209.23
5.7 R-5 FSH 2209.23, Sec. 331.14
5.7 FSM 2472.31
5.7 "Brushland Management" EIS, 1972
5.7 "Vegetation Management for Reforestation" Draft 1987

5.8 FSH 1909.15
5.8 FSH 2109.11, Sec. 93
5.8 FSM 2150, 2151
5.8 FSM 2150.3
5.8 FSM 2151
5.8 FSM 2153.2, 2153.2, 2155
5.8 FSM 2155
5.8 FSM 2240.2, .1
5.8 FSM 2243.32 - 34
5.8 FSM 2243
5.8 FSM 2257.9
5.8 FSM 2501
5.8 FSM 2502
5.8 FSM 2503
5.8 FSM 2504

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5.8 FSM 2520.3
5.8 FSM 2521.02. -03
5.8 FSM 2521
5.8 FSM 2525
5.8 FSM 2526
5.8 FSM 2527
5.8 FSM 2530, 2532
5.8 FSM 2542
5.8 FSM 2504.1, .2, & .3
5.8 FSM 2530.45
5.8 FSM 2510.41, .42 & .43
5.8 FSM 2521.04b, .04c
5.8 FSM 3403.1
5.8 FSM 3404
5.8 FSM 3421
5.8 FSM 3423
5.8 FSM 3431
5.8 FSM 3433
5.8 FSM 3403.1
5.8 FSM 7443
5.8 FSM 7462.52
5.8 FSH 2109.12
5.8 R-5 FSH 2109.21
5.8 R-5 FSH 2209.23, Sec. 221
5.8 R-5 FSH 2209.23, Sec. 231.15
5.8 R-5 FSH 2209.23, Sec. 231.17
5.8 Pesticide Background Statements Volume 1. Herbicides, August 1984, USDA Forest Service Agriculture Handbook, Number 633
5.8 NFMA
5.8 NEPA

5.9 FSM 2150.3.7
5.9 FSM 2150.3.10
5.9 FSM 2155
5.9 FSM 2243.34, .4, .5
5.9 FSM 2542
5.9 FSM 3403.1
5.9 FSM 3404
5.9 R-5 FSH 2109.21
5.9 R-5 FSH 2209.23, Sec. 231.12

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5.9 R-5 FSH 2209.23, Sec. 231.13

5.10 FSH 1909.15
5.10 FSM 2150.3
5.10 FSM 2150.3.9
5.10 FSM 2153.2
5.10 FSM 2155
5.10 FSM 2158
5.10 FSM 2525
5.10 FSM 2530, 2532
5.10 FSM 2542
5.10 FSM 3403.1
5.10 FSM 3404
5.10 FSM 3421
5.10 FSM 7443
5.10 R-5 FSH 2109.21
5.10 R-5 FSH 2209.23, Sec. 231.17
5.10 Practice 7 - 6

5.11 FSM 2150.3.4
5.11 FSM 2153.3
5.11 FSM 2155
5.11 FSM 2157
5.11 FSM 2158
5.11 FSM 2542
5.11 FSM 3403.1
5.11 FSM 7443
5.11 FSM 7462.52
5.11 FSH 2109.12
5.11 R-5 FSH 2109.21
5.11 USDA - FS Agriculture Handbook Number 633
5.11 Practice 7 - 4

5.12 FSM 2150-3.7
5.12 FSM 2153.3
5.12 FSM 2155
5.12 FSM 2157
5.12 FSM 2542
5.12 FSM 3403.1
5.12 FSM 3404

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5.12 FSM 7462.52
5.12 FSH 2109.12
5.12 R-5 FSH 2109.21
5.12 R-5 FSH 2209.23, Sec. 231.15
5.12 40 CFR 165

5.13 FSM 2153.2
5.13 FSM 2153.20
5.13 FSM 2153.3
5.13 FSM 2155
5.13 FSM 2521
5.13 FSM 2526
5.13 FSM 2527
5.13 FSM 2542
5.13 FSM 3403.1
5.13 FSM 3404
5.13 R-5 FSH 2109.21
5.13 R-5 FSH 2209.23, Sec. 221 & 222.2

5.13 USDA-FS Agriculture Handbook Number 633

5.14 FSM 2155
5.14 FSM 3403.1
5.14 FSM 3404
5.14 R-5 FSH 2109.21
5.14 R-5 FSH 2209.23, Sec. 231.11
5.14 R-5 FSH 2209.23, Sec. 231.14
5.14 R-5 FSH 2209.23, Sec. 231.15
5.14 R-5 FSH 2209.23, Sec. 231.17

6.1 “Brushland management” EIS, 1972
6.1 FSH 1909.15
6.1 FSM 1950
6.1 FSM 5100
6.1 FSM 5102
6.1 FSM 5103
6.1 FSM 5140
6.1 FSM 5150
6.1 FSM 5194

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6.2 FSM 5140

6.3 FSM 5140

6.4 FSH 5109.32
6.4 FSM 5130
6.4 FSM 5130.3

6.5 FSH 2509.13
6.5 FSM 2523.1
6.5 FSM 5130.3
6.5 FSM 5194

6.6 FSH 2509.13
6.6 FSM 2523

7.1 FSM 2510.43
7.1 FSM 2512
7.1 FSM 2522.2
7.1 FSM 2522.04b
7.1 NFMA Sec. 219.23e

7.2 Executive Order 11988
7.2 FSH 1909.15
7.2 R-5 FSH 2509.22, Chap. 30
7.2 FSM 2526
7.2 R-5 FSM 2526
7.2 FSM 2527.04b, 04c
7.2 FSM 7721.16

7.3 Executive order 11990
7.3 FSM 2471.2
7.3 FSM 2526
7.3 R-5 FSM 2526
7.3 FSM 2527.04b, 04c
7.3 R-5 FSM 2532
7.3 R-5 FSH 2509.22, Chaps. 30 & 40

7.4 TSC B6.34
7.4 FSM 7442

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7.4 FSM 7440 R5 SUPP 7400-92.4
7.4 R-5 FSM 7443
7.4 TSC C6.341
7.4 Practice 5.11 & 2.12
7.4 40 CFR 112
7.4 FSH 6309.32 (FAR), Landscape Preservation
7.4 Executive Order 12856
7.4 State Above Ground Petroleum Storage Act of 1995, Chap 6.67, California State Health and Safety Code

7.5 FSH 2709.11
7.5 FSM 2703
7.5 FSM 2716.3
7.5 FSM 2713.3
7.5 FSM 2772.1
7.5 FSM 2709.11, Chap. 50
7.5 FSM 2721.61c

7.6 FSM 1922.7
7.6 FSM 2532
7.6 R-5 FSM 2532
7.6 FSM 2355.05
7.6 36 CFR 261.9e, .52, .53e, .58 & .56

7.7 Executive Order 11644
7.7 Executive Order 11989
7.7 36 CFR 261
7.7 FSM 2542.2
7.7 R-5 FSM 7731.4

7.8 FSM 2431
7.8 R-5 FSH 2509.22, Chap. 20
7.8 NEPA Sec. 1508.25 (a) & (c)

8.1 FSM 2210
8.1 FSM 2250
8.1 R-5 FSM 2526
8.1 36 CFR 222
8.1 FSH ID 2209.13.96.1

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8.1 R5.EM-TP-004

8.2 FSM 2230
8.2 FSM 2240
8.2 FSM 2250
8.2 FSH 2209.13
8.2 36 CFR 222
8.2 R5.EM-TP-004

8.3 R-5 FSM 2526
8.3 FSM 2230
8.3 FSM 2240
8.3 FSM 2250
8.3 R5.EM-TP-004

11 - INTRODUCTION

1. The Organic Administration Act of June 4, 1897, which created the National Forest System (NFS), established as a primary purpose of the forests the "securing of favorable conditions of water flow." In the years since Congress approved that act, the national forests in California have generally provided a high level of protection for the headwaters of the State. For example, a recent statewide survey found that streams in forested watersheds were in better condition than streams in watersheds in any other land use (Ode 2007). Water quality of the Sacramento River and its tributaries, which drain primarily NFS lands, have generally good quality and support their beneficial uses (Domagalski and others 2000). Sediment and nutrient loads from forested watersheds in the Sierra Nevada, including large areas within national forests, were found to be substantially lower than loads from downstream agricultural areas and significantly lower than average pollutant loads nationwide (Kratzer and Shelton 1998). Ahearn and others (2005) compared water quality in the upper Consumnes River watershed, which is mostly national forest, to the more agricultural and heavily populated lower watershed, and found that "upland drainages tended to deliver dilute, clear waters to the lowlands, while lower elevation sub-watersheds produced more turbid waters with elevated levels of constituents" (p. 242).

2. Nevertheless, resource-management and protection activities on NFS lands have the potential to result in nonpoint source pollution of the State's waters, and continual efforts are needed to maintain and improve water quality. The USDA Forest Service (USFS) has as its goal the ecological restoration of NFS lands in California (Forest Service Manual (FSM) 2020, USFS Pacific Southwest Region Leadership Intent 2010), and water quality is an important component of forest ecosystems. Recognizing increasing stresses on the environment, new regulatory developments, and its responsibility for leadership in ecological restoration within the state, the Forest Service has worked with the State Water Resources Control Board (SWRCB), the Regional Water Quality Control Boards (Regional Boards), tribes, and stakeholders to develop this revised Water Quality Management Handbook for NFS lands in California.

3. The FSM directs that best management practices (BMP) will be used to control nonpoint source pollution related to all management actions with the potential to affect water quality on NFS lands (FSM 2532). BMPs are the practices that both the Federal and State water-quality regulatory agencies expect the Forest Service to implement to meet its obligation for complying with applicable water-quality laws and standards, and to maintain and improve water quality. BMPs address protection of water quality from new and ongoing activities. Restoration of water-quality problems resulting from past land uses (legacy sites) is also an important component of this plan.

4. A decision by the Ninth Circuit Court of Appeals in August 2010 will result in many NFS roads being classified and regulated as point sources. The regulatory process that will be used for roads meeting criteria for point sources has not yet been developed. This Water Quality Management Handbook includes all road-related BMPs developed for management of roads as nonpoint sources. The Forest Service fully intends to comply with any future point source regulatory process the State of California and the U.S. Environmental Protection Agency (EPA) develop for forest roads.

5. Monitoring by the Forest Service (USFS 2004, 2009) indicates that improved implementation of BMPs is likely to be the most effective approach to improving protection of water quality on NFS lands. Most of this revised handbook focuses on steps to improve BMP implementation through changes in administrative practices and adaptive management. The handbook also includes several new BMPs to address developing water-quality issues and revisions of several BMPs selected on the basis of monitoring results and priorities as described in section 12.

6. This Water Quality Management Handbook for NFS lands in California describes background, legal, and policy basis for the handbook, BMPs that will be used for controlling nonpoint source pollution, processes for implementing those BMPs, an adaptive management system to continually improve BMPs, restoration of legacy water-quality problems, a monitoring plan to evaluate the success of the handbook, specific measures for total maximum daily load (TMDL) implementation, and needed future actions. The Forest Service will use these BMPs and processes to comply with provisions of:

a. Federal water-quality statutes and regulations, including the Clean Water Act, the Coastal Zone Act Reauthorization Amendments, and the related regulations of the EPA.

b. California's water-quality requirements, including the Porter-Cologne Water Quality Control Act; the five elements of implementation and enforcement for the SWRCB Non-point Source Pollution Control Policy; the Basin Plans of the RWQCBs; and water-quality control regulations, plans, policies, and program plans approved by the SWRCB pursuant to the foregoing Federal and State statutes.

The provisions of this Water Quality Management Handbook are designed to conform and comply with all of these legal requirements, as well as with applicable Forest Service directives.

7. Section 313 of the Clean Water Act states that the Federal Government is subject to and will comply with all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution in the same manner, and to the same extent as any nongovernmental entity. This

means the Forest Service must use nonpoint source controls, including BMPs, approved by the State.

8. Several different relationships occur throughout the United States regarding State-specific BMPs and NFS lands. States usually have their own sets of BMPs, and when they do, the Forest Service adheres to them. A second situation occurs when the Forest Service has authored the BMPs and a state has agreed that those practices conform to state requirements. The use of Forest Service-authored BMPs is usually formalized through a memorandum of understanding. The third situation occurs when Forest Service-authored BMPs have gone through a formal public review process, been approved by the state and/or EPA, and the governor of the state has designated the Forest Service as the water-quality management agency for NFS lands within the state. In California, the State is the final authority on adequacy of BMPs.

9. Water-quality regulation of activities on NFS lands is the result of both Federal and State laws. As noted above, Congress, in amending the Federal Water Pollution Control Act (Clean Water Act) in 1972, waived sovereign immunity for Federal agencies, and included in the law a requirement that Federal agencies comply with all state and local laws pertaining to water quality to the same extent as nonfederal entities. The State's Porter-Cologne Water Quality Control Act was chaptered in 1969, augmenting the State Water Resources Control Board (SWRCB) and establishing the nine Regional Water Quality Control Boards (RWQCB). The Federal Water Pollution Control Act of 1972 was amended by the Clean Water Act of 1977. Clean Water Act Section 208 provided authority and funding for states to develop water quality management plans and to designate water quality management agencies with primary responsibility for implementing those plans. The water quality management plans were to address, among other things, nonpoint source pollution. EPA promulgated regulations specifying the contents required in a water quality management plan (including best management practices and the process by which they were to be implemented), the process to be used for water-quality management plan development, and the qualifications required of a management agency (40 CFR, Part 130, Section 130.6).

10. The Porter-Cologne Water Quality Control Act authorized the SWRCB to exercise any powers delegated to the states by the Federal Water Pollution Control Act or subsequent amendments. Also, the governor delegated to the SWRCB the authority granted by Clean Water Act Section 208 to certify proposed water quality management plans for the State. Accordingly, the Forest Service and SWRCB initiated a 208 water quality management planning process for nonpoint source activities on NFS lands in California. The Forest Service, including the Pacific Northwest Region, the Pacific Southwest Region, and the Intermountain Region, drafted a proposed water quality management plan for NFS lands in California, and the SWRCB reviewed the draft water quality management plan.

11. In 1981, the SWRCB, in accordance with Clean Water Act Section 208, took the following actions:

a. The SWRCB certified the document titled "Water Quality Management for National Forest System Lands in California" as a water quality management plan.

b. The SWRCB designated the Forest Service (all three Regions) as the management agency with primary responsibility for water quality management plan implementation.

c. The SWRCB executed a management agency agreement with the Forest Service setting forth the latter's commitment to implementing the water-quality management plan, and expressing the anticipation that Regional Boards would waive imposition of waste discharge requirements under the Porter-Cologne Water Quality Control Act.

12. In accordance with EPA regulations, all these SWRCB actions were submitted to the EPA for approval, which was granted in 1981.

13. During the following 20 years, a number of new Federal and State laws were enacted that affected the status of the water quality management plan and accompanying management agency agreement. In 1987, the Federal Water Quality Act was approved, adding Section 319 to provide funding for implementing nonpoint source management plans. Congress eliminated funding for implementing Section 208. In 1988, SWRCB adopted the "Source of Drinking Water" Policy (SWRCB Resolution 88.63). The Coastal Zone Act Reauthorization Amendments of 1990 (Section 6217) required affected states to develop nonpoint source control programs for waters that flowed to the ocean. The EPA promulgated "Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters" to implement it, specifying the contents of such plans and requiring implementation of specific "management measures" (mostly performance standards) for silviculture and some other nonpoint sources of pollution. In 1999, SB390 amended the Porter-Cologne Act to formalize requirements for waivers of Waste Discharge Requirements.

14. In 2000, the Forest Service, SWRCB, and the RWQCBs collaboratively reviewed and revised the water quality management plan and BMPs. Revisions primarily involved the references cited for the BMPs. The SWRCB deemed these changes to be administrative and non-substantive, so re-certification of the water quality management plan was not needed.

15. Additional major changes in California's water-quality regulatory landscape occurred after approval of the revised water quality management plan in 2000:

a. The Porter-Cologne Act was amended to require that all Water Board waivers of waste discharge requirements be formal, temporary, conditional, and include

monitoring as a condition. Two Regional Boards have adopted conditional waivers of waste discharge requirements for timber harvesting and vegetation management, and one has adopted a waiver covering most resource-management activities on NFS lands.

b. The SWRCB was, for the first time, authorized to adopt its own waivers, which could be statewide.

c. Pursuant to the Coastal Zone Act Reauthorization Amendments and EPA (g) guidance regulations, SWRCB and the State Coastal Commission adopted, and EPA approved, California's Nonpoint Source Pollution Control Program (NPS Program Plan), which sets forth "management measures" (mostly performance standards) for silviculture and several other activities that generate nonpoint source pollution. The EPA holds the State accountable for conforming to these management measures.

d SWRCB adopted the policy titled "Implementation and Enforcement of the Nonpoint Source Pollution Control Program" (NPS Policy). It sets forth key elements for a third-party nonpoint source pollution-control program.

e. SWRCB adopted the policy titled "Addressing Impaired Waters: Regulatory Structure and Options." It sets forth alternative ways of meeting TMDL goals.

f. Many water bodies on and downstream of NFS lands were added to the State's section 303(d) list of impaired water bodies.

g. The National Marine Fisheries Service and the State Department of Fish and Game began listing various populations of anadromous salmonids and steelhead trout as threatened or endangered pursuant to the Federal or State Endangered Species Acts, a process that is still continuing. NFS lands harbor much of the remaining habitat and refugia for some of these populations, especially along the North Coast.

h. The EPA and the North Coast Regional Board began calculating sediment and thermal pollution TMDLs (which are the two most frequently observed pollutants contributing to water-body impairment on NFS lands), and the Regional Board has been developing TMDL implementation plans.

i. The Forest Service began developing a set of national core BMPs.

16. The many changes indicated that the 2000 water quality management plan needed to be significantly revised and updated, and that the regulatory mechanisms needed to be reconsidered and streamlined. This Water Quality Management Handbook is the immediate successor to the 2000 water quality management plan.

17. This Water Quality Management Handbook is related to other Forest Service directives and programs that govern water-quality protection and improvement on NFS lands. These directives and programs are briefly described in this section.

18. Forest Service activities are governed by a planning framework that includes general policies and directives, as well as specific standards and guidelines. The Forest Service planning framework includes formal directives contained in the Forest Service Manual (FSM) and Forest Service Handbook (FSH), standards and guidelines from provincial and national forest plans, and the Forest Service Watershed Improvement Program.

19. Key water quality components of the Forest Service planning framework are described below:

a. Land and Resource Management Plans - Each national forest has a Land and Resource Management Plan (LRMP), also known as a "forest plan." These plans provide broad guidance for forest management over relatively long (10 to 15 years) periods. LRMPs determine areas within each forest that are suitable for different resource management activities, including timber harvest, livestock grazing, and recreation, and establish desired conditions for forest resources. LRMPs include plans for wildfire suppression and standards and guidelines for activities and projects within the national forest. LRMPs are prepared and analyzed under NEPA.

b. Northwest Forest Plan (NWFP) - The NWFP includes an assessment and planning process for the Six Rivers, Klamath, Mendocino, Shasta-Trinity, and Rogue River-Siskiyou National Forests, as well a portion of the Modoc National Forest. The NWFP amended the LRMPs for these forests in 1994.

20. The Aquatic Conservation Strategy (ACS) of the NWFP (http://www.reo.gov/library/reports/newsandga.pdf) has nine objectives for maintaining and restoring the function, diversity, and integrity of the riparian and aquatic system, including water-quality protection:

a. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted.

b. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

c. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

d. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

e. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

f. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

g. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

h. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration; and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

i. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

21. Key watersheds comprise a system of large refugia for fish and wildlife based at the watershed scale. Key watersheds comprise nearly 40 percent of Forest Service lands within the forests managed under the NWFP, and are managed to maintain or recover habitat for anadromous and resident fish species. Key watersheds have a high priority for restoration. Specific road management guidelines apply to key watersheds: 1) no new roads in roadless areas within key watersheds; 2) no new roads in unroaded portions of roadless areas within key watersheds; and 3) reduction in existing road mileage within key watersheds (no net increase if funding is insufficient to implement reductions).

22. Riparian reserves are a key component of the ACS and comprise lands along streams and unstable and potentially unstable areas where special standards and guidelines direct land use. Riparian reserves apply to all ephemeral, intermittent,

and perennial streams, and geologically unstable areas. These reserve areas maintain hydrologic, geomorphic, and ecological processes that directly affect streams and fish habitats. Widths of the reserves can range from a minimum of 100 feet on each side of ephemeral and/or intermittent streams to over 300 feet on each side of perennial fish-bearing streams. Only activities that protect or enhance ACS objectives are permissible within a riparian reserve. Riparian reserves serve to protect aquatic resources and water quality from timber-harvesting activities, road building, and other nonpoint source activities such as grazing, by maintaining a diverse riparian community, a buffer area from upslope activities, canopy for shade and aquatic nutrition, and filtration of sediment from hillslopes.

23. Watershed analysis, another component of the ACS, is required for all 5th-field watersheds managed under the NFWP. Watershed analysis is a process that evaluates the geomorphic and ecological processes operating in a watershed, and is intended to enable watershed planning to achieve ACS objectives. Watershed analysis provides the basis for monitoring and restoration programs. Watershed analysis informs restoration planning efforts by identifying watershed problems, such as erosional features, problem roads and road sections, and riparian areas not meeting the ACS objectives, as well as identifying those areas that should be preserved from any activities.

24. The Sierra Nevada Framework Plan Amendment (SNFPA), amended in 2004 (http://www.fs.fed.us/r5/snfpa/final-seis/), is analogous to the NWFP. The SNFPA provides similar guidance for forests in the Sierra Nevada and Modoc Plateau, including the Modoc, Lassen, Plumas, Tahoe, Eldorado, Stanislaus, Sierra, Inyo, and Sequoia National Forests, and the Lake Tahoe Basin Management Unit. The SNFPA includes an Aquatic Management Strategy (AMS) similar to the ACS. The SNFPA equivalent to the riparian reserve is the “riparian conservation area,” and the SNFPA equivalent to key watershed is “critical aquatic refuge.” The SNFPA equivalent to “watershed analysis” is “landscape analysis.”

25. The four southern California national forests (Los Padres, Angeles, San Bernardino, and Cleveland National Forests) have consistent LRMPs that are comparable to the NWFP or SNFPA. Although each southern California national forest has its own LRMP, they all have adopted similar supplements to the Forest Service Handbook (FSH 2509-22) that provide protection to riparian conservation areas similar to the protection afforded through the NWFP and SNFPA.

26. The Forest Service Watershed Improvement Program (WIP) is a nationwide program that guides assessment of watershed conditions, inventories and identifies watershed restoration needs, and implements restoration activities. Implementation of the WIP results in assessment and restoration on a watershed scale.

27. In accordance with the WIP, each forest identifies priority watersheds for restoration, and essential projects that will improve watershed condition. The intent of the program is to focus watershed restoration activities in priority watersheds and progress through the priority watersheds in a stepwise manner, eventually providing assessment and restoration for all the watersheds. As described in more detail below, priority watersheds receive heightened water-quality protection under Forest Service guidance and are integral for maintaining sanctuary habitats for threatened and endangered species and unique plant and animal communities. Watershed restoration projects are not limited to priority watersheds, and are used to address watershed issues and water-quality problems in lower priority watersheds.

Primary components of the WIP are:

a. Priority watershed selection

b. Watershed assessments or watershed analyses

c. Watershed improvement needs inventories

d. Essential project identification (for example, road crossings, road decommissioning, and landslide stabilization)

e. Watershed restoration plans

f. Annual watershed improvement accomplishments reporting

28. Forest Service directives that provide guidance for watershed-scale planning, restoration, and assessment, include:

a. The Forest Service Region 5 FSH 2509.22 Soil and Water Conservation Handbook, chapter 20 (July 1988), requires that the Forest Service assess and consider the potential for cumulative watershed effects of proposed activities. The Forest Service Pacific Southwest Region Cumulative Watershed Effects policy provides an approach to assessing the potential for cumulative watershed effects related to management activities on NFS lands. The approach uses the equivalent roaded area model to make a preliminary assessment of watershed conditions by comparing effects of past, existing, and reasonably foreseeable actions to a watershed threshold of concern. More detailed analyses are required when equivalent roaded area totals equal or exceed the threshold of concern. National Forests may use scientifically valid empirical and physically-based models such as Water Erosion Prediction Project (WEPP) model to guide the development of disturbance coefficients and thresholds of concern. The assessment of potential cumulative watershed effects is included in NEPA analyses and can guide selection of alternatives by decision makers.

FSM chapter 2520 provides national direction for watershed condition assessment, watershed improvement, emergency burned area response for wildfires, monitoring, riparian area management, floodplain management and wetland protection, emergency watershed protection, and natural disaster and flood damage surveys. Watershed improvement activities include road decommissioning, meadow restoration, and reforestation of burned areas.

29 FSM chapter 2020 (September 2008) provides a policy for using ecological restoration in managing NFS lands, further supporting watershed analysis and restoration, and the ACS. Policy

11.1 - NEPA and the Interdisciplinary Approach

The NEPA process is crucial for developing site-specific methods and techniques for applying BMPs to fit individual project needs. Direction for environmental evaluations and preparation of environmental documents to comply with NEPA are contained in established NFS policy and procedures found in FSM 1900, FSM 1950, and FSH 1909.15. These references also contain direction to incorporate the interdisciplinary process into planning and decision making. Under NEPA, interdisciplinary involvement is required to evaluate projects that may influence water quality and to develop the appropriate BMP applications for maintaining and improving water quality. The line officer responsible for a project selects and convenes an interdisciplinary team to evaluate a proposed activity, and assigns them the task of formulating and evaluating alternatives. A major part of the team evaluation is an analysis of environmental consequences. Alternatives that are likely to result in significant long-term adverse effects to water quality and associated beneficial uses, even with full application of BMPs, will not be considered viable alternatives.

An interdisciplinary team is comprised of individuals representing two or more areas of professional knowledge and skills. They are not a fixed set of professionals. Each team includes a unique combination of skills that the line officer selects according to the identified issues, concerns, and opportunities associated with each project proposal. The team does not make decisions, but provides the line officer with alternatives, evaluations, and recommended mitigation and protection measures needed to make a reasoned decision and protect the environment. The final decision authority lies with the line officer.

Commonly, the methods and techniques for water-quality protection that apply to a project site are a composite package of multiple BMPs with site-specific applications the interdisciplinary team develops. These site-specific applications are also known as “on the ground prescriptions.” The appropriate BMPs and the methods and techniques of implementing the BMPs are included in the environmental documentation, permit, contract, or other controlling document used to conduct and administer the project (see chapter 3, Administrative Processes).

11.2 - Application of BMPs

Although some pollutants may be thought of as characteristic of a management activity, the actual extent to which contaminants from an activity have the potential to degrade water quality will vary based on:

1. The physical, biological, meteorological, and hydrological environment where the activity takes place (for example, topography, physiography, precipitation, channel density, soil type, or vegetative cover).

2. The type of activity imposed on a given environment (for example, recreation, mineral exploration, or timber management), and the proximity of the activity area to surface waters.

3. The method of application and time frame over which the activity is applied (for example, grazing system used, types of silvicultural practices used, constant use as opposed to seasonal use, recurrent application, or one-time application).

4. The kind of beneficial uses of the water in proximity to the management activity and their relative sensitivity to the type of contaminants associated with the activity.

5. These four factors vary throughout NFS lands in California. It follows then, that the extent and type of potential contaminants are variable, as are the most appropriate abatement and control measures.

12 - BEST MANAGEMENT PRACTICES

This chapter describes the Forest Service programmatic BMP guidance and describes procedures for developing site-specific BMP prescriptions using the guidance contained in the Water Quality Management Handbook. The programmatic BMPs described in this handbook are intended to lead to on-the-ground site-specific BMP prescriptions, but are not intended to be such prescriptions themselves. The programmatic BMPs described below include practices and standards, rather than specific erosion-control structures that would be included in site-specific BMPs. This distinction is important because confusion has resulted from using the term “BMP” to describe both performance standards and specific structures or prescriptions.

Based on BMP implementation and effectiveness monitoring from 2003 to 2007 (USFS 2008), BMPs for Road Management (2.1 to 2.13) and Range Management (8.1 to 8.3) were reviewed and revised. New BMPs were developed for Off-Highway Vehicles (4.7.1 to 4.7.9). All other BMPs are identical to those in the previous Water Quality Management Handbook (USFS 2000). Some formatting changes have been made to improve consistency in this document. Some disparities in the amount of detail and format remain apparent between groups of new and revised BMPs and the BMPs that were retained from the original 1981 handbook. As described in chapter 8, review and revision of these remaining BMPs is planned for the future. All BMPs are intended to be dynamic and to undergo periodic review and revisions to ensure that they incorporate the best available information and techniques.

As noted above, the programmatic BMPs described in this Water Quality Management Handbook are performance standards. They are neither detailed prescriptions nor solutions to specific nonpoint pollution sources. Rather, they are action-initiating mechanisms, processes, and practices that call for the development of site-specific detailed prescriptions that are designed at the project scale during planning. Development of prescriptions is aided by results from ongoing monitoring, and may also follow direction developed at the national forests.

A new procedure in this Water Quality Management Handbook is the inclusion of an On-Line Library, at the end of this chapter, which includes reference materials for specific pollution-control techniques. National forest interdisciplinary teams are required to use techniques selected from these references when appropriate, or provide specific measures with equivalent or greater protection for water quality. The erosion control plans described in BMP 2.13 are required to rely on techniques described in one or more of the references in the On-Line Library.

BMPs should be used when appropriate for activities other than the primary activity for which they were developed. For example, BMPs 1.8 and 1.19, which deal with designation and protection of streamside management zones, are included with the Timber Management BMPs, but may and should be used for other types of activities and projects that may affect riparian zones, including engineering, recreation, and range management.

The BMPs are dynamic and always subject to improvement and development. Monitoring and evaluation of existing practices may disclose areas where refinement is warranted. Research, academia, and administrative studies are continually evolving new methods and techniques applicable to water-quality protection. Provision has been made to allow for the continued updating and refinement of the existing practices as well as development of new practices (see chapter 4, Adaptive Management).

BMPs are grouped into subject areas based on the type of resource management or use activity:

1. Timber management
2. Road building and site construction
3. Mining
4. Recreation
5. Vegetation management
6. Fire suppression and fuels management
7. Watershed management
8. Range management

Each BMP includes the following sections:

Practice: Includes the sequential number of the BMP and a brief title.

Objective: Describes the desired results or attainment of the practice as it relates to water-quality protection.

Explanation: Further amplifies the brief title and expresses how to apply the practice. Describes criteria or standards when applicable.

Implementation: Describes where to apply the practice; who is responsible for application, direction, and supervision; and when to employ the practice.

12.1 - Timber Management

Timber harvesting and reforestation are the culmination of several years of multiple resource assessment and detailed project planning.

Timber harvest includes felling, bucking, skidding, yarding, loading, and hauling designated trees to a mill. Harvest can be followed by reforestation, which includes preparation of the harvested site to treat excess fuels and competing vegetation, followed by tree planting, and stand maintenance as needed.

An effective starting point for identifying, documenting, and incorporating BMPs in the timber sale planning process is during the formulation of silvicultural prescriptions. Forest and districts may differ in how and when they formulate prescriptions in the planning process, but they generally follow the sequence of: stand examination, diagnosis of stand treatment and detailed silvicultural prescriptions, with post-treatment monitoring and evaluation.

Certified silviculturists develop silvicultural prescriptions. These specialists must meet high standards of professional knowledge, skills, and experience in multiple-use silviculture. Their training for certification requires continuing education in soils and watershed management. They are familiar with the terminology of these disciplines, and consult with soil and water specialists in the process of writing, or approving timber harvest prescriptions.

Timber sale proposals are evaluated and refined during the interdisciplinary preparation of environmental documentation as required by NEPA. The line officer identifies the members comprising the interdisciplinary team, and assigns them the responsibility for preparing environmental documentation, including the conduct of requisite field investigation of the proposed harvest site.

The team selects those BMPs necessary to protect or improve the water quality for specific sites, and the appropriate method and technique for their implementation, and incorporates them into the environmental document. When the appropriate line officer approves the environmental document, the BMPs are officially made a part of the harvest plan.

Planning begins 1 to 5 years before timber harvesting begins. Timber harvest planning and implementation also must follow the guidelines and requirements of the Forest Land and Resource Management Plan.

The timber sale planning process includes the following steps:

1. Position statement development
2. Sale area design (includes the environmental documentation process)
3. Sale plan implementation (includes harvest unit layout and stand record card updates)
4. Final sale package preparation (includes sale area improvement plan and contract preparation)
5. Sale award

While the timber sale is in progress, the implementation and effectiveness of the BMP prescription for the sale area are evaluated. This evaluation process continues through the completion of reforestation. This is when the actual environmental effects onsite are compared to the expected effects the interdisciplinary team estimated.

Findings are documented for use by future interdisciplinary teams on proposed timber sales and to update BMPs where warranted.

12.11 - Timber Management Best Management Practices

The following are the BMPs for the control of nonpoint source pollution associated with timber management activities. The line officer on each administrative subunit is responsible for fully implementing the directives that provide for water-quality protection and improvement during timber harvest and management activities.

1.1 Timber Sale Planning Process
1.2 Timber Harvest Unit Design
1.3 Determining Surface Erosion Hazard for Timber Harvest Unit Design
1.4 Using Sale Area Maps and/or Project Maps for Designating Water Quality Protection Needs
1.5 Limiting the Operating Period of Timber Sale Activities
1.6 Protecting Unstable Lands
1.7 Prescribing the Size and Shape of Regeneration Harvest Units
1.8 Streamside Management Zone Designation
1.9 Determining Tractor-loggable Ground
1.10 Tractor Skidding Design
1.11 Suspended Log Yarding in Timber Harvesting

1.12 Log Landing Location
1.13 Erosion Prevention and Control Measures During Timber Sale Operations
1.14 Special Erosion-prevention Measures on Disturbed Land
1.15 Regeneration of Areas Disturbed by Harvest Activities
1.16 Log Landing Erosion Control
1.17 Erosion Control on Skid Trails
1.18 Meadow Protection during Timber Harvesting
1.19 Streamcourse and Aquatic Protection
1.20 Erosion-control Structure Maintenance
1.21 Acceptance of Timber Sale Erosion-control Measures Before Sale Closure
1.22 Slash Treatment in Sensitive Areas
1.23 Five-year Restoration Requirement
1.24 Non-recurring “C” Provisions that can be used for Water-quality Protection
1.25 Modification of the Timber Sale Contract

Earth scientists and other trained and qualified individuals are available to work with the timber management work force to provide technical assistance in identifying beneficial uses, the most recent state-of-the-art water-quality control, methods and techniques, and evaluation of results.

12.11 Exhibit 01
BMP 1.1 - Timber Sale Planning Process

Objective: To incorporate water-quality and hydrologic considerations into the timber sale planning process.

Explanation: The interdisciplinary team will address potential water-quality problems and provide for administrative controls, corrective treatments, and preventive measures. As warranted, a qualified specialist will define and quantify the potential changes to water quality and instream beneficial uses.

The result is an environmental document and sale contract(s). These documents describe methods to prevent unacceptable effects to water quality during and following sale layout and logging operations. They document mitigation measures to ameliorate, and/or preclude adverse effects for those treated areas. Silvicultural treatment is excluded from environmentally sensitive areas where adverse environmental effects from the activity cannot be mitigated to conform to Federal, State, and local water-quality standards.

Implementation: Earth scientists or other trained and qualified individuals participate in the environmental documentation process to evaluate onsite watershed characteristics and potential environmental consequences of the proposed timber harvest and related activities. They design the timber sale to include site-specific prescriptions for each area of water-quality concern. The resulting contract will include those provisions set forth in the environmental document to meet water-quality protection objectives.

12.11 Exhibit 02
BMP 1.2 - - Timber Harvest Unit Design

Objective: To ensure that timber harvest unit design will secure favorable conditions of water quality and quantity, while maintaining desirable stream channel characteristics and watershed conditions. The design should consider the size and distribution of natural structures (snag and down logs) as a means of preventing erosion and sedimentation.

Explanation: This is an administrative and preventive practice. Proposed timber harvest units will be evaluated to predict watershed response to the proposed timber harvest unit design. This includes onsite examination of the watersheds to evaluate their ability to absorb the effects of the proposed harvest without incurring unacceptable effects on water quality.

Characteristics to be evaluated can include recovery from past harvests; size and extent of past management activities; protection of channels; number, size and location of harvest units; planned location and size of roads, landings and skid trails; logging system design; potential natural recovery rate of the watershed; and needs of associated beneficial uses.

Where it is not possible to mitigate adverse effects on water quality and undesirable streamflow conditions, the harvest unit design will be modified to reduce adverse effects. To the fullest extent possible, the unit design is made to be amendable to implementing mitigation measures.

Implementation: Earth scientists or qualified specialists will conduct a hydrologic and geologic survey of the area affected by proposed harvest activities. Mitigations or changes needed to stabilize slopes and project or improve stream courses will be incorporated into the harvest unit design. It is the responsibility of the aale administrator to carry out on-the-ground accomplishments of environmental protection measures, and the timber sale contract-specific areas will be identified during design for monitoring attainment of water-quality objectives.

12.11 Exhibit 03
BMP 1.3 - Determining Surface Erosion Hazard for Timber Harvest Unit Design

Objective: To identify high-erosion hazard areas to adjust treatment measures and prevent downstream water-quality degradation.

Explanation: This is a preventive practice. The California Soil Survey Committee erosion hazard rating (EHR) system is a method used to estimate the potential erosion hazard of a given area. It evaluates the soil-topography-climate-soil cover relationships of site-specific areas. Where the post-harvest hazard is predicted to be “moderate,” an onsite evaluation is conducted to determine the need for erosion control measures. Where the post-harvest hazard is predicted to be “high,” or “very high,” erosion-control measures are necessary to reduce the potential risk of accelerated erosion to a low or moderate level.

Where the harvest impacts cannot be reduced to a low or moderate level with treatments, then the harvest units should be avoided or harvest methods modified, or both (see also BMP 1.6).

Implementation: The erosion-hazard determination is part of the pre-sale planning process, as input to the environmental document. Only trained and qualified Forest Service employees will establish the EHR for individual harvest units. The timber sale Planning Forester uses this information to help design the timber sale, and apply appropriate erosion control.

12.11 Exhibit 04
BMP 1.4 - Using Sale Area Maps and/or Project Maps for Designating Water-Quality Protection Needs

Objective: To ensure recognition and protection of areas related to water-quality protection delineated on a sale-area map or a project map.

Explanation: This is an administrative and preventative practice. The following are examples of water-quality protection features that pre-sale foresters can designate on the sale area map or project map, thereby ensuring their incorporation as timber sale contract requirements:

1. Location of streamcourses and riparian zones to be protected, including the width of the protection zone required for each stream
2. Wetlands (meadows, lakes, springs, and so forth) to be protected
3. Boundaries of harvest units
4. Specified roads
5. Roads where log hauling is prohibited, or restricted
6. Structural improvement
7. Area of different skidding and/or yarding method application
8. Sources of rock for road work, riprapping, and borrow materials
9. Water sources that are available for purchasers' use
10. Other features that are required by contract provisions
11. Site preparation/fuel treatment

Implementation: The interdisciplinary team will identify and delineate these and other features on maps, as part of the environmental documentation process. The Sale Preparation Forester will include them on the sale area map at the time of contract preparation. The sale administrator and the purchaser will review these areas on the ground before commencing harvest.

12.11 Exhibit 05
BMP 1.5 - Limiting the Operating Period of Timber Sale Activities

Objective: To ensure that the purchasers conduct their operations, including, erosion-control work, road maintenance, and so forth, in a timely manner, within the time specified in the timber sale contract.

Explanation: Contract provision C6.3, “Plan of Operation” is required in all timber sale contracts. This provision states that the purchaser must submit a general plan of operation which will set forth planned periods for, and methods of road construction, timber harvesting, completion of slash disposal, erosion-control work, and other contractual requirements. Forest Service written approval of the Plan of Operation is prerequisite to commencement of the purchaser’s operation. Contract clause B6.31, “Operation Schedule,” requires that the purchaser provide an annual schedule of anticipated activities such as road maintenance and erosion-control work until the sale is closed. Contract clause C6.313, “Limited Operating Period,” will be used in a contract to limit the purchaser’s operation to specified periods when adverse environmental effects are unlikely. Contract provision B6.6 can be used to close down operations due to the rainy season, high water, and other adverse operating conditions, to protect resources.

Implementation: During the timber sale planning process, the interdisciplinary team will identify and recommend limited operating periods. The Sale Preparation Forester prepares the contract to include clause C6.313. Provisions B6.3, B6.31, and C6.3 are all mandatory provisions of the timber sale contract. Provision C6.3 is mandatory only for sales over a 2.year contract period. The purchaser must submit a general plan and annual plans to the Forest Service. The purchaser may commence operations only after written Forest Service approval of the general plan under C6.3.

12.11 Exhibit 06
BMP 1.6 - Protecting Unstable Lands

Objective: To provide special treatment of unstable areas to avoid triggering mass slope failure with resultant erosion and sedimentation.

Explanation: This practice is an administrative and preventative control. Where unstable lands are delineated, they are taken out of suitable forest lands and are reclassified as unsuitable forest land. Using existing harvest technologies, unsuitable forest lands cannot be managed for timber production where irreversible adverse effects to soils, productivity, or watershed conditions may occur. Timber harvesting is deferred pending technology development proven to be operational on these sites without causing adverse environmental effects.

Implementation: The interdisciplinary team will prepare plans and environmental documents, utilizing information provided by specialists trained and qualified to identify unstable areas. When warranted, based on location and size of the sale, proposed harvest units may be assessed for relationships to unstable areas through aerial photo reconnaissance (most recent photos at least 1:24,000 or larger scale) and a landslide hazard map, where available. These features are then assessed on the ground as the team deems necessary. Where unstable lands are presently classified as suitable forest lands, the classification is changed to unsuitable forest lands. Unsuitable forest lands will not be harvested until they can be harvested without irreversible or unmitigable resource effects. If the team determines that current or prospective logging methods would result in irreversible or unmitigable watershed effects, then the line officer should reclassify the area to unsuitable forest land and defer harvesting.

12.11 Exhibit 07
BMP 1.7 - Prescribing the Size and Shape of Regeneration Harvest Units

Objective: To control the physical size and shape of regeneration harvest units as a means of preventing erosion and sedimentation.

Explanation: This is an administrative and preventive practice. 36 CFR 219.27 (d)(2) limits the size of openings created by the application of even-aged silviculture in California in a single entry (a clearcut) to 60 acres for Douglas-fir forest type and 40 acres for all other forest types with certain exceptions. Exceptions can be made in the case of salvage harvesting or with Regional Forester approval. The National Forest Management Act, section 6, contains the following:

"(F) insure that clearcutting, seed tree cutting, shelterwood cutting and other cuts designed to regenerate an even aged stand of timber will be used...only where...(iv) there are established according to geographic areas, forest types, or other suitable classifications the maximum size limits for areas to be cut in one harvest operation including provision to exceed the established limits after appropriate public notice and review by the responsible Forest Service officer one level above the Forest Service officer who normally would approve the harvest proposal: Provided, That such limits shall not apply to the size of areas harvested as a result of natural catastrophic conditions such as fire, insect and disease attack, or windstorm; and (v) such cuts are carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and esthetic resources, and the regeneration of the timber resource."

Implementation: The size and the shape of the proposed regeneration units are reviewed on the ground in the pre-sale planning process. A map showing proposed units is included in the contract, which is reviewed and approved by the appropriate line officer. The timber sale should be, and normally is, delineated on the ground (roads staked, timber marked) after the environmental analysis is complete and a formal decision is made.

12.11 Exhibit 08
BMP 1.8 - Streamside Management Zone Designation

Objective: To designate a zone along riparian areas, streams, and wetlands that will minimize potential for adverse effects from adjacent management activities. Management activities within these zones are designed to improve riparian values.

Explanation: As a preventive measure, roads, skid trails, landings, and other timber-harvesting facilities will be kept at a prescribed distance from designated stream courses.

Factors such as stream class, channel aspect, channel stability, sideslope steepness, and slope stability are considered in determining the limitations on activities within the width of streamside management zones (SMZ). Aquatic and riparian habitat, beneficial riparian zone functions, their condition and their estimated response to the proposed timber sale are also evaluated in determining the need for and width of the streamside management zones.

The SMZ will be a zone of total exclusion of activity, or a zone of closely managed activity as described in the “Glossary of Terms.” It is a zone that acts as an effective filter and absorptive zone for sediment; maintains shade; protects aquatic and terrestrial riparian habitats; protects channel and streambanks; and promotes floodplain stability.

Implementation: Identify the streamside management zone requirements during the environmental documentation process. Each forest’s LRMP identifies specific measures to protect these zones. As a minimum, forest requirements must be identified and implemented. The timber sale project is designed to include site-specific prescriptions for preventing sedimentation and other stream damage from logging debris. The timber sale contract will be designed to ensure retention of streamside vegetation and improve the condition and beneficial functions of the riparian area.

As appropriate, water-quality monitoring is identified in the environmental document. The Timber Sale Preparation Forester is responsible for including the zones in the timber sale contract and on the sale area map as identified by the environmental document. The sale administrator is responsible for contract compliance during harvest operations.

12.11 Exhibit 09
BMP 1.9 - Determining Tractor-loggable Ground

Objective: To minimize erosion and sedimentation resulting from ground disturbance of tractor logging systems.

Explanation: This preventative practice is intended to minimize accelerated soil erosion and sedimentation, and water-quality degradation. To determine tractor-loggable ground, consider physical site characteristics such as steepness of slopes, landslide prone areas, and soil properties. The EHR is one method. For example, where the post-tractor logging EHR is predicted to be “moderate,” an onsite evaluation is conducted to determine the need for erosion-control measures. Where the post-tractor logging EHR is predicted to be ”high,” or “very high,” erosion-control measures are required to reduce the risk of accelerated erosion.

Avoid tractor logging where the predicted, post-logging erosion hazard cannot be reduced to either “low” or “moderate.”

Implementation: A trained and qualified Forest Service employee will evaluate the EHR during the on-the-ground planning phase of the timber sale. This work is done within each sale area by evaluating representative sites. The resulting EHRs are considered during the selection of logging methods and silvicultural prescriptions, of erosion-control measures to reduce risk, and in determining the intensity of and controls for land-disturbing activities.

Interpretations of the considerations are described in the environmental document. Provisions in the timber sale contract specify the areas, determined by the EHR, upon which tractors can operate.

12.11 Exhibit 10
BMP 1.10 - Tractor Skidding Design

Objective: By designing skidding patterns to best fit the terrain, the volume, velocity, concentration, and direction of runoff water can be controlled in a manner that will minimize erosion and sedimentation.

Explanation: This is a preventative practice. Watershed factors considered include slope, soil stability, exposure, SMZs, meadows, and other factors that may affect the surface water runoff and sediment yield potential of the land. The careful control of skidding patterns serves to avoid onsite and downstream channel instability, build-up of destructive runoff flows, and erosion in sensitive watershed areas such as meadows and SMZs.

Methods for protecting water quality while utilizing tractor skid trail systems are:

1. End-Lining. This method involves winching the log directly out of the sensitive areas (such as SMZs and meadows) with a cable operated from outside the sensitive area. In this manner, logs can be removed from the sensitive areas, while avoiding encroachment by heavy equipment and associated adverse environmental effects.

2. Felling to the Lead. This method involves felling trees toward a predetermined skid pattern. This procedure facilitates an uncomplicated approach of the tractor operating between the log and the skid trail. Soil disturbance and compaction are consequently lessened, and residual stand and site damage is minimized.

3. Specialized Equipment Access. Specialized equipment (harvesters, feller bunchers) having low ground pressures can move in and out of selected SMZs without turning and leaving disturbed ground.

Implementation: For skid trail design, sensitive areas will be identified and evaluated in the environmental documentation process during the timber sale planning process. When needed to protect water quality, prescriptions must be included in the basic TSC by the use of special contract provisions (C-clauses). The sale administrator then executes the prescription on the ground by locating the skid trails with the timber purchaser, or by agreeing to the purchaser's proposed locations prior to construction. Guidelines for skid trail locations are referenced in the sale administrator Handbook, and will be in the environmental documentation and the timber sale contract.

12.11 Exhibit 11
BMP 1.11 - Suspended Log Yarding in Timber Harvesting

Objectives:

1. To protect the soil mantle from excessive disturbance.
2. To maintain the integrity of the SMZ and other sensitive watershed areas.
3. To control erosion on cable corridors.

Explanation: Suspended log yarding includes all yarding systems that suspend logs either partially or completely off the ground. These systems include, but are not limited to, skyline, helicopter, and balloon yarders. The systems are used on steep slopes where tractors cannot operate. All of the systems result in less soil disturbance since heavy machinery is not used over the sale area. Erosion-control measures are applied as necessary in cable corridors to control erosion and runoff.

Implementation: The areas where suspended log yarding is required will be determined during the pre-sale planning process, and they will be included in the sale plan. The specific systems must be included in the timber sale contract, and designated on the sale area map by the Sale Preparation Forester. The sale administrator will oversee the project operation using the guidelines and standards established in the timber sale contract and sale administrator handbook with reference to the sale plan.

12.11 Exhibit 12
BMP 1.12 - Log Landing Location

Objective: To locate new landings or reuse old landings in such a way as to avoid watershed impacts and associated water-quality degradation.

Explanation: This practice is both administrative and preventive. The location of and clearing limits for log landings are commonly evaluated by the interdisciplinary team, and are agreed to by the sale administrator and purchaser prior to construction. The following criteria are used by the sale administrator in evaluating landings:

1. The cleared or excavated size of landings should not exceed that needed for safe and efficient skidding and loading operations. Trees considered dangerous will be removed around landings to meet the safety requirements of the Occupational Safety and Health Administration (OSHA).

2. To the extent feasible, select landing locations that involve the least amount of excavation and the least erosion potential, and are well outside of the SMZ.

3. Where feasible, locate landings near ridges away from headwater swales in areas that will allow skidding without crossing channels, violating the SMZ, or causing direct deposit of soil and debris to the stream.

4. Locate landings where the least number of skid roads will be required, and sidecast can be stabilized without entering drainages, or affecting other sensitive areas.

5. Position landings such that the skid road approach will be as nearly level as feasible, to promote safety, and protect the soil from erosion.

6. Keep to a minimum the number of skid trails entering a landing.

7. Avoid excessive fills associated with landings constructed on old landslide benches. Do not change the mass balance to point to destabilize the landslide.

8. Construct stable landing fills or improve existing landings by using appropriate compaction and drainage specifications. Engineered fills will be needed under certain conditions.

Implementation: The sale administrator must agree to landing locations proposed by the purchaser or their representatives. Relying on interdisciplinary team input and the stated criteria, the sale administrator can negotiate to select mutually acceptable landing locations—other than those identified in the NEPA document. To be an acceptable landing, it must meet the above criteria. Should agreement not be reached, the decision of the Forest Service will prevail within contract limitations.

12.11 Exhibit 13
BMP 1.13 - Erosion Prevention and Control Measures during Timber Sale Operations

Objective: To ensure that the purchasers' operations will be conducted reasonably to minimize soil erosion.

Explanation: Timber is purchased by individuals or companies who either harvest the timber themselves, or sub-contract to other parties. Therefore, it is necessary to ensure that purchasers and their sub-contractors understand and adhere to water-quality BMP prescriptions formulated during the timber sale planning process. This is accomplished by setting forth the purchaser's responsibilities in the timber sale contract, and holding the purchaser accountable for actions of their sub-contractor.

Implementation: Equipment will not be operated when ground conditions are such that excessive damage will result. The kinds and intensity of control work required of the purchaser will be adjusted to ground and weather conditions, with emphasis on the need to control overland runoff, erosion, and sedimentation. Erosion-control work required by the contract will be kept current. At certain times of the year this means daily, if precipitation is likely, or at least weekly when precipitation is predicted for the weekend.

If the purchaser fails to perform seasonal erosion-control work prior to any seasonal period of precipitation, or runoff, the Forest Service may temporarily assume responsibility, complete the work, and use any unencumbered deposits as payment for the work.

12.11 Exhibit 14
BMP 1.14 - Special Erosion-prevention Measures on Disturbed Land

Objective: To provide appropriate erosion and sedimentation protection for disturbed areas.

Explanation: This is an administrative and preventive treatment. When required by the contract, the purchaser will give adequate treatment by spreading slash, mulch, or wood chips (or, by agreement, some other treatment) on portions of tractor roads, skid trails, landings, cable corridors or temporary road fills. This provision is to be used only for sales which contain identified special soil stabilization problems which are not expected to be adequately treated by normal methods prescribed under other contract provisions.

Implementation: During the timber sale planning process and/or during sale appraisal, the interdisciplinary team will identify criteria for selecting treatment areas or classes of areas for special treatment and document them in the environmental assessment. The Sale Preparation Forester will identify the acreage to be treated in the legend of the sale area map. The sale administrator will designate the specific areas to be treated on the ground.

12.11 Exhibit 15
BMP 1.15 - Revegetation of Areas Disturbed by Harvest Activities

Objective: To establish a vegetative ground cover on disturbed sites to prevent erosion and sedimentation.

Explanation: Where the purchaser's operations have severely disturbed the soil, and the establishment of vegetation is needed to control accelerated erosion, the purchaser will be required to take appropriate measures normally used to establish an adequate ground cover of grass or other vegetative stabilization measures acceptable to the Forest Service. The type and intensity of treatment to establish ground cover is prescribed by the sale administrator, with assistance from earth scientists and botanists, as needed.

This measure is applied in contracts where it is expected that disturbed soils in parts of the sale area will require vegetative cover for stabilization and other contract provisions will not mitigate problems.

Implementation: The Forest Service will include an estimate of the need for revegetation in the timber sale appraisal and sale contract. Where revegetation is prescribed, the prescription must be included in the timber sale contract. The sale administrator will designate the areas of disturbed soils, such as logging areas and temporary roads that must be treated.

The Forest Service will provide advice as to soil preparation and the application of suitable seed mixtures, mulch, and fertilizer, and the timing of such work. The sale administrator is responsible for ensuring that revegetation work is done correctly and in a timely manner.

12.11 Exhibit 16
BMP 1.16 - Log Landing Erosion Control

Objective: To reduce the impacts of erosion and subsequent sedimentation associated with log landings by use of mitigating measures.

Explanation: This practice uses administrative, preventive, and corrective controls to meet the objective. The Sale Planning Forester and sale administrator assess the need for stabilization, with the assistance of earth scientists as needed.

Implementation: Timber sale contract requirements provide for erosion prevention and control measures on all landings. The Timber Sale Preparation Forester will include provisions in the timber sale contract for landings to have proper drainage. After landings have served the purchaser's purpose, the purchaser will ditch, or slope the landings, and may be required to rip or subsoil and make provisions for revegetation to permit the drainage and dispersion of water. Erosion-prevention measures such as waterbars will be constructed to divert water away from landings.

Other provisions may include aggregate surfacing; scarifying; smoothing and sloping; construction of drainage ditches; spreading slash; covering with mulch or wood chips; or applying straw mulch. Prevent road drainage from reaching landings. Unless agreed otherwise, cut and fill banks around landings will be reshaped to stabilize the area.

The specific work needed on each landing will depend on the actual onsite conditions. The sale administrator is responsible for ensuring that this practice is properly implemented on the ground. The sale administrator will agree upon the location and size of log landings proposed by the purchaser before clearing and construction begins.

12.11 Exhibit 17
BMP 1.17 - Erosion Control on Skid Trails

Objective: To protect water quality by minimizing erosion and sedimentation derived from skid trails.

Explanation: This practice uses preventive controls to reach the objective.

The timber sale contract requires the installation of erosion-control measures on skid trails, tractor roads, and temporary roads. Normally, the work involves constructing cross ditches and water-spreading ditches. Other methods such as backblading will be agreed to in lieu of cross drains. Grass seeding or other erosion-control and compaction remediation measures may also be required by a “C” provision, which will be added to the timber sale contract. Areas to be treated are shown on the sale area map legend. During the life of the contract, these areas are designated on the ground annually as logging and temporary access construction progresses.

Implementation: Locations of all erosion-control measures are designated and agreed to on the ground by the sale administrator. The sale administrator handbook section on Skid Trails and Firelines contains guidelines for spacing of cross drains, construction techniques, and cross drain heights. The sale administrator should use these guidelines on the ground to identify site-specific preventive work that is required of the purchaser. The purchaser is obligated to complete and maintain erosion-control work specified in contract provisions during the life of the contract.

12.11 Exhibit 18
BMP 1.18 - Meadow Protection during Timber Harvesting

Objective: To avoid damage to the ground cover, soil, and the hydrologic function of meadows.

Explanation: This is an administrative and preventive action. The interdisciplinary team identifies these sensitive environments during the scoping and onsite evaluation portion of the environmental document preparation process. As a minimum, meadow protection requirements contained in the forest LRMP must be identified and implemented. Trained and qualified Forest Service employees will assess these areas. Protection zones and tree directional felling are prescribed according to site conditions and within guidelines provided by the Forest Service directive system and the LRMP guidelines.

The timber sale contract prohibits unauthorized operation of vehicular or skidding equipment in meadows or in protection zones designated on sale area maps and marked on the ground. Vehicular or skidding equipment is not to be used on meadows except when specifically approved by the sale administrator. Where feasible, directional felling will be used to avoid felling trees into meadows. Unless otherwise agreed, trees felled into meadows will be removed by end-lining, slash removed, and resulting disturbance will be repaired where necessary to protect vegetative cover, soil, and water quality.

Implementation: The concerns and requirements will be set forth in the timber sale contract requirements for sale areas with meadow land. The contract may also specify that a purchaser is subject to liquidated damage charges each time equipment enters a designated meadow. The purchaser will repair damage to these designated areas and/or their associated protection zones in a timely manner, as agreed to by the sale administrator.

The purchaser will repair damage to a streamcourse, or SMZs caused by unauthorized purchasers' operations in a timely and agreed-upon manner.

12.11 Exhibit 19
BMP 1.19 - Streamcourse and Aquatic Protection

1. Objectives:

   a. To conduct management actions within these areas in a manner that maintains or improves riparian and aquatic values.

   b. To provide unobstructed passage of stormflows.

   c. To control sediment and other pollutants entering streamcourses.

   d. To restore the natural course of any stream as soon as practicable, where diversion of the stream has resulted from timber management activities.

Explanation: This management practice uses administrative, preventive, and corrective measures to meet the objectives.

Streams within proposed timber sale areas are surveyed and protection zones are prescribed during the timber sale planning process. The interdiscipliinary team formulates stream-protection requirements, and includes the prescription in the decision document. The requirements are then included in the timber sale contract and identified on the sale area map.

2. The following principles are fundamental to protecting streamcourses:

   a. The sale administrator must agree to location and method of streamcourse crossings prior to construction. This is done at the same time as agreements are made with the purchaser or purchaser's representative for the locations of landings, skid trails, tractor roads, and temporary roads.

   b. All damage to a streamcourse, including damage to banks and channels, will be repaired to the extent practicable.

   c. All sale-generated debris is removed from streamcourses, unless otherwise agreed to by the sale administrator, and in an agreed-upon manner that will cause the least disturbance.

   d. Limit, or exclude equipment use in designated SMZs. Widths of SMZ and restrictions pertaining to equipment use are defined by onsite project investigation and are included in the timber sale contract. The Forest Service identifies these areas on the sale area map prior to advertising. Boundaries of zones will be modified by

12.11 Exhibit 19 -- Continued
BMP 1.19 - Streamcourse and Aquatic Protection

agreement between the contractor and sale administrator, to compensate for unforeseen operation conditions.

e. Methods for protecting water quality while utilizing tractor skid trail design in streamcourse areas where harvest is approved include: 1) end lining, 2) felling to the lead, and 3) utilizing specialized equipment with low ground pressure such as a feller buncher harvester. Permit equipment to enter streamside areas only at locations agreed to by the sale administrator and the purchaser.

f. Water bars and other erosion-control structures will be located so as to disperse concentrated flows and filter out suspended sediments prior to entry into streamcourse.

g. Material from temporary road and skid trail streamcourse crossings is removed and streambanks restored to the extent practicable.

h. In cable log yarding operations, logs will be fully airborne within the SMZ, when required by the timber sale contract.

i. Special slash-treatment site-preparation activities will be prescribed in sensitive areas to facilitate slash disposal without use of mechanized equipment.

Implementation: The sale administrator works with the purchaser's representative to ensure that the timber sale contract clauses covering the above items are carried out on the ground. Specialists can be called upon to help the sale administrator with decisions. In the event the purchaser causes debris to enter streamcourses in amounts which may adversely affect the natural flow of the stream, water quality, or fishery resource, the purchaser will remove such debris as soon as practicable, but not to exceed 48 hours, and in an agreed-upon manner that will cause the least disturbance to streamcourses.

12.11 Exhibit 20
BMP 1.20 - Erosion-control Structure Maintenance

Objective: To ensure that constructed erosion-control structures are stabilized and working.

Explanation: Erosion-control structures are only effective when they are in good repair and function as designed. Once the erosion-control structures are constructed, there is a possibility that they may not become adequately effective, or they will become damaged from subsequent harvest activities. It is necessary to provide follow-up inspection and structural maintenance to avoid these problems and ensure adequate erosion control.

Implementation: During the period of the timber sale contract, the purchaser will provide maintenance of soil erosion-control structures constructed by the purchaser until they become stabilized, but not for more than one year after their construction. After one year, accomplish needed erosion-control maintenance work using other funding sources under timber sale contract provisions B6.6 and B6.66.

The Forest Service may agree to perform such structure maintenance under timber sale contract provision B4.225 (Cooperative Deposits), if requested by the purchaser, subject to agreement on rates. If the purchaser fails to do seasonal maintenance work, the Forest Service may assume responsibility and charge the purchaser accordingly.

12.11 Exhibit 21
BMP 1.21 - Acceptance of Timber Sale Erosion-control Measures before Sale Closure

Objective: To ensure the adequacy of required erosion-control work on timber sales.

Explanation: The effectiveness of soil erosion prevention and control measures is determined by the conditions found after sale areas have been exposed for one, or more years to the elements. The evaluation is to ensure that erosion-control treatments are in good repair and functioning as designed before releasing the purchaser from the contract responsibility.

Although a careful check is required before a timber sale is closed to ensure that planned erosion work has been completed to the standard prescribed, the erosion prevention work done in previous years must also be inspected during the life of the timber sale. These inspections will help determine whether the planned work was adequate, if maintenance work is needed, the practicability of the various treatments used, and the necessity for modifying present standards, or procedures.

Implementation: “Acceptable” erosion control means only minor deviation from established objectives, provided no major, or lasting damage is caused to soil, or water. Sale administrators will not accept erosion-control measures that fail to meet these criteria. Specific requirements for erosion control are included in each timber sale contract and the sale administrator handbook.

12.11 Exhibit 22
BMP 1.22 - Slash Treatment in Sensitive Areas

Objective: To maintain or improve water quality by protecting sensitive areas from degradation which would likely result from using mechanized equipment for slash disposal.

Explanation: Special slash treatment site preparation will be prescribed in sensitive areas to facilitate slash disposal without use of mechanized equipment. Meadows, wetlands, SMZs, and landslide areas are typically sensitive areas where equipment use is normally prohibited. Slash-treatment and site-preparation methods are specified in environmental documents, where applicable, for each cut unit in project and contract documents such as a timber sale contract, project map, or sale area map.

Implementation: An assessment of the sale area will be made in the timber sale planning process. Sensitive areas requiring protection are identified. Assessment results will be documented in the environmental document, and identified in the timber sale contract and on the sale area map. The sale administrator, contract inspector, or Forest Service specialist will inspect the treatment for correct and satisfactory slash disposal accomplishment.

12.11 Exhibit 23
BMP 1.23 - Five-Year Reforestation Requirement

Objective: To assure a continuous forest cover and to limit disturbance on areas with limited regeneration potential where there is no assurance that the site can be reforested within 5 years.

Explanation: When trees are cut to achieve timber production objectives, the cuttings shall be made in such a way as to assure that the technology and knowledge exists to adequately restock the lands within 5 years after harvest. Adequate stocking means that the cut area will contain the minimum number, size, distribution, and species composition of regeneration as specified in regional silvicultural guides for each forest type. Five years after final harvest means 5 years after clear cutting, 5 years after final overstory removal in shelterwood cutting, 5 years after seed tree removal cut in seed tree cutting, or 5 years after selection cutting (36 CFR Part 219.27 (c) (3)).

The implementation of this practice protects water quality by helping to stabilize soils, increasing ground cover, and providing improved infiltration.

Implementation: During the timber sale planning process, the interdiscipliinary team assesses the capability of proposed areas to achieve reforestation within the prescribed period. The silviculturist uses information the interdisciplinary team collected, including soil productivity, soil depth, and available moisture-holding capacity to determine harvesting and regeneration methods.

12.11 Exhibit 24
BMP 1.24 - Non-recurring "C" Provisions that can be used for Water-quality Protection

Objective: To use the option of inserting Special "C" provisions in the timber sale contract to protect water quality where standard "B" or "C" provisions do not apply or are inadequate to protect watershed values.

Explanation: At times, District Rangers or Forest Supervisors will propose special "C" provisions to meet management objectives for a particular sale area. However, the Regional Forester must approve the provisions. Such authorization will apply only to the sale for which approval was given.

An example of a Special "C" provision commonly used for water-quality protection is the provision concerning the directional felling of timber. This provision is used for SMZs where it is important to avoid felling trees into streams, or into important areas of riparian vegetation, or residual timber.

Another example is the use of a "swing yarding" special provision in situations where such a method would help protect water quality. Swing yarding refers to the use of more than one yarding system to accomplish a difficult yarding problem. In one situation, it might be possible to avoid building a stream crossing by using a tractor to yard logs to a point where a skyline yarder could lift them across the stream to a landing.

This practice can be used in a variety of special situations, which may occur on any timber sale. There are no standards, or set provisions that can be referenced, since each Special "C" provision is unique and specific to one sale.

Implementation: The interdisciplinary team will identify and recommend the need for Special "C" provisions during the timber sale planning process. The Sale Preparation Forester will prepare documentation describing the Special "C" provision needed and submit it through line officers to the Regional Forester for approval. The Regional Forester will prepare the appropriate contract wording of the provision and return it approved. The sale administrator will apply the Special "C" provision in the same manner as the standard contract provisions.

12.11 Exhibit 25
BMP 1.25 - Modification of the Timber Sale Contract

Objective: To modify the timber sale contract if new circumstances or conditions indicate that the timber sale will damage soil, water, or watershed values.

Explanation: Once timber sales are sold, they are harvested as planned via the timber sale contract. At times, however, it will be necessary to modify a timber sale contract because of new concerns about the potential effects of land disturbance on the water resource. If new evidence raises serious concerns to the Forest Service representative, an interdiscipliinary team will be assigned to assess the evidence and implications.

The team will report to the appropriate line officer on whether the timber sale as currently planned will (1) damage soil, water, or watershed conditions or (2) inadequately protect stream courses, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water quality, and/or blockages of watercourses. The interdiscipliinary team will also recommend mitigation and corrective actions. The environmental document prepared for the timber sale will then be amended to reflect the findings of the interdiscipliinary team.

Implementation: Where the project is determined to unacceptably affect watershed values, the appropriate line officer will take corrective actions, which may include contract modification. The timber sale modification can be accomplished by agreement with the timber sale purchaser, or unilaterally by the Forest Service (with suitable compensation to the purchaser) using the amended environmental document prepared by the interdiscipliinary team.

12. 2 - Road Management Activities

The purpose of this set of BMPs is to control nonpoint source pollution that may occur as a result of road (and motorized trail) management activities on NFS lands in the Pacific Southwest Region. Activities associated with road (and motorized trail) management include travel route planning, design, construction, operation, maintenance, reconstruction, storage, and decommissioning.

Considering the proportion of the landscape that they occupy, roads are a prevalent cause of hydrologic and geomorphic process alteration on NFS lands. Highly compacted road surfaces generate infiltration-excess overland flow, even during small precipitation events. In addition, cut slopes can intercept transient hillslope groundwater (that is, subsurface stormflow) when the height of the cut slope exceeds the depth to the water table. This runoff is laterally redistributed and often concentrated along inside ditches or the running surface, where it is discharged to hillslopes below the road or trail prism or routed directly into streams. These hydrologic process and pathway alterations largely drive the water-quality impacts associated with roads.

When roads and associated drainage-control features contribute flow directly to a natural waterbody, they become part of the drainage network and are said to be hydrologically connected. These drainage systems may further increase hydrologic connectivity if they deteriorate because of use, weather, or inadequate maintenance. Drainage facilities may be inadequate after wildfires or extreme precipitation events, due to increased surface runoff, loss of vegetative cover, and stream bulking, and can increase the length of road hydrologically connected to the stream network. Furthermore, many slope disturbances are spatially linked to the road network, and roads are often the pathway for transporting pollutants from these other types of disturbances (for example, dispersed recreation). Hydrologically disconnecting roads is a fundamental practice for eliminating chronic water-quality impacts from roads and other disturbances.

Location and design strongly influence the risk and degree of road and trail impacts on water, aquatic and riparian resources, as can maintenance practices. Roads located adjacent to unstable slopes, streams, lakes, wetlands, springs, and other waters are particularly susceptible to causing adverse impacts. Proper road and trail design, construction, maintenance, and operation can reduce impacts to natural hydrogeomorphic functions and water resources.

Stream crossings are the most frequent location of adverse road and trail impacts to water, aquatic, and riparian resources. Road surfaces typically drain toward crossings, so the likelihood of connectivity of road surface with channels is greatest. Crossings comprised of fine-grained native materials may erode and deliver sediment to channels. Culverts may be inadequately sized to properly pass flow, bedload and debris and, due to size and/or gradient, may present barriers to fish and aquatic organism movement. Crossings also present the risk of catastrophic failure if flood flows exceed crossing capacity. In such cases the crossing fill may be lost. In the worst case scenario, crossing failure results in diversion of flows from the channel onto the adjacent roadway. For these reasons, management activities conducted at crossings are vitally important to water, aquatic, and riparian resources, and are emphasized in the BMPs that follow.

The following BMPs are to be applied as needed to prevent adverse impacts of road management activities on water, aquatic, and riparian resources to the extent possible. BMPs range from suggested practices to prohibitions, as required by Forest Service directives.

Section 404 permits, so named because they were created under section 404 of the Clean Water Act, are required for discharges of dredged or fill materials to waters of the United States, including wetlands. They are administered by the U.S. Army Corps of Engineers. Section 401 Water Quality Certifications are completed for section 404 permits and any other permit issued by a Federal agency for a project with potential to affect water quality. In California, Regional Water Boards administer section 401 Water Quality Certifications. Each section 404 permit needs a section 401 Water Quality Certification UNLESS the section 404 permit is obtained under a nationwide permit that has a “blanket” Water Quality Certification.

National Pollutant Discharge Elimination System (NPDES) permits may also be required. Forest Service engineers and hydrologists shall work together during the permitting process.

12.21 - Road Management BMPs

2.1 Travel Management Planning and Analysis
2.2 General Guidelines for the Location and Design of Roads
2.3 Road Construction and Reconstruction
2.4 Road Maintenance and Operations
2.5 Water Source Development and Utilization
2.6 Road Storage
2.7 Road Decommissioning
2.8 Stream Crossings
2.9 Snow Removal and Storage
2.10 Parking and Staging Areas
2.11 Equipment Refueling and Servicing
2.12 Aggregate Borrow Areas
2.13 Erosion Control Plans (roads and other activities)

12.21 Exhibit 01
BMP 2.1 - Travel Management Planning and Analysis

Objective: Roads impact water quality to varying degrees. Use the travel analysis and road management planning processes to develop measures to avoid, minimize, and mitigate adverse impacts to water, aquatic, and riparian resources during road management activities, contribute toward restoration of water quality where needed, and identify the road system which can be effectively maintained.

Explanation: The Forest Service is currently engaged in a nationwide effort to identify the minimum road networks needed on national forests for resource management and visitor access. This effort is being implemented under the Travel Management Rule subpart A (36 CFR, part 212). Roads on NFS lands are assessed through the travel management process both in terms of the benefits provided and the risks to natural resources, including water quality. Decisions as to whether a road will or will not be retained in the NFS road network will be made by national forest supervisors.

Various planning processes are involved in determining the number, type, and location of roads. Road management-related planning includes travel analyses, as well as consideration of road management in projects. Planning occurs at scales that range from forestwide assessments and plans, to watershed-scale or project-level analyses, to individual road activities. Effects to the water, aquatic, and riparian resources are assessed during planning and balanced with the social, economic, and land-management needs of the area. Appropriate protection and mitigation measures are considered when water, aquatic, and riparian resources are anticipated to be adversely impacted, or are already impaired.

The line officer determines the scope and scale of travel analysis conducted, such as forest, watershed, landscape, or project level. This is the mandated agency procedure for advising road-related project decisions on cumulative effects and connected actions that may be involved with those decisions. Legacy roads with a history of impacts to water quality are analyzed to a degree commensurate with the scale of the particular travel analysis being performed. Project-level travel analysis is conducted to inform decisions and facilitate vegetation, fuels, range, recreation, or other management actions. Such analysis contains detail on the condition of individual roads within the project area, as well as the impacts by the roads. Specific actions for protection, and improvement of water quality, if needed, are identified for implementation as funding for a project becomes available. Options for road management include maintaining, improving, relocating, converting to other use, placement into storage, and decommissioning. See Exhibit 1. - Road management options.

12.21 Exhibit 01 -- Continued
BMP 2.1 - Travel Management Planning and Analysis



Road management objectives document the intent and purpose of each route providing access in support of the forest's LRMP. In addition, road management objectives document maintenance objectives, environmental concerns, and management constraints. The District Ranger approves, signs, and dates the road management objectives. Travel analysis may trigger a modification to

12.21 Exhibit 01 -- Continued
BMP 2.1 - Travel Management Planning and Analysis

the road management objectives, in support of reducing impacts to or improving water quality. The following list of techniques may be refined to reflect local site conditions.

Implementation:

1. Apply techniques of BMP 2.1(Travel Management Planning and Analysis) as applicable.

2. Conduct Travel Analysis (see description of the Travel Management Rule Subpart A above under Explanation) to determine the minimum road system needed for safe and efficient travel, administration, utilization, and protection of forest land and water resources. Identify current and future needs and uses of each NFS system and unauthorized road.

3. Identify road segments causing or threatening to cause adverse impacts to environmental resources (that is, soils, water, aquatic or riparian habitat), utilizing refinement of modeling commensurate with the scale of travel analysis being performed.

a. Use physically based, empirical, or conceptual road erosion and delivery models based on field-based road inventory data to identify the relative impact or risk of adverse impacts to water resources.

b. Identify relative risk of crossing failure by assessing:

(1) Hydraulic capacity of crossing

(2) Signs of plugging or aggradation at the culvert inlet

(3) Condition of drainage structure (for example, a culvert)

(4) Potential for drainage diversion

c. Identify relative risk of road-induced mass wasting.

d. Update road information periodically to adequately reflect time-varying road conditions (that is, road condition after high-magnitude, low-frequency storm events).

4. Locate, correctly interpret, and use readily available and relevant scientific literature and field data in the analysis. Disclose any assumptions made during the analysis, and reveal the limitations of the information on which the analysis is based. Use and/or

12.21 Exhibit 01 -- Continued
BMP 2.1 - Travel Management Planning and Analysis

collect data in accordance with FSH 7709.55 chapter 20, to identify the relative impact or risk of adverse impacts to water resources.

5. Identify and rank relative risk of crossing failure.

6. Identify and prioritize mitigation measures for existing roads that cause resource or watershed impacts. Mitigation measures may include any of the following:

a. Relocating road segments that adversely impact soil or water resources.

b. Reconstructing road segments to modify, improve, or restore road drainage.

c. Improving roads with deferred maintenance needs to current standards.

d. Improving stream crossings to accommodate bedload and debris, and provide for aquatic habitat and passage.

f. Hardening road surfaces (that is, running surface or inside ditches) to prevent the generation of fine-grained surface material and/or armor portions of the road prism subject to concentrated runoff.

g. Putting roads in storage, while maintaining hydrologic and geomorphic functionality of drainage features (see BMP 2.6 - Road Storage).

h. Closing roads seasonally to protect water resources.

i. Restoring surface and subsurface hydrologic properties by removing roads from sensitive environments including riparian areas and meadows. May include relocation or decommissioning.

j. Permanently closing roads that cause significant adverse impacts to soil or water resources.

k. Decommissioning or converting unnecessary roads to other uses, such as trails (see BMP 2.7 - Decommissioning). Assess risk of impact to water quality by decommissioning, placing road in storage, or converting to other use, and various treatments for each option.

7. Review road management objectives for on-site changes to originally recorded documents.

12.21 Exhibit 01 -- Continued
BMP 2.1 - Travel Management Planning and Analysis

a. Identify current type of vehicle use and volume.

b. Monitor for effectiveness of design features on water quality, aquatic, and riparian resources.

c. Identify appropriate access management strategy (that is, encourage use, accept use, discourage use, eliminate use, and prohibit use (FSM 7731.11)) for each road.

d. Incorporate changes from original road management objectives into analysis, and if necessary, update objectives.

e. Propose mitigations where needed and prioritize

8. Avoid keeping roads that display risks to water quality that outweigh benefits, when possible. Define mitigation measures for existing roads that impact water quality.

9. Plan new NFS roads only when needed to support the forest LRMP.

10. Inventory and analyze unauthorized roads. Based on benefits and risks, identify roads for future inclusion in the forest's transportation system, conversion to another use, or decommissioning.

11. At project-level analysis, roads identified for one-time use only are temporary roads, subject to decommissioning according to the Forest and Rangeland Renewable Resources Planning Act (16 USC 1608).

12.21 Exhibit 02
BMP 2.2 - General Guidelines for the Location and Design of Roads

Objective: Locate roads to minimize problems and risks to water; aquatic, and riparian resources. Incorporate measures that prevent or reduce impacts, through design for construction, reconstruction, and other route system improvements.

Explanation: A road's location and design may have long-term effects on water quality, construction and maintenance costs, safety, and other public resources. Road location and design control hydrologic connectivity—the degree that road runoff and sediment are linked to the stream channel network. The extent of hydrologic connectivity, along with the magnitude and frequency of road erosion, drives road-related water-quality impacts.

Roads are located according to standards and specifications to meet their use objectives, while protecting other resources. Well-defined project objectives are necessary to locate and design roads that will best address environmental and resources issues, as well as safety and traffic requirements.

Designs of new roads and upgrades to existing roads consider ways to reduce impacts to beneficial uses of water. Management needs have changed considerably since most NFS roads were constructed. Influences of roads on aquatic and riparian resources are recognized and considered. Road maintenance budgets and opportunities have diminished. Designs for improvements to existing roads significantly reduce or eliminate impacts to beneficial uses of water. Drainage features and surfacing are among elements often considered for change. Improvements to the road system are made on a priority basis that considers road and resource condition, beneficial uses at risk, and cost.

In addition, some situations may require adherence to special conditions associated with Clean Water Act permits for water quality certification (401), stormwater (402), and discharge of dredge and fill material (404). State and local entities may also provide guidance and regulations such as a Forest Practices Act or a Stream Alteration Act. Forest plans often contain direction on location of roads relative to streams, wetlands, and unstable landforms.

The risk from road management activities can be managed by using the appropriate techniques for road location and design from the following list, and adapted as needed to local site conditions.

Implementation: Implementation considers new road location, relocation, and design only. Construction, reconstruction, maintenance, decommissioning, and erosion control are covered in subsequent BMPs.

12.21 Exhibit 02-- Continued
BMP 2.2 - General Guidelines for the Location and Design of Roads

Location:

1. Avoid locating new roads where water-quality risks outweigh beneficial uses.

2. Locate roads to fit the terrain, limit the need for excavation, and prevent damage to improvements and resources.

3. Avoid sensitive areas such as riparian areas, wetlands, meadows, bogs, fens, inner gorges, overly steep slopes, and unstable landforms to the extent practicable. If such areas cannot be avoided:

   a. Use bridges or raised prisms with diffuse drainage to sustain flow patterns

   b. Set crossing bottoms at natural levels of channel beds and wet meadow surfaces

   c. Avoid actions that may dewater or reduce water budgets in wetlands. Consider compensatory mitigation or mitigation banking.

4. Locate roads outside SMZs whenever possible, with a minimum of number of crossings and connections between the road and streams.

5. Relocate existing routes or segments that are in high-risk locations, including the SMZ, to the extent practicable.

6. Relocate roads that are causing uncontrollable adverse effects to beneficial uses of water, with commensurate decommissioning of high-risk roads.

7. Consider potential for generation of waste material in location of roads, and need for access to appropriate disposal areas. Waste or spoil may not be placed within SMZs, on slopes greater than 60 percent, on unstable slopes, or in areas subject to converging runoff.

8. Locate roads in an interdisciplinary manner with a hydrologist, soils scientist, and geologist, if necessary.

9. Final road location drives design features, assuring protection of water quality. Incorporate modeling as necessary to assist with design of road segments displaying higher erosion potential.

12.21 Exhibit 02-- Continued
BMP 2.2 - General Guidelines for the Location and Design of Roads

Design:

1. Design roads to balance cuts and fills or use full bench construction where stable fill construction is not possible.

   a. Consider full bench construction or mechanically stabilized fills on unstable slopes or slopes greater than 60 percent.

   b. Ensure design addresses method to stabilize constructed fill slopes, including key ways where fill slopes exceed 3 feet in height at the hinge point.

   c. Do not design to discharge runoff on to unstable landforms, such as hollows.

2. Design road surfaces to dissipate intercepted water in a uniform manner along the road by outsloping, insloping with drains, or crowning with drains, subject to site soil characteristics to prevent the discharge of sediment to surface waters.

3. Design to reduce the hydrologic connectivity of the road segment or network.

4. Limit occurrence of connectivity areas to water crossings only, if possible.

5. Choose low-maintenance designs (for example, outsloping and rolling the grade) for roads that may be subject to minimal use or will be put in storage.

6. Follow general principles of stormwater and erosion control related to roads including permanent and temporary controls that:

   a. Minimize soil compaction (except as needed to achieve compaction standards on road prism) and bare ground coverage.

   b. Separate exposed bare ground from surface waters. Incorporate vegetation or slash over exposed fill slopes.

   c. Design stable road prisms and stream crossings.

   d. Use geotextiles when necessary to avoid mixing aggregate with subgrade and subsequent rutting of road.

7. Employ treatments that control stormwater and erosion at the source through the use of small-scale treatments distributed throughout the road prism.

8. Design properly spaced cross drains to provide maximum filter distance and to limit hydrologic connectivity between the road and water resource where practicable.

12.21 Exhibit 02 -- Continued
BMP 2.2 - General Guidelines for the Location and Design of Roads

9. Design subsurface dispersion measures and cross drains as necessary to capture and disperse expected flows contributed by locally shallow groundwater and road surfaces.

10. Design energy dissipaters, apron, downspouts, gabions, flumes, oversize drains and debris racks, culvert and cross drain inlets and outlets, where needed to prevent erosion and discharge of sediment to surface waters. Do not discharge runoff on to unstable surfaces.

11. Design stable ditch configuration that does not erode, yet does not fail during mechanical maintenance activity

12. Carefully consider impacts vs. benefits of berm in the control of runoff. Avoid berms except where needed to facilitate drainage patterns without adverse impact to water quality.

13. Design spot surface treatments to areas that are sensitive, erodible, subject to high seasonal water tables, or will be heavily traveled.

14. For roads located within the SMZ where adequate buffer zone does not exist, design for aggregate or paved surface. Design for a floodplain surface to slow water velocities and minimize erosion by flood flows (energy dissipation).

15. Generally use the minimum road standards for grade and alignment (width, turning radius, maximum slope) to accommodate the design vehicle and traffic mix and volume.

16. Consider maintenance requirements in road design.

17. For roads to be reconstructed, incorporate design features to reduce or eliminate identified water-quality impacts.

Crossings:

1. Design both temporary and system roads to limit the number of surface-water crossings necessary to meet planned activity objectives and safety requirements.

2. When necessary to cross streams, find optimal places for road-stream crossings. If possible avoid:

a. Areas requiring steep road approaches.

12.21 Exhibit 02 -- Continued
BMP 2.2 - General Guidelines for the Location and Design of Roads

b. Crossing braided or migrating stream channels.

c. Flat stream gradient immediately downstream of steep stream gradients.

d. Areas requiring deep fills.

e. Areas immediately downstream of unstable slopes or landforms.

3. Design crossing approaches so road surfaces and drainage features have minimum hydrologic connectivity with channels.

4. Design diversion potential dips at existing crossings where there is a risk of flow diversion or where crossing fills are higher than approaches. Consider hardened fills commensurate with fill height. Consult with hydrologist.

5. Design stream-crossing structures to provide the most resource protection consistent with facility needs, legal obligations, and cost considerations.

6. Provide for desired passage of aquatic and terrestrial organisms, debris, and bedload as well as flow.

a. Size crossings for the 100-year flood event, plus associated debris and sediment, or greater.

b. Design for stream simulation if feasible in consultation with hydrologists and fisheries biologists.

7. Consider using culvert arrays, perched culverts and/or permeable fills in meadow environments or areas with naturally high water tables to encourage meadow function.

12.21 Exhibit 03
BMP 2.3 - Road Construction and Reconstruction

Objective: Minimize erosion and sediment delivery from roads during road construction or reconstruction, and their related activities.

Explanation: During road construction and reconstruction activities, vegetation and ground cover are removed, often exposing both the surface and subsurface soil to erosion. Temporary and long-term erosion-control measures are necessary to reduce erosion and maintain overall slope stability. These erosion-control measures may include vegetative and structural techniques to ensure the area's long-term stability. The risk from road construction and reconstruction activities can be managed by using the appropriate techniques from the following list adapted as needed to local site conditions.

Implementation: Enforcement of the techniques is the responsibility of the inspector and contracting officer's representative for public works contracts, the inspector and engineering representative for timber sale roads, and the permit administrator for roads constructed or reconstructed under administrative operations (that is, Road Use Permit, Special Use Permit, and so forth). If roads are constructed or reconstructed by force account crews, the project manager and foreman are responsible for adherence to project drawings, specifications, and erosion control plan.

1. Implement the approved erosion control plan that covers all disturbed areas, including borrow areas and stockpiles used during road management activities (see BMP 2.13- Erosion Control Plan). Include the forest's wet weather operations standards (WWOS).

2. Maintain erosion-control measures to function effectively throughout the project area during road construction and reconstruction, and in accordance with the approved erosion control plan (see BMP 2.13- Erosion Control Plan).

3. Set the minimum construction limits needed for the project and confine disturbance to that area.

4. Locate and designate waste areas before operations begin.

   a. Deposit and stabilize excess and unsuitable materials only is designated sites.

   b. Do not place such materials on slopes with a high risk of mass failure, in areas subject to overland flow (for example, convergent areas subject to saturation overland flow), or within the SMZ.

   c. Provide adequate surface drainage and erosion protection at disposal sites.

12.21 Exhibit 03 -- Continued
BMP 2.3 - Road Construction and Reconstruction

d. Comply with BMP 2.5 - Water Source Development and Utilization.

5. Comply with BMP 2.11 - Equipment Refueling and Servicing.

6. Do not permit sidecasting within the SMZ. Prevent excavated materials from entering water ways or SMZs.

7. Develop and follow blasting plans to move materials when necessary.

a. To the extent possible, restrict blasting in sensitive areas and those sites with high landslide potential.

b. Restrict blasting after intense storms when soils are saturated.

c. Prevent damage from fly rock and overshot by not overloading shots, installing blasting mats, or avoiding setting charges through variable rock strata.

8. Schedule operations when rain, runoff, wet soils, snowmelt or frost melt are less likely. Follow seasonal restrictions of the forest's WWOS, and notification protocols, as outlined in an approved erosion control plan.

a. Optimally, schedule construction during dry periods, while still adhering to other seasonal restrictions (wildlife breeding, spawning, fire activity levels, and so forth), consistent with local ordinances.

b. Stabilize project area during normal operating season when the National Weather Service predicts a 30 percent or greater chance of precipitation, such as localized thunderstorm or approaching frontal system.

c. Keep erosion-control measures sufficiently effective during ground disturbance to allow rapid closure when weather conditions deteriorate.

d. Complete all necessary stabilization measures prior to predicted precipitation that could result in surface runoff.

9. To the extent possible, construct new stream crossings when streams are dry or when stream flow is at its lowest. Install sediment controls.

10. Comply with BMP 2.8- Stream Crossings.

12.21 Exhibit 03 -- Continued
BMP 2.3 - Road Construction and Reconstruction

11. Limit operation of equipment when ground conditions could result in excessive rutting, soil compaction (except on the road prism or other surface to be compacted), or runoff of sediments directly to streams.

12. On slopes greater than 40 percent, the organic layer of the soil shall be removed prior to fill placement, according to project specifications.

13. Waste organic material, such as uprooted stumps, cull logs, accumulations of limbs and branches, and unmerchantable trees, shall not be buried in logging road or landing fills. Dispose of waste organic material according to project specifications, in locations designated for waste disposal. Assure compliance with the project erosion control plan.

14. Construct fills and keyways according to design drawings and specifications, not exceeding specified lift thickness and moisture content. Ensure uncompacted materials are prevented from leaving disturbance limits.

15. Stabilize all disturbed areas with mulch, erosion fabric, vegetation, rock, large organic materials, engineered structures, or other stabilization measures according to the Erosion Control Plan, and project specifications and drawings for permanent controls (that is, crib walls, gabions, riprap placement, and so forth).

16. Scatter construction-generated slash on disturbed areas to help control erosion.

a. Ensure ground contact between slash and disturbed slopes.

b. Windrow slash at the base of fill slopes to reduce sedimentation.

c. Ensure that windrows are placed along the contour and that there is ground contact between slash and disturbed slope.

17. Remove large limbs and cull logs to designated sites outside the SMZ or relocate within the SMZ to meet aquatic resource management objectives.

18. Monitor contractor’s plans and operations to assure contractor does not open up more ground than can be substantially completed before expected winter shutdowns, unless erosion-control measures are implemented.

19. If snow/rainy season operations are proposed, specifications for snow/ice depth or soil operability conditions must be described. Include these specifications in the erosion control plan (see BMP 2.13- Erosion Control Plans).

12.21 Exhibit 03 -- Continued
BMP 2.3 - Road Construction and Reconstruction

20. Install erosion-control measures on incomplete roads prior to precipitation events or the start of the winter period (November 16 through March 31) and in accordance with the approved erosion control plan:

a. Remove ineffective temporary culverts, culvert plugs, diversion dams, or elevated stream crossings, leaving a channel at least as wide as before construction and as close to the original grade as possible.

b. Install temporary culverts, side drains, cross drains, diversion ditches, energy dissipaters, dips, sediment basins, berms, dikes, debris racks, pipe risers, or other facilities needed to control erosion.

c. Remove debris, obstructions, and spoil material from channels, floodplains, and riparian areas.

d. Do not leave project areas for the winter with remedial measures incomplete.

e. Plant vegetation, mulch, and amendments, or provide other protective cover for exposed soil surfaces.

21. When pioneer roads are necessary:

a. Confine construction of pioneer roads to the planned roadway limits unless otherwise specified or approved.

b. Locate and construct pioneering roads to prevent undercutting of the designated final cut slope.

c. Avoid deposition of materials outside the designated roadway limits.

d. Dewater live streams where crossed by pioneer roads with appropriate diversion devices.

e. Accommodate drainage with adequate temporary crossings.

12.21 Exhibit 04
BMP 2.4 - Road Maintenance and Operations

Objective: To ensure water-quality protection by providing adequate and appropriate maintenance and by controlling road use and operations.

Explanation: Appropriate maintenance and control of road use and operations can protect water quality, aquatic and riparian resources, and capital investments. Maintenance needs and operational controls are informed by periodic inventory and assessment that determine road condition and the potential impacts the road has on water quality.

Properly designed and maintained road surfaces and drainage systems can reduce adverse effects to water resources by facilitating natural hydrologic function. Roads and drainage systems normally deteriorate because of traffic, weather, and effects of maintenance. In addition, roads occasionally become saturated by new groundwater springs and seeps after a wildfire or unusually wet periods. Many such conditions can be corrected by timely maintenance. However, while routine maintenance may be needed to ensure the road performs as designed, it can also be a source of soil disturbance and therefore, sediment production. In particular, the grading of inside ditches and road surfaces can significantly increase sediment production rates. Less aggressive maintenance may be desired to minimize disturbance of stable sites.

Road management objectives include the level and type of maintenance that a road is expected to receive. Assigned road maintenance levels vary from 1 to 5, and are directly linked to the operational objectives for the road. Maintenance Level 1 is assigned to roads closed to all motorized vehicles for a year or more; they should be left in a stable condition, and by definition, require less maintenance. Maintenance Levels 4 and 5 are assigned to roads that are typically double-lane, aggregate-surfaced or paved, and passenger vehicle traffic is “encouraged.” They are well maintained to provide a moderate to high degree of user comfort and convenience.

Operational objectives and activities are also defined by the road management objectives, and depend upon the amount of maintenance a road is expected to receive. Road operations also include permit, contract, and agreement administration, control of seasonal use, sustaining roads in closed status and revising maintenance levels and seasonal closures, as needed. Road closures and restrictions are necessary because many forest roads are designed for dry-season use. Most local roads are not surfaced, while others have some surfacing or spot stabilization. Roads without stabilized surfaces or adequate base can be damaged by use during wet periods or by loads heavier than the road was designed to convey.

Road maintenance plans are implemented through contract, cooperators, force account, and active timber sale or other authorized activities. Contract, timber sale, and other authorized or permitted operations are bound by specifications and drawings. BMPs are incorporated as specifications, contract or sale clauses, operating plan requirements, permit clauses, and are often

12.21 Exhibit 04 -- Continued
BMP 2.4 - Road Maintenance and Operations

shown in the drawings. The contracting officer's representative is responsible for assuring compliance by contractors; engineering representative, TSA, or FSR assures compliance by cooperator, purchaser or permitted operator. Project manager and crew supervisor assures compliance for force account work. Optimally, the forest hydrologist works with the forest quality assurance personnel to determine if approved maintenance tasks are completed with minimal resource impacts. Adjustments to future maintenance plans and methods are considered when previous methods do not provide the needed protection to water quality.

Risk from road maintenance activities can be managed by using the appropriate techniques from the following list adapted as needed to local site conditions.

Implementation

Inspection:

1. Periodically inspect system travel routes to assess condition and linkage to water quality. This information assists in setting maintenance and improvement priorities.

   a. Provide training to the engineering personnel performing condition surveys to successfully identify and assess linkage to water quality.

   b. Conduct condition surveys jointly with engineering and hydrology personnel, to more accurately assess potential of road to impact water quality.

   c. Prioritize inspections to roads at high risk of failure, followed by road segments that are hydrologically connected to the stream network, to reduce risk of diversions and cascading failures.

   d. Identify diversion potential on roads, and prioritize for treatment.

2. Inspect drainage structures and runoff patterns after major storm events and snowmelt, and perform any necessary maintenance. Major storm events include all storm events for which the National Weather Service issues a local flood watch, advisory, or warning.

   a. Determine the extent of hydrologic connectivity during and/or just after major storm events, including the connectivity of disturbed areas directly adjacent to the road network. Use this information to prioritize and plan improvements to road drainage.

   b. Immediately clean out, repair or reconstruct waterbars, inside ditches, culverts, and other features that are not functioning in order to hydrologically disconnect roads

12.21 Exhibit 04 -- Continued
BMP 2.4 - Road Maintenance and Operations

from surface waters and prevent discharges of sediment andother pollutants to water bodies.

3. Regularly inspect roads during all operations.

4. Keep roads closed to public use, but open for administrative use, in hydrologically functional condition. If waterbars are breached, forest personnel will promptly repair them.

5. Encourage field personnel of all disciplines to observe road deterioration or damage commensurate with travel to field activities, and report to engineering, for immediate action, if necessary.

a. Restrict operations if impact or imminent threat of impact to water quality is occurring.

b. Consider restricting operations if road damage such as surface displacement or active rutting is occurring.

Maintenance Planning:

1. Incorporate the forest's Wet Weather Operations Standards and notification protocols in maintenance and operations.

2. Develop and implement an erosion control plan commensurate with the complexity and scale, and duration of the activity. See BMP 2.13.

3. Develop and implement annual maintenance plans that prioritize road maintenance work for the forest or district.

a. Include roads identified as needing maintenance from field condition surveys, and roads identified through roads analysis and travel analysis that negatively impact water quality.

b. Determine method of accomplishment (contract, force account, permit, and cooperative) and define responsibilities and maintenance timing in the plan.

4. Planning for emergency interim/temporary erosion controls to protect water quality is considered for roads that may require immediate maintenance, but are beyond capability of annual maintenance plan.

12.21 Exhibit 04 -- Continued
BMP 2.4 - Road Maintenance and Operations

5. Identify roads with potential to improve water quality by modifying road prism and drainage patterns through maintenance operations.

a. Analyze roads in an interdisciplinary manner to identify other impacts that may occur due to changes in road prism or drainage patterns. Consider local conditions and site characteristics.

b. Implement diversion potential method per Forest Service Publication 9777.1814P-SDTDC Diversion Potential at Road-Stream Crossings.

c. Consider user safety and protection of other forest resources.

d. Provide training and reference materials for forest road managers, road maintenance operators, and road maintenance contract preparation personnel to work with hydrologists in identifying appropriate roads for revised maintenance procedures.

6. Evaluate road management objectives when an inspection indicates road design is not meeting current transportation and/or resource needs. Road management objectives support forest LRMP prescriptions.

Maintenance Activities:

1. Maintain road surfaces to dissipate intercepted water in a uniform manner along the road by outsloping with rolling dips, insloping with drains, or crowning with drains. Where feasible and consistent with protecting public safety, utilize outsloping and rolling the grade (rolling dips) as the primary drainage technique.

2. Adjust surface drainage structures to minimize hydrologic connectivity by:

a. Discharging road runoff to areas of high infiltration and high surface roughness.

b. Armoring drainage facility outlet as energy dissipater and to prevent gully initiation.

c. Increasing the number drainage facilities with SMZs.

3. Clean ditches and drainage structure inlets only as often as needed to keep them functioning. Prevent unnecessary or excessive vegetation disturbance and removal on features such as swales, ditches, shoulders, and cut and fill slopes.

4. Minimize diversion potential by installing diversion prevention dips that can accommodate overtopping runoff.

12.21 Exhibit 04 -- Continued
BMP 2.4 - Road Maintenance and Operations

a. Place diversion prevention dips downslope of crossing, rather than directly over the crossing fill, and in a location that minimizes fill loss in the event of overtopping.

b. Armor diversion prevention dips when the expected volume of fill loss is significant.

5. Address risk and consequence of future failure at the site when repairing road failures. Use vegetation, rock, and other native materials to help stabilize failure zones.

6. Maintain road surface drainage by removing berms, unless specifically designated otherwise.

7. Install and preserve markers to identify and protect drainage structures that can be damaged during maintenance activities (that is, culverts, subdrains, and so forth)

8. When grading roads or cleaning drainage structure inlets and ditches, avoid undercutting the toe of the cut slope.

9. Grade road surfaces in accordance with road management objectives and assigned maintenance level. Grade only as needed to maintain a stable running surface and adequate surface drainage.

10. Accompany grading of hydrologically connected road surfaces and inside ditches with erosion and sediment control installation.

11. Identify additional road maintenance measures to protect and maintain water; aquatic, and riparian resources including: surfacing and resurfacing, outsloping, dips and cross drains, armoring of ditches, spot rocking, replacing culverts, and installing new drainage features.

12. Effectively maintain roads in storage to eliminate all motorized vehicle use. Maintain physical closure devices, if present, to be safe and effective. For roads where physical closure methods are not feasible, install signing to inform of road closure.

13. Enforce pre-haul maintenance, maintenance during haul, and post haul maintenance (putting the road back in storage) specifications when maintenance level 1 roads are opened for use on commercial resource management projects. Require the commercial operator to leave roads in a satisfactory condition when project is completed.

14. Opened for use on commercial resource management projects. Require the commercial operator to leave roads in a satisfactory condition when project is completed.

12.21 Exhibit 04 -- Continued
BMP 2.4 - Road Maintenance and Operations

Operations:

1. Restrict or prohibit road use during periods when such use would likely damage the roadway surface or road drainage features are identified through Travel Analysis and Travel Management, and implement through enforcement of motor vehicle use map. Changes in road management are supported by appropriate analysis. Follow the forest's WWOS. See BMP 2.13.

2. Require users to obtain permit(s) when proposed operations involve use of roads by vehicles larger than the design vehicle, or beyond typical operation period or season of use (that is, timber purchasers, mining operations, oversize vehicle movement, and so forth. Conditions of the permitted use may require:

   a. Strengthening the road surface by adding rock, dust palliatives, pavement, or armor, particularly in areas where surfaces are vulnerable to movement such as corners and steep sections.

   b. Considering short-term road surface stabilization by dust abatement methods, such as watering.

   c. Upgrading drainage structures.

   d. Restricting use to low-ground-pressure vehicles or frozen ground conditions.

   e. Strengthening the road base if roads are tending to rut.

   f. Using a base course of rock and/or geotextile fabric to provide subsurface stability.

   g. Intensifying maintenance to handle the traffic without creating excessive erosion and damage to the road surface.

   h. Repairing damage to road and forest resources associated with use by permittee.

   i. Restoring the road to original standard of features, such as restoring waterbars.

3. To the extent possible, ensure drainage features are fully capable of preventing pollutant discharges to surface waters before the start of the local winter season (such as November 16 to March 31) or before the start of runoff-inducing precipitation events.

4. Permits to oversize or overweight loads require that damage by such loads be repaired by the permit holder. Damage includes impacts to water quality.

5. Cooperative maintenance agreements follow Forest Service direction for use, maintenance, repairs, and responsibilities.

6. Roads under easement are subject to terms of conditions for operation and maintenance.

12.21 Exhibit 05
BMP 2.5 - Water Source Development and Utilization

Objective: To supply water for road construction, maintenance, dust abatement, fire protection, and other management activities, while protecting and maintaining water quality.

Explanation: Water source development is needed to supply water for road construction and maintenance, dust control, and fire control. In-stream water drafting can substantially affect water flow and/or configuration of the bed, bank, or channel of streams. Aquatic species present could be at risk due to rapid changes or sustained reductions in flow, reduced dissolved oxygen, and/or increased water temperature. Exposed surfaces of water holes or other developments could erode and discharge sediment back into the waterway. In addition to direct hydrogeomorphic (forming and shaping landform by water) disruption to the channel and subsequent impacts to aquatic species, water-quality impacts can occur from road approaches that access the water drafting site. Many water drafting sites have steep approaches and in the absence of adequate drainage or surfacing, these approaches can become chronic sources of sediment and runoff to the channel. Water trucks often leak oil, and sometimes fuel, onto drafting pads, becoming a source of petroleum product contamination to surface waters.

Regular monitoring of water supply developments, during construction and use, and enforcement of contract and sale clauses, specifications, and restrictions is the responsibility of inspectors, contracting officer representatives, engineering representatives, sale administrators, and force account crew foreman.

Implementation

Location and Development:

Critical to the effectiveness of this practice is the coordination of engineering representatives, hydrologists, fishery biologists, and permit and sale administrators. Locate existing developments, or proposed streams, and evaluate for feasibility of use; determine scope and scale of environmental risks; select techniques for mitigating disturbance to water quality; and compare with the economics of development and use:

1. Water sources designed for permanent installation, such as piped diversions to off-site storage, are preferred over temporary, short-term-use developments.

2. If off-site storage is not an option then the following locations shall be considered.

    a. Locations where flowing side channels rather than the main thread of the channel can be used for drafting.

    b. Areas with existing pools that can be partially blocked, rather than in-channel excavation are preferred.

12.21 Exhibit 05 -- Continued
BMP 2.5 - Water Source Development and Utilization

c. Sites where road approaches can be hydrologically disconnected from streams.

d. Sites where the drafting pad can be placed above the bankfull elevation of the channel with little or no excavation and/or fill placement.

3. Develop and implement Erosion Control Plan for water supply site construction and use.

4. Follow the forest's wet weather operations standards and guidelines. See BMP 2.13.

5. Excavation of streambed or bank materials for approaches, drafting pads, and water drafting intakes are subject to local or regional restrictions on ground-disturbing activities.

a. Excavations should not occur during peak runoff season.

b. Federally listed threatened and endangered species, sensitive (including State-listed) species, management Indicator species, and aquatic organisms of interest may impose further restrictions.

c. Other restrictions such as spawning season may be applicable

6. Basins shall not be constructed at culvert inlets for the purpose of developing a waterhole, as these can exacerbate plugging of the culvert.

7. Access approaches are located as close to perpendicular as possible to prevent stream bank excavation.

8. Access approaches are stabilized with appropriate materials, depending on expected life and use frequency of the developed water source.

9. Fish-bearing streams that are temporarily dammed to create a drafting pool shall provide fish passage for all life stages of fish.

10. Temporary dams shall be removed when operations are complete.

11. Removal shall be done gradually so that released impoundments do not discharge sediment into the streamflow.

12. When diverting water from streams, bypass flows shall be maintained that ensure continuous surface flow in downstream reaches, and keep habitat in downstream reaches in good condition.

12.21 Exhibit 05 -- Continued
BMP 2.5 - Water Source Development and Utilization

Drafting Operations:

1. For fish-bearing streams, the water drafting rate should not exceed 350 gallons per minute for streamflow greater than or equal to 4.0 cubic feet per second (cfs).

2. Below 4.0 cfs, drafting rates should not exceed 20 percent of surface flows.

3. Water drafting should cease when bypass surface flows drop below 1.5 cfs.

4. For non-fish-bearing streams, the water drafting rate should not exceed 350 gallons per minute for stream flow greater than or equal to 2.0 cfs.

5. Drafting rate should not exceed 50 percent of surface flow for non-fish-bearing streams.

6. Water drafting should cease from non-fish-bearing streams when bypass surface flow drops below 10 gallons per minute.

7. Intakes, for trucks and tanks, shall be placed parallel to the flow of water and screened, with opening size consistent with the protection of aquatic species of interest.

8. Drafting from gravity-fed storage tanks shall utilize the following

9. Water storage tanks shall be fitted with properly sized pipes designed to cleanly return the tank overflow to the source stream.

10. Outflow pipes shall be sized to fully contain the tank overflow and prevent it from overflowing onto the drafting pad or road surface.

11. Water storage tank return pipes at the water outfall area shall be armored to prevent erosion of the streambed, bank, or channel.

12. At the end of drafting operations, intake screens shall be removed and drafting pipes plugged, capped, or otherwise blocked or removed from the active channel to terminate water drafting during the winter season.

13. Trucks directly drafting from the channel shall utilize the following practices.

14. Water drafting by more than one truck shall not occur simultaneously

12.21 Exhibit 05 -- Continued
BMP 2.5 - Water Source Development and Utilization

Approaches and Drafting Pads:

1. Road approaches and drafting pads shall be treated to prevent sediment production and delivery to a watercourse or waterhole.

2. Road approaches shall be armored as necessary from the end of the approach nearest a stream for a minimum of 50 feet, or to the nearest drainage structure (for example, waterbar or rolling dip) or point where road drainage does not drain toward the stream.

3. Areas subject to high flood events shall be armored to prevent erosion and sediment delivery to water courses.

4. Where overflow runoff from water trucks or storage tanks may enter the stream, effective erosion control devices shall be installed (for example, gravel berms or waterbars).

5. All water-drafting vehicles shall be checked daily and shall be repaired as necessary to prevent leaks of petroleum products from entering SMZs.

6. Water-drafting vehicles shall contain petroleum-absorbent pads, which are placed under vehicles before drafting.

7. Water-drafting vehicles shall contain petroleum spill kits. Dispose of absorbent pads according to the Hazardous Response Plan.

12.21 Exhibit 06
BMP 2.6 - Road Storage

Objective: Ensure that roads placed in storage are maintained to so that drainage facilities and runoff patterns function properly, and damage to adjacent resources is prevented. Stored roads are managed to be returned to service, at various intervals.

Explanation: Road maintenance needs on NFS lands typically exceed maintenance budgets. As a result, many low-standard, closed roads receive no maintenance and may go years without being inspected for maintenance needs. Plans for and design of such roads should reflect long intervals between maintenance activities, but provide protection to resources and investments. This approach reduces the risk of adverse impacts to water, aquatic, and riparian resources and reduces long-term maintenance costs.

Road storage is not an alternative to road decommissioning (BMP 2.7). As described in BMP 2.1, each national forest will designate its minimum road network. Roads not included in the minimum road network will eventually be decommissioned. Only roads that are needed in the future will be considered for storage.

A primary reason for putting roads into Intermittent Stored Service is to reduce maintenance needs while limiting the risk of adverse effects to hydrologic function from stream crossing failures, fill failures, surface water routing, and modified drainage patterns. Roads placed in Intermittent Stored Service have the roadway retained to the extent practicable while meeting the watershed objectives of reducing sediment delivery and restoring natural flow patterns. These are achieved by reducing sediment delivery from the road surface and fills, and reducing the risk of crossing failure and stream diversion.

The risk from roads in Intermittent Stored Service condition can be managed by using the appropriate techniques from the following list adapted as needed to local site conditions. Project crew leaders and supervisors are responsible for ensuring that force account projects meet road closure procedures standards. Contracted projects are implemented by the contractor, or operator. Compliance with plans, specifications, and operating plans is ensured by the contracting officer's representative, engineering representative, or Forest Service representative. Permitted use of stored roads requires restoring the road to its previous stable condition after use by the permittee, as enforced by the permit administrator.

Implementation:

1. Roads that are placed in storage, but open as trails, motorized and non-motorized, will need to provide for the safety of the intended users. As such, pulling culverts may not be warranted.

12.21 Exhibit 06 -- Continued
BMP 2.6 - Road Storage

2. In an interdisciplinary manner, prepare and implement an erosion and sediment control plan for roads to be placed in storage.

3. The forest watershed staff will work with the forest engineering staff to identify which culverts pose a threat to water quality and must be removed before a road is placed in storage.

4. Road-stream crossings deemed safe to leave in stored roads will be treated to remove the potential for streamflow diversions in the event of a crossing failure or blockage, and will have rock armor added to downstream crossing fill where needed to prevent erosion.

5. Existing crossings in low-risk situations where the culvert is sized appropriately, is stable, and does not impede aquatic passage remain in place. Prior to storing, ensure that the road, culvert, and all hydrologically connected drainage structures are cleaned, and sediment and erosion controls are intact and functioning.

6. Only structures that have a long planned storage period and present a significant risk to stream channels are removed, due to increased disturbance and exposure. The removal of drainage structures is tied to the length of period of storage, as well as the ability to access structures that are not removed.

7. The risk of increased sedimentation from ground disturbance and exposed surfaces associated with drainage structure removal is weighed carefully against the benefits of restoring long-term hydrologic functionality.

8. Lay back the streambanks at the crossing-site at a width and angle that allows flows from infrequent events to pass without scouring or puddling.

9. Armor the crossing-site, if needed to prevent scour and erosion.

10. Maintain the same size and gradient at the crossing-site as the channel above and below the removed crossing-site.

11. Angle the banks such that undercutting and slumping is not expected, and revegetation has a strong chance of success.

12. Avoid concentrated flow in ditches by outsloping or using frequent waterbars or other means of cross draining the road.

12.21 Exhibit 06 -- Continued
BMP 2.6 - Road Storage

13. Outslope the road template where appropriate to disperse runoff, prevent concentrated flow, and avoid overly steep fills.

14. Remove unstable material at unstable sites, seeps, slumps or where fills are failing. Place removed materials in stable locations where the stored material will not present a future risk to water, aquatic, or riparian resources.

15. Depending on the extent of anticipated closure period, the following are performed in direct proportion to that time period:

a. Scarify or de-compact the road surface to promote vegetation growth and/or infiltration of runoff and intercepted flow.

b. Consider re-contouring highly unstable portions of road.

c. Re-vegetate disturbed areas, particularly at or near stream crossings. Coordinate type and species of vegetation, along with any amendments, with the forest botanist.

16. Closure method at the entrance to the stored road is commensurate with the terrain, alternate uses, and extent of time road is expected to be stored. Stored roads are not shown on the motor vehicle use map, thereby prohibiting motor vehicle use. Use gates or barriers as appropriate for the site. Sign the closure as necessary to inform the public.

17. Regularly perform condition surveys to monitor and evaluate the effectiveness of the closure measures.

12.21 Exhibit 07
BMP 2.7 - Road Decommissioning

Objective: Stabilize, restore, and vegetate unneeded roads to a more natural state as necessary to protect and enhance NFS lands, resources, and water quality. The end result is that the decommissioned road will not represent a significant impact to water quality by:

1. Reducing erosion from road surfaces and slopes and related sedimentation of streams;

2. Reducing risk of mass failures and subsequent impact on water quality;

3. Restoring natural surface and subsurface drainage patterns;

4. Restoring stream channels at road crossings and where roads run adjacent to channels.

Explanation: Roads no longer needed are identified during transportation planning activities (see description of Travel Management subpart A in BMP 2.1) at the forest, watershed or project level. The unneeded road may be decommissioned, or converted to a trail or other use as appropriate. Temporary roads constructed for a specific short-term purpose (for example, ski area development, minerals exploration, or vegetation extraction) are decommissioned at the completion of their intended use, and vegetation reestablished within 10 years.

Road decommissioning terminates the use of the road as a road, and as such, treatments can range from simply blocking the road entrance, to totally eliminating the road prism and structures, and restoring the land to original contours. Treatment method is carefully chosen to minimize negative impacts to water quality, reestablish vegetation, and restore ecological processes. More aggressive techniques may include greater and longer term risks to water quality through exposure of larger disrupted soil surfaces. Road decommissioning can be accomplished by using the appropriate techniques from the following list adapted as needed to local site conditions.

Implementation:

1. Engineering and hydrology personnel conduct field review of road selected for decommissioning to determine site characteristics: aspect, soil type(s), topography, surrounding vegetation, proximity to water sources, and so forth.

2. Optimize treatments that will achieve long-term watershed protection goals on individual roads to stretch the available funds for road decommissioning over as many miles as practicable.

12.21 Exhibit 07 -- Continued
BMP 2.7 - Road Decommissioning

3. Weigh benefits and costs of treatments against alternative of placing road in storage and costs for continuing to maintain for hydrologic functionality. See BMP 2.1.

4. Prepare and implement an approved erosion and sediment control plan for both temporary and long-term recovery of the site as specified.

5. Outslope road by pulling back unstable or perched fill. Remove berms.

12.21 Exhibit 07
BMP 2.7 - Road Decommissioning

1. Restore stream courses and floodplains where feasible, to natural grade and configuration.

2. Remove drainage structures determined as necessary to protect water quality:

3. Re-contour disturbed fill material, and compact minimally to allow filtration.

4. Re-contour the road surface cut and fill slopes to restore natural hillslope topography where specified.

5. De-compact areas with stable fill but reduced infiltration and productivity.

6. Haul excess fill to stable disposal areas outside of the SMZ.

7. Provide effective soil cover (such as mulch, woody debris, rock, vegetation, blankets) to exposed soil surfaces for both short- and long-term recovery.

8. Revegetate disturbed areas, particularly at or near stream crossings.

9. Block vehicle access to prevent motorized traffic, in conjunction with signing, publication, and enforcement of the forest's motor vehicle use map.

12.21 Exhibit 08
BMP 2.8 - Stream Crossings

Objective: Minimize water, aquatic, and riparian resource disturbances and related sediment production when constructing, reconstructing, or maintaining temporary and permanent water crossings.

Explanation: Stream crossings present the highest risk to water quality associated with roads. Forest management activities often occur in areas that require surface waters to be crossed. Depending on the activity type and duration, crossings may be needed permanently or temporarily. Permanent crossings are designed to meet applicable standards while also protecting water, aquatic, and riparian resources.

Examples of crossings include culverts, bridges, arched pipes, low water crossings, fords, vented fords, and permeable fills. Crossing materials and construction will vary, based on the type of access required and volume of use expected. Optimally, crossings should be designed and installed to provide passage for the flow of water plus anticipated sediment and debris, provide for desired aquatic organism passage, and minimize disturbance to the surface and shallow groundwater resources. Sizing is based on a weighed balance between providing for larger storm events, and cost feasibility, while still meeting other resource objectives.

Construction, reconstruction, and maintenance of a water crossing usually requires heavy equipment to be in and near streams, lakes, and other aquatic habitats to install or remove culverts, fords and bridges and their associated fills, abutments, piles, and cribbing. Such disturbance near the waterbody can increase the potential for accelerated erosion and sedimentation from destabilization of streambanks or shorelines, vegetation and ground cover removal, and soil exposure or compaction. In addition, heavy equipment has potential for contamination of the surface water from vehicle fluids.

Permits may be required for in-stream work associated with stream crossing construction and maintenance projects. There are specific requirements for such projects under the Clean Water Act and implementing regulations. State and local entities may also provide guidance and regulations.

The risk from construction, reconstruction or maintenance of stream crossings can be managed by using the appropriate techniques from the following list adapted as needed to local site conditions.

Implementation:

Enforcement of the techniques is the responsibility of the inspector and contracting officer’s representative for public works contracts, the inspector and engineering representative for timber

12.21 Exhibit 08 -- Continued
BMP 2.8 - Stream Crossings

sale roads, and the permit administrator for stream crossings constructed or reconstructed under administrative operations (for example, Road Use Permit, Special Use Permit). If stream crossings are constructed, reconstructed, or maintained by force account crews, the project manager and foreman are responsible for adherence to project drawings, specifications, and Erosion Control Plan. The forest hydrologist works in conjunction with engineering and administrative personnel to provide additional monitoring and evaluation during implementation, as needed.

Location and Design:

1. Locate roads in an interdisciplinary manner with a hydrologist, soils scientist, and geologist if necessary.

2. Plan and locate surface water crossings to limit the number and extent required to service the activity.

3. Design the stream crossing to pass the 100-year flood flow plus associated sediment and debris; armor to withstand design flows and to provide desired passage of fish and other aquatic organisms.

4. Locate and design crossings to minimize disturbance to the waterbody.

5. Use structures appropriate to the site conditions and traffic levels:

   a. Favor bridges, bottomless arches, or buried pipe-arches for those streams with identifiable floodplains and elevated road prisms, instead of pipe culverts.

   b. Place bridge and arch footings below the scour depth for the 100-year flood flow plus the appropriate factor of safety.

   c. Favor armored fords for those streams where vehicle traffic is either seasonal or temporary, or the ford design maintains the channel pattern, profile and dimension.

   d. For perennial streams, use vented fords, so that the crossing can pass low flows.

6. See BMP BMP 2.2: General Guidelines for the Location and Design of Roads, for further guidance.

12.21 Exhibit 08 -- Continued
BMP 2.8 - Stream Crossings

Construction and reconstruction - permanent and temporary crossings:

1. Implement the approved erosion control plan that covers all disturbed areas, including borrow areas, stockpiles, stream diversions, etc. used during stream crossing construction or reconstruction (see BMP 2.13- Erosion Control Plan).

   a. Use temporary filters, berms, barriers, conveyances or other materials to collect sediment and prevent it from entering surface waters.

   b. Set the minimum construction limits needed for the project and confine disturbance to within this area.

2. Accurately establish and preserve vertical control through design invert and outlet elevations on site for each crossing, to assure that the constructed stream-crossing structure will perform as intended, and promote effective drainage without damage or impact to water, aquatic, or riparian resources.

3. Accurately establish and preserve horizontal alignment for each stream-crossing structure, to assure that flows do not erode stream banks or shoreline.

4. Install stream crossings according to project design specifications and drawings. Design should sustain bankfull dimensions of width, depth and slope, and maintain streambed and bank resiliency.

5. Minimize streambank and riparian area excavation during construction:

   a. Stabilize adjacent areas disturbed during construction using surface cover (mulch), retaining structures, and or mechanical stabilization materials.

   b. Keep excavated materials out of channels, floodplains, wetlands, and lakes.

   c. Install silt fences or other sediment- and debris-retention barriers between the water body and construction material stockpiles and wastes.

6. Bypass roads for use during construction are considered temporary roads, and are subject to the all relevant BMPs. Decommissioning and stabilization of the bypass roads are inherent in the project plan.

7. Ensure imported fill materials meet project specifications, and are free of toxins and invasive aquatic or riparian species.

12.21 Exhibit 08 -- Continued
BMP 2.8 - Stream Crossings

8. To the extent possible, conduct operations during the least critical periods for water and aquatic resources: when streams are dry; during low-water conditions; in compliance with spawning and breeding season restrictions.

9. Divert or dewater stream flow for all live streams or standing waterbodies during crossing installation and invasive maintenance:

a. Return clean flows to channel or water body downstream of the activity.

b. Restore flows to their natural stream course as soon as possible after construction or prior to seasonal closures.

c. Install downstream collection basins, retention facilities, or filtering systems as needed to capture and retain turbid water.

d. Remove collected sediment as needed to maintain their design capacity during the life of the project.

10. Construct diversion prevention dips to accommodate overtopping of runoff if diversion potential exists, when shown on project drawings and specifications. Locate diversion prevention dips downslope of the crossing rather than directly over crossing fill; if designed, armor diversion prevention dips based on soil characteristics and potential risk.

11. Install cross drains (for example, rolling dips; waterbars) to hydrologically disconnect the road above the crossing and to dissipate concentrated flows.

12. Remove all project debris from the water body in a manner that will cause the least disturbance.

13. Dispose of unsuitable material in approved waste areas outside of the SMZ.

14. Clean equipment used for instream work prior to entering the water body:

a. Remove external oil, grease, dirt and mud from the equipment and repair leaks prior to arriving at the project site.

b. Inspect all equipment before unloading at site.

c. Inspect equipment daily for leaks or accumulations of grease, and correct identified problems before entering streams or areas that drain directly to waterbodies.

12.21 Exhibit 08 -- Continued
BMP 2.8 - Stream Crossings

d. Remove all dirt and plant parts to ensure that noxious weeds and aquatic invasive species are not brought to the site.

15. Fuel and service equipment used for in-stream or riparian work (including chainsaws and other hand power tools) only in designated areas (see BMP 2.10).

16. Fully suspend logs, pipes, posts and other transported materials when crossing waterbodies and SMZs.

17. Restore the original surface of the streambed, lake bottom, or wetland upon completing the crossing construction or maintenance. Construct the surface of the streambed according to project specifications and drawings for aquatic passage projects. Stockpile materials by strata or as indicated by specified design criteria when extensive dredging or excavation of these substrates is required.

18. Stabilize streambanks, shorelines, cut and fill slopes, turnouts, and other disturbed areas adjacent to the water resource following crossing installation or maintenance:

a. Use riprap or rock, wood, vegetation, and other native materials as appropriate.

b. Install riprap or other slope protection to prevent erosion from water movement.

c. Size rock slope protection for the 100-year flood flow.

d. Use appropriate construction techniques (keying in riprap) and underlayments (filter blankets or other geotextile) to prevent undermining.

e. Ensure stone used for riprap is free of weakly structured rock, soil, organic material, and other material not resistant to erosive water action.

f. Place stable materials below drainage outlets on erodible soils to dissipate energy.

19. Provide effective soil cover (mulch, woody debris, rock, vegetation, blankets) on exposed soil surfaces for both short- and long-term recovery.

20. Revegetate disturbed areas.

21. Stabilize temporary crossings that must remain in place during high-runoff seasons.

22. Remove temporary crossings and restore the waterbody profile and substrate when the need for the crossing no longer exists.

12.21 Exhibit 08 -- Continued
BMP 2.8 - Stream Crossings

Maintenance:

1. Implement the approved erosion control plan that covers all disturbed areas, including borrow areas, stockpiles, stream diversions used during stream-crossing maintenance and culvert cleaning (see BMP 2.13- Erosion Control Plan). Use temporary filters, berms,

2. barriers, conveyances, or other materials to collect sediment and prevent it from entering surface waters.

3. Remove all project debris from the stream or creek in a manner that will cause the least disturbance.

4. Dispose of unsuitable material in approved waste areas outside of the SMZ.

5. Clean equipment used for instream work prior to entering the stream/creek.

   a. Remove external oil, grease, dirt and mud from the equipment, and repair leaks prior to arriving at the project site.

   b. Inspect all equipment before unloading at site.

   c. Inspect equipment daily for leaks or accumulations of grease, and correct identified problems before entering streams or areas that drain directly to waterbodies.

   d. Remove all dirt and plant parts to ensure that noxious weeds and aquatic invasive species are not brought to the site.

6. Fuel and service equipment used for in-stream or riparian work (including chainsaws and other hand power tools) only in designated areas (see BMP 2.10).

7. Maintain and remove buildup of sediment and debris in diversion prevention dips, rolling dips, and waterbars to ensure they are functioning properly, and do not contribute to the hydrological connectivity of the road.

8. Ensure that inside ditches are maintained properly, and are relieved at regular intervals to eliminate hydrological connectivity. See BMP 2.4, Road Maintenance and Operations.

12.21 Exhibit 09
BMP 2.9 - Snow Removal and Storage

Objective: Prevent or reduce erosion, sedimentation, and chemical pollution that may result from snow removal and storage activities.

Explanation: Forest roads and parking areas are sometimes used in areas that receive snow. Snow removal from these facilities may adversely affect water; aquatic, and riparian resources in several ways. Plowing may physically displace native or engineered surfaces on roads, damage drainage structures, or alter drainage patterns. Plowing may also remove protective soil cover (for example, vegetation and mulch). These changes can result in concentrated flow, increased erosion, and a greater risk of sediment delivery to waterbodies.

Snow piled in large heaps or in sensitive areas may contribute to increased run-off, hill slope erosion, mass slope instability, and in-channel erosion from snowmelt. Snow stored in riparian areas and floodplains may compact soils, break or stunt vegetation, or channel runoff in undesirable patterns, thereby weakening the buffering capacity of areas. Additionally, both snow removal and storage may result in additions of nutrients or fine aggregates used for de-icing or traction control directly to surface water and indirectly to both surface water and groundwater during runoff.

Sale administrators, contracting officer's representatives, engineering representatives, inspectors, permit administrators, and force account crew supervisors are responsible for implementing snow removal and storage operations. The line officer is responsible for approving and assuring implementation of the snow removal plan, and the winter road maintenance plan. The risk from snow removal and storage can be managed by using the appropriate techniques from the following list adapted as needed to local site conditions.

Implementation:

1. Review the forest's wet weather operations standards. See BMP 2.13.

2. Prepare a winter road maintenance plan for roads and parking facilities routinely subject to snow removal operations. Include an erosion and sediment control component to address the following, particularly when no other alternatives exist:

    a. Snow storage areas that could impact water bodies, riparian areas, wetlands, floodplains, and streams.

    b. Fill slopes subject to erosion.

    c. Snow storage locations whose runoff could overwhelm drainage features.

    d. Winter logging operations.

12.21 Exhibit 09 --Continued
BMP 2.9 - Snow Removal and Storage

e. Traditional snow play and winter recreation areas, including those under permit.

f. Snow-park locations.

g. Administrative access.

h. Store snow in pre-approved areas where snowmelt will not cause erosion or deposit snow, road de-icers, or traction enhancing materials directly into surface waters.

i. Plan as though snowmelt from snow storage is the equivalent of an intense localized rainfall.

j. Mark drainage structures to avoid damage during plowing.

3. Move snow in a manner that will prevent disturbance of road surfaces and drainage structures, while protecting adjacent water; aquatic and riparian resources.

4. Control areas where snow removal equipment can operate to prevent damage to riparian areas, floodplains, and stream channels.

5. Install snow berms where such placement will preclude concentration of snowmelt runoff and will serve to rapidly dissipate melt water. Provide frequent drainage through snow berms to avoid hydrologic connectivity with surface waters, concentration of snowmelt runoff on fillslopes and other erosive areas, to dissipate melt water, and to prevent sediment delivery to waterbodies.

6. Limit use of approved deicing and traction-control materials, but do not compromise in areas where safety is critical (intersections and approaches, steep segments, corners).

a. Do not over-apply these materials, and limit spray distribution, when near surface waters.

b. Design paved roads and parking lots to facilitate sand removal (with curbs or paved ditches).

7. Conduct frequent inspections at the earliest possible opportunity to ensure road drainage is not adversely affecting soil or water resources.

8. Where feasible, discontinue road use and snow removal when sediment delivery, or threat thereof, is occurring.

12.21 Exhibit 09 --Continued
BMP 2.9 - Snow Removal and Storage

9. Replace lost road surface materials with similar quality material and repair structures damaged in snow removal operations as soon as practicable and as funding allows.

10. Develop a snow removal plan for roads with winter-logging operations, or roads plowed for recreation, administrative or other access, either by force account or contract, to provide written guidelines on how to implement these techniques, and to provide a map that includes:

a. Locations of drainage structures

b. Locations of streams

c. Control areas for equipment

d. Pre-approved snow storage areas

e. Locations to avoid

11. Federal Land Policy and Management Act easements shall include best management practices for snow removal for roads where snow removal and storage affects NFS land, providing access to non-forest users (residential areas).

12. Modify snow removal procedures as necessary to meet water-quality concerns.

12.21 Exhibit 10
BMP 2.10 - Parking and Staging Areas

Objective: Construct, install, and maintain an appropriate level of drainage and runoff treatment for parking and staging areas to protect water, aquatic, and riparian resources.

Explanation: Designated parking and staging areas on NFS lands may be permanent or temporary and are associated with a variety of uses including administrative buildings, developed recreation sites, trailheads, off-highway vehicle (OHV) areas, and management projects. These parking facilities sometimes constitute large areas with little or no infiltration capacity. Runoff from these areas can create rills or gullies, and carry sediment, nutrients, and other pollutants to nearby surface waters. The risk from parking and staging areas can be managed by using the appropriate techniques from the following list adapted as needed to local site conditions.

Implementation:

1. Design and locate parking and staging areas of appropriate size and configuration to accommodate expected vehicles and prevent damage to adjacent water; aquatic, and riparian resources.

    a. Avoid sensitive areas such as riparian areas, wetlands, meadows, bogs, fens, inner gorges, overly steep slopes, and unstable landforms to the extent practicable.

    b. For staging areas, designate specific locations for fueling so that water-quality impacts are minimized.

2. Consider the number and type of vehicles to determine parking or staging area size.

    a. Calculate the expected runoff generated using the appropriate design storm to determine necessary drainage based on the size of the parking or staging area.

    b. Consider run-on from any contributing areas.

3. Provide signage to designate parking, staging, and refueling areas, and to minimize impacts to sensitive areas.

4. Use permeable pavements where possible, and integrate vegetative islands to trap and filter runoff.

5. Infiltrate as much of the runoff as possible using permeable surfaces and infiltration ditches or basins in areas where groundwater contamination risk is low.

12.21 Exhibit 10 -- Continued
BMP 2.10 - Parking and Staging Areas

6. Pave parking areas that experience heavy use and those that are used during wet periods.

7. Install curbs and gutters to direct and capture surface flow from these paved surfaces.

8. Install and maintain oil and grease separators in larger parking lots with high use and where drainage discharges directly to streams.

9. Plan for necessary clean out and disposal of material collected in these vaults.

10. Connect drainage system to existing stormwater conveyance systems where available and desirable.

11. Conduct maintenance activities commensurate with parking or staging area surfacing and drainage requirements as well as precipitation timing, intensity, and duration.

12. Limit the size and extent of temporary parking or staging areas.

13. Take advantage of existing openings, sites away from waterbodies, and areas that are apt to be more easily restored.

14. Rehabilitate temporary parking or staging areas immediately following use.

15. Effectively prevent access to the area once site restoration activities have been completed.

16. Consider the need to upgrade roads that access parking areas such as OHV parking areas or snow play areas.

12.21 Exhibit 11
BMP 2.11 - Equipment Refueling and Servicing

Objective: Prevent fuels, lubricants, cleaners, and other harmful materials from discharging into nearby surface waters or infiltrating through soils to contaminate groundwater resources.

Explanation: Many activities require the use and maintenance of petroleum-powered equipment in the field: vegetation harvest and regeneration; road, trail, and facility construction, reconstruction, and maintenance. The activities often employ equipment that uses or contains gasoline, diesel, oil, grease, hydraulic fluids, antifreeze, coolants, cleaning agents, and/or pesticides. These petroleum and chemical products may pose a risk to surface water and groundwater during refueling and servicing the equipment.

Sale administrators, contracting officer's representatives, engineering representatives, inspectors, permit administrators, and force account crew supervisors are responsible for enforcing requirements of equipment fueling and servicing activities. They can manage the risk from fuel and chemical spills during equipment refueling or servicing by using the appropriate techniques from the following list adapted as needed to local site conditions.

Implementation:

1. Plan for appropriate equipment refueling and servicing sites during project planning and design.

2. Allow temporary refueling and servicing only at approved locations, which are well away from water or riparian resources.

3. Develop or use existing fuel and chemical management plans (for example, spill prevention control and countermeasures (SPCC), spill response plan, emergency response plan) when developing the management prescription for refueling and servicing sites.

4. Locate, design, construct, and maintain petroleum and chemical delivery and storage facilities consistent with local, State and Federal regulations.

5. Install contour berms and trenches around vehicle service and refueling areas, chemical storage and use areas, and waste dumps to fully contain spills.

6. Use liners as needed to prevent seepage to groundwater.

7. Provide training for all personnel handling fuels and chemicals in their proper use, handling, storage, and disposal.

8. Avoid spilling fuels, lubricants, cleaners, and other chemicals during handling and transporting.

12.21 Exhibit 11 -- Continued
BMP 2.11 - Equipment Refueling and Servicing

9. Prohibit excess chemicals or wastes from being stored or accumulated in the project area.

10. Remove service residues, waste oil, and other materials from NFS land and properly dispose them following completion of the project.

11. Clean up and dispose of spilled materials according to specified requirements in the appropriate guiding document.

12. Report spills and initiate appropriate clean-up action in accordance with applicable State and Federal laws, rules and regulations. The forest hazardous materials coordinator's name and phone number shall be available to Forest Service personnel who administer or manage activities utilizing petroleum-powered equipment.

13. Remove contaminated soil and other material from NFS lands and dispose of this material in a manner according to controlling regulations.

14. Prepare a certified SPCC Plan for each facility, including mobile and portable facilities that have oil storage capacity of at least 1,320 gallons in containers 55 gallons or greater.

a. Install or construct the containment features or countermeasures called for in the SPCC Plan to ensure that spilled oil does not reach groundwater or surface water.

b. Ensure that each SPCC Plan includes a spill contingency plan at each facility that is unable to provide secondary spill containment.

c. Ensure that clean-up of spills and leaking tanks complies with Federal, State and local regulations and requirements.

15. Prepare a contingency plan when quantities of petroleum products are capable of violating Basin Plan water-quality objectives.

16. Section H clauses for Public Works Construction include a standard clause for Spill Plan when project or activity includes oil or oil products storage exceeding 1,320 gallons, or a single container exceeding 660 gallons. Section H clauses also require designation of contractor's key personnel, including authorized on-site representative and phone number(s).

12.21 Exhibit 12
BMP 2.12 - Aggregate Borrow Areas

Objective: Minimize disturbance to water, aquatic, and riparian resources when developing and using aggregate borrow sites.

Explanation: Materials deposited along channels and in floodplains during high flows and storm runoff can provide a source of aggregates such as gravels, cobbles, and boulders for some management activities. Many of these aggregate deposits also include finer materials such as sand, silt, clay, and organic debris that can be mobilized during or following desired material-extraction operations. Additionally, the location of these deposits may require equipment to pass over or through water courses or riparian areas, increasing the potential for bed, bank, riparian, and aquatic habitat disturbance.

Adequate planning is necessary to minimize adverse impacts on water, aquatic, and riparian resources; natural geomorphic processes; and existing infrastructure while removing aggregate deposits. The size and location of the deposit, as well as the amount and duration of need for materials, are commonly the key factors to consider when evaluating and designing an appropriate strategy to remove the materials and stabilize the site following extraction. Project crew leaders and supervisors are responsible for implementing force account projects; contracted projects are implemented by the contractor or equipment operator, and compliance is ensured by Forest Service engineering representative, contracting officer's representative, inspector, or Forest Service representative. They can manage the risk to water-quality impacts from aggregate borrow activities by using the appropriate techniques from the following list adapted as needed to local site conditions.

Implementation:

1. Determine the limits of disturbance for extraction such that water and adjacent water-dependent resources are protected.

2. Determine safe periods of use and limit extraction to those periods.

3. Install temporary barriers between the extraction area and surface waters to prevent sedimentation.

4. Provide for appropriate soil and stream crossings, as necessary, while working in the SMZ and waterbodies.

5. Develop detailed mitigation measures to stabilize and restore the borrow area to desired conditions for the site.

6. Ensure that areas restored within active channels and floodplains will be stable and function as expected under higher flows.

12.21 Exhibit 12--Continued
BMP 2.12 - Aggregate Borrow Areas

Special use permits issued for gravel bar excavation will follow the above techniques, and will require an approved operating plan and reclamation plan. District Ranger or permit administrator is responsible for ensuring compliance.

12.21 Exhibit 13
BMP 2.13 - Erosion Control Plan

Objective: Effectively limit and mitigate erosion and sedimentation from any ground-disturbing activities, through planning prior to commencement of project activity, and through project management and administration during project implementation.

1. Provide seamless transition between planning-level (NEPA) mitigation descriptions and on-the-ground implementation of erosion-control measures tailored to site conditions.

2. Ensure that all disturbance-related mitigation requirements and provisions for field revisions or modifications are accurately captured in one comprehensive document for each project or activity.

3. Activities include, but are not limited to: timber sale harvest; facility site, road, bridge, trail and appurtenance construction, reconstruction, and maintenance; watershed improvement; road and trail decommissioning; legacy site restoration, administratively permitted activities; and vegetation and fuels management activities.

4. Comply with overarching area plans, such as Northwest Forest Plan and Sierra Nevada Framework Plan Amendment.

Explanation: Ground-disturbing activities can result in erosion and sedimentation. By effectively planning for erosion control, sedimentation can be controlled or prevented. Engineering and hydrology personnel jointly develop mitigation recommendations and preliminary BMPs using an interdisciplinary team during the project planning process and environmental analysis phase. Erosion control plans are not be confused with design features whose primary objective is to provide or improve water quality, such as a bridge; reinforced earth retaining wall; or landscaping. The long-term mitigation objectives are typically described in the NEPA document for the project, and then refined in project drawings and specifications as design features. Short-term mitigation measures to prevent erosion and sedimentation are described in detail in the project's erosion control plan.

Project mitigations are conceptually described in NEPA analyses but are typically generic. Detailed mitigation measures are based on site-specific surveys, conditions, and characteristics, and are developed in the project design phase. They are ultimately displayed in the project document's design documents (specifications and drawings) based on site-specific surveys, conditions, and characteristics. Furthermore, field personnel have the responsibility to make refinements or additional recommendations to adjust to actual current and predicted future conditions.

12.21 Exhibit 13 -- Continued
BMP 2.13 - Erosion Control Plan

This flexibility is a necessary and desirable component of project implementation, but must ultimately result in implementation of requirements to protect soil and water quality. To ensure

that all required and relevant mitigation measures are documented and implemented, an environmental control plan will be prepared to complement design (design addresses required mitigations specified in NEPA documents), site-specific prescriptions, and amended to include changes made in the field. Detailed and accurate environmental control plan will allow Forest Service and Water Board staff to conduct efficient, meaningful inspections of ground-disturbing projects, and will provide a needed check to ensure that mitigation measures for addressing impacts from the activities are accurately communicated to field staff.

Implementation: Ground-disturbing activities will be exempt from the requirement to prepare an erosion control plan under any of the four exemption categories below:

1. Area-based - less than 50 square feet in riparian area; less than 10,000 square feet in a non-riparian area;

2. Activity-based - activities conducted under a categorical exclusion with no wheeled or tracked equipment, or included under North Coast Regional or State waiver Category A;

3. Site-condition criteria - project locations that are: outside of riparian areas and on soils with high infiltration rates (more than 2 inches per hour) and on slopes less than 15 percent.

4. Flexibility criteria - any activity approved by the forest hydrologist with documentation explaining the rationale for the exemption.

BMP checklists will be prepared for all projects (see section 16) even if an erosion control plan is not necessary.

Erosion control plans for any ground-disturbing activity not meeting the exemption categories above will be reviewed and recommended by the forest hydrologist, and approved and signed by the District Ranger. The hydrologist's recommendation and signature indicates that all mitigation measures prescribed in environmental documents and project plans, or resource specialist's recommendations are included on the environmental control plan. The Forest Supervisor will approve and sign the environmental control plan for forestwide ground-disturbing activities, such as annual road maintenance.

All forests shall develop wet weather operations standards (WWOS). The purpose of the WWOS is to provide guidance with the end result of preventing significant adverse impacts to water quality from wet weather operations on NFTS roads and trails. Such operations may include

12.21 Exhibit 13 -- Continued
BMP 2.13 - Erosion Control Plan

winter hauling, fuelwood gathering, public access for hunting or Christmas tree cutting, administrative access on closed roads for springtime burning of slash piles, reforestation activities, snow plowing, or other ground disturbance outside normal operating season. WWOS must include notification protocols for informing resource specialists (hydrologists, biologists,

soil scientists) as well as line officers prior to initiation or continuation of a project or activity into wet weather season.

Project field operations cannot begin until the District Ranger approves and signs the plan. The erosion control plan will be kept on site during project activity and made available for review upon request of a representative of the Water Board or any local storm water management agency which receives the storm water discharge. The erosion control plan shall be amended if there is a change in control practices, site conditions, or BMPs that may result in less water-quality protection than specified in the project's environmental document, project plan, accepted erosion control plan, or permit/waiver. The amendment must include: name of person requesting the change; a description of the change, including revised BMPs or control practices to mitigate the effects of the change; and why the change is needed.

Even the best erosion and sediment control plan cannot cover the specifics of each situation that will arise on a site during the life of a project. All parties involved in the project have a role and responsibility to ensure the activity complies with the goals or intent of the erosion control plan at all times. All temporary erosion and sediment control practices must be maintained and repaired as needed to assure continued performance of their intended function.

Erosion Control Plan Contents

1. Erosion and Sediment Control shall include:

   a. List of anticipated ground-disturbing actions associated with the project (for example, stream diversion; exposed cut slopes; stripped and stockpiled topsoil; water source development or use)

   b. Checklist which includes mitigation measures required by project NEPA, and in some cases CEQA documents, requirements to meet BMPs, project plans, specifications, and permits, if any. The selection of erosion and sedimentation control measures shall be based on assessments of site conditions and how storm events may contribute to erosion. Control measures will be selected from the references provided in the On-Line Library at the end of section 12, or will be of equivalent effectiveness as the measures described in those references.

12.21 Exhibit 13 -- Continued
BMP 2.13 - Erosion Control Plan

c. Illustrations of control practices designed to prevent erosion and sedimentation. Illustrations must show construction and installation details for control practices, and must be included in the erosion control plan. (for example, California Stormwater Quality Association BMP standard specifications CASQA at http://www.cabmphandbooks.com, or Caltrans Stormwater and Water Pollution Control guides at http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm)

d. Map/drawing(s) showing soil or water buffer zones, RCAs, RCHAs, SMZs or other soil or water protection areas to be protected from project activities. Project boundary extends beyond disturbance limits.

e. A description of the color and/or pattern of flagging or marking for soil or water buffer zones, RCAs, RCHAs, SMZs or other soil or water protection areas for each unit.

f. Relevant sections from the forest's WWOS that apply to activity/activities. The WWOS will provide guidance to prevent significant adverse impacts to water quality from wet weather operations on NFTS roads and trails.

i. Forest motor vehicle use map will be used to determine seasonal closures for all NFTS routes that are not under permit or for administrative use only.

(1) A storm preparedness plan that describes additional control practices to be implemented when the National Weather Service predicts a 50 percent or greater chance of precipitation.

(2) A winterization plan that describes additional control practices to be implemented to stabilize the site during periods of seasonal inactivity. The dates vary by locality, and may be determined by the individual RWQCB (for example, October 15 through May 1). "Winterized" means that the site is stabilized to prevent soil movement permanently if project activities are complete, or temporarily in a manner which will remain effective until end of the stabilization period.

(3) If winter activity, including over-snow operation is proposed, specifications for snow/ice depth or soil operability conditions must be described.

g. Control practices to reduce the tracking of sediment onto paved roads. These roads will be inspected and cleaned as necessary.

12.21 Exhibit 13 -- Continued
BMP 2.13 - Erosion Control Plan

h. Control practices to reduce wind erosion and control dust.

i. A proposed sequential schedule to implement erosion and sediment control measures, in addition to the general construction schedule.

j. Location information, including directions to access the project area. Include a scaled map, with road names/numbers.

k. Contact information of project personnel, including name and cell phone number (that is, sale administrator, contracting officer's representative, project manager, project supervisor, contractor, site superintendent, hydrologist, permit administrator and so forth)

2. Maps requirements: Maps must be clear, legible, and of a scale such that depicted features are readily discernable. For example, sale area maps may be used to satisfy the mapping requirements outlined in b.ii, below, if they meet this intent.

a. As a means of determining BMPs and erosion control measures, a topographic map should be in the project file. The map should extend beyond the boundaries of the project site, showing the project site boundaries, and surface and subsurface water bodies (ephemeral and intermittent waters, springs, wells, and wetlands) that could be at risk of water-quality impacts from project activities.

b. For timber harvest activities, unit-specific map(s) shall be scaled no smaller than 1 inch equals 1,000 feet (1:12,000). For all other activities, maps shall be scaled to provide legible interpretation of requirements shown above. All maps shall include:

(1) Specific locations of storm water structures and controls used during project activities.

(2) Erosion hazard ratings for each unit, specified down to 20 acres if different EHRs exist within each unit.

(3) Locations of existing and proposed haul roads, watercourse crossings, skid trails, and landings.

(4) Locations of post-project storm water structures and controls.

(5) Equipment access, storage, and service areas.

12.21 Exhibit 13 -- Continued
BMP 2.13 - Erosion Control Plan

3. Diversion of Live Streams: If the project involves stream diversions for crossing construction, the erosion control plan must include detailed plans for these activities, including storm contingencies. See BMP 2.8 - Stream Crossings.

4. Non-Storm Water Management:The erosion control plan shall include provisions which eliminate or reduce the discharge of materials other than storm water to the storm sewer system and/or receiving waters. Such provisions shall ensure that discharged materials shall not have an adverse effect on receiving waters. Materials other than storm water that are discharged shall be listed, along with the estimated quantity of the discharged material.

5. Waste Management and Disposal: The erosion control plan shall describe waste management and disposal practices to be used at the project site. All wastes (including equipment and maintenance waste) removed from the site for disposal shall be disposed of in a manner that is in compliance with Federal, State, and local laws, regulations, and ordinances. Include plan for project-specific activities that produce waste products, such as concrete truck/chute/pump washout, equipment servicing, equipment washing, and so forth.

6. Maintenance, Inspection, and Repair: The erosion control plan shall include inspection, maintenance and repair procedures to ensure that all pollution-control devices identified in the erosion control plan are maintained in good and effective condition and are promptly repaired or restored. A qualified person shall be assigned the responsibility to conduct inspections. The name and telephone number of that person shall be listed in the erosion control plan. A tracking and follow-up procedure shall be described to ensure that all inspections are done by trained personnel and that adequate response and corrective actions have been taken in response to the inspection. This procedure may be in the form of a written checklist, with inspections signed and dated. Photo documentation is encouraged.

7. Other Plans: This erosion control plan may incorporate, by reference, the appropriate elements of other plans required by local, State, or Federal agencies. A copy of any requirements incorporated by reference shall be kept in the project file.

8. Post-Project Storm Water Management: The erosion control plan shall describe the storm water control structures and management practices that will be implemented to minimize pollutants in storm water discharges after project activity phases have been completed at the site. It shall also specify controls to be removed from the activity site(s) and methods for their removal. The discharger must consider site-specific factors and

12.21 Exhibit 13 -- Continued
BMP 2.13 - Erosion Control Plan

seasonal conditions when designing the control practices that will function after the project is complete.

9. Preparer: The erosion control plan shall include the title and signature of the person responsible for preparation of the erosion control plan, the date of initial preparation, and the person and date responsible for any amendments to the erosion control plan.

10. Template: The Forest Service will develop sample templates for erosion control plans based on activity type. Complexity of the template will be commensurate with the degree of risk to impact water quality by the activity.

12.3 - Mining

Mineral exploration and extraction activities on NFS land including oil, gas, and geothermal resources, fall into the following categories:

1. Locatable Mineral Activities - Administered under the U.S. Mining Laws, Act of May 10, 1872, as amended. This Law applies to most hard rock and placer mineral deposits on NFS lands reserved from the public domain. The Law generally allows "...that all valuable mineral deposits in lands belonging to the United States...are free and open to exploration and purchase...by citizens of the United States..."

2. Leasable Mineral Activities - Minerals such as coal, oil and gas, phosphate, potash, sodium, geothermal steam, and other minerals that will be acquired under the Mineral Leasing Act of 1920, as amended. This also applies to all minerals on lands the Forest Service acquires under authority of the Weeks Act.

3. Saleable Mineral Activities - Administered under the Materials Act of July 31, 1947, as amended. Common varieties of sand, stone, gravel, pumice, cinders, and clay located on NFS land may be disposed of by sale, or given free to other units of government and non-profit entities when consistent with good public land management and the public interest.

12.31- Mining BMPs

3.1 Water Resource Protection on Locatable Mineral Operations
3.2 Administering Terms of Bureau of Land Management (BLM)- issued Permits or Leases for Mineral Exploration and Extraction on NFS Lands
3.3 Administering Common Variety Mineral-removal Permits

The following BMPs are for the control of nonpoint source pollution associated with mining activities. Each BMP synthesizes the referenced administrative directives into a process to be followed by the Forest Service to permit and administer mining activity on NFS land.

The line officer on each administrative subunit will be responsible for fully implementing the directives that provide water-quality protection and improvement during mining activities. The directives referenced in Section 13, provide details on methods to incorporate water-quality controls into each phase of mining activities.

Trained and qualified earth scientists, and other professional employees, are available to assist the minerals program management work force with technical assistance to identify beneficial uses, the most recent state-of-the-art water-quality control methods and techniques, and help evaluate results.

Mining operations usually involve activities such as site clearing, road construction, and use of heavy equipment. The BMPs for those types of activities are described in other sections of this guidance, and though applicable to mining related actions, they are not repeated here. The appropriate BMP for other activities associated with mining must also be implemented along with the following BMP.

12.31 Exhibit 01
BMP 3.1 - Water Resources Protection on Locatable Mineral Operations

Objective: To protect water quality from degradation by physical and chemical constituents resulting from locatable mineral operations, including exploration, development, production, and associated activities, on National Forest System (NFS) lands.

To ensure that all mineral operations and associated activities are conducted in an environmentally sound manner and in compliance with applicable Federal and State water quality standards and requirements and that the operator reclaims the NFS lands disturbed by the mineral operations and associated activities by taking such measures to restore the NFS lands and to prevent or control damage to NFS lands including, but not limited to, control of erosion, landslides, and water runoff.

Explanation: The occupancy and use of surface resources of NFS lands in connection with mining operations authorized by the United States 1872 Mining Law (30 USC §§ 21.54 et seq.), as amended, is subject to Forest Service regulation under the Organic Act (16 U.S.C. §§ 478 and 551). Forest Service regulations at 36 CFR Part 228, subpart A require the operator and the Forest Service to minimize adverse environmental impacts to the surface resources, including water quality, of NFS lands from mining operations and associated activities. See, 36 CFR 228.1.

Implementation: Seven instruments are used in the process of determining adverse environmental impacts to surface resources, including water quality, from mining operations and associated activities and the measures, controls, and requirements to minimize any adverse environmental impacts. It is seldom necessary to use all of these in every case. The seven instruments are listed below:

1. Notice of Intent to Operate

   A Notice of Intent (NOI) is required from persons proposing to conduct mining operations which might cause significant disturbance of surface resources, including water quality, of NFS lands. The NOI must include sufficient information concerning the proposed mining operations and associated activities to allow the authorized officer determine whether the operator may proceed under the NOI or whether the operator must submit a proposed Plan of Operations for Forest Service approval before the mining operations and associated activities may be conducted.

2. Plan of Operations

12.31 Exhibit 01 -- Continued
BMP 3.1 - Water Resources Protection on Locatable Mineral Operations

Operators are required to submit a Plan of Operations if the proposed operations will likely cause, or are causing, a significant disturbance of surface resources, including surface waters. The authorized officer may determine that mining operations are causing or will likely cause significant disturbance of surface resources and require a Plan of Operations. When a Plan of

Operations is required, operators are required to submit a proposed Plan of Operations to the Forest Service. The Forest Service must approve the Plan of Operations before the operator can conduct mining operations or associated activities. The Forest Service's approved Plan of Operations will incorporate the mitigation measures, controls and other requirements identified in the environmental document.

When a operator is discharging, or proposes to discharge, waste, as that term is defined in Cal. Water Code §13050, in connection with mining operations or associated activities that could affect the quality of the waters of the state of California, the operator is required to file a report of waste discharge (ROWD) with the appropriate Regional Water Quality Control Board (Regional Board). When an operator is discharging, or proposes to discharge, pollutants to the navigable waters of the United States within California or is discharging, or proposes to discharge, dredged or fill material into the navigable waters of the United States within California, the operator must file a ROWD with the appropriate Regional Board. The Regional Board will determine whether the operator must obtain waste discharge requirements (WDRs) and/or a NPDES permit for the mining operations and associated activities. Additionally, when an operator proposes to discharge dredged or fill material into the navigable waters of the United States, the Army Corps of Engineers will determine whether the operator must obtain a 404 permit for the mining operations and associated activities. If the Forest Service determines that the mining operations and associated activities under the Plan of Operations may result in a discharge into navigable waters, for example when a NPDES permit or 404 permit is required, the operator must provide the Forest Service certification from the appropriate Regional Board that any discharge from the mining operations and/or associated activities is in compliance with the applicable requirements of the Clean Water Act, or has been waived as provided for in 42 U.S.C. §1341(1), before the Forest Service can approve the Plan of Operations. This certification is commonly known as "401 certification" (42 U.S.C. §1341 is also referred to as Section 401 of the Clean Water Act). The Forest Service shall include the substantive provisions of the WDRs and/or NPDES permit as terms and conditions in the Plan of Operations, which the Forest Service

12.31 Exhibit 01 -- Continued
BMP 3.1 - Water Resources Protection on Locatable Mineral Operations

approves and administers. The Forest Service ensures that the operator complies with all terms and conditions of the approved Plan of Operations.

If the Regional Board does not require WDRs and/or a NPDES permit but the Regional Board provides comments, the comments will be considered during the authorized officer's evaluation of the adequacy of the proposed project's water-quality protection mitigation measures to be included in the Plan of Operations.

Operators must comply with all applicable federal, state, and local laws and regulations when conducting mining operations and associated activities on NFS lands.

3. Environmental Document

The procedural requirements of the National Environmental Policy Act (NEPA) and its implementing regulations (43 C.F.R. Parts 1500-1508) must be followed in the environmental evaluation of a proposed Plan of Operations. The appropriate authorized officer will convene an interdisciplinary team to assess the impacts of the proposed mining operations and associated activities on the environment, formulate alternatives, and prescribe mitigation measures, controls, and other requirements. The environmental document will identify mitigation measures, controls, and other requirements for the proposed mining operations and associated activities. The Forest Service shall include the mitigation measures, controls, and requirement identified in the environmental document as terms and conditions in the Plan of Operations, which the Forest Service approves and administers. The Forest Service ensures that the operator complies with all terms and conditions of the approved Plan of Operations.

4. Reclamation Bond

If the operator is required to file a Plan of Operations, the Forest Service may require the operator to furnish a bond or other financial guarantee to cover the estimated costs of reclamation, including stabilizing, rehabilitating, and reclaiming the area of operations. When a bond or other financial guarantee is required, the operator must furnish the required bond or other financial guarantee to the Forest Service prior to the Forest Service's approval of a Plan of Operations. Hence, mining operations and associated activities cannot be approved until the Forest Service receives the required reclamation bond.

12.31 Exhibit 01 -- Continued
BMP 3.1 - Water Resources Protection on Locatable Mineral Operations

5. Special Use Permit

Special use permits may be required for associated activities, such as water diversion, transmission facilities, and power lines. These permits may be authorized and issued by the Forest Service in conjunction with the approval of a Plan of Operations, when a Plan of Operations is required.

6. Road use permit

Road use permits may be required for commercial use of certain NFS roads. In this case, the appropriate BMP in Section 12.2 will apply. These permits may be authorized and issued by the Forest Service in conjunction with the approval of a Plan of Operations, when a Plan of Operations is required.

7. Notice of noncompliance

When an operator fails to comply with Forest Service regulations at 36 C.F.R. Part 228, Subpart A or an approved Plan of Operations, and the noncompliance is causing injury, loss or damage to surface resource, including water quality, the authorized officer will issue the operator a "Notice of Noncompliance." This notice will describe the noncompliance, specify the actions to comply, and time frames within which to comply (generally not to exceed 30 days). In addition to a notice of noncompliance, civil and/or criminal enforcement actions are additional remedies that the Forest Service may pursue.

12.31 Exhibit 02
BMP 3.2 - Administering Terms of Bureau of Land Management (BLM)-Issued Permits or Leases for Mineral Exploration and Extraction on NFS Lands

Objective: To ensure that other resource values, including water quality, are protected during mineral exploration and extraction processing, and that reclamation activities carried out are under the terms of prospecting permits and mineral leases on NFS land.

Explanation: The Department of the Interior has the major role in issuing and supervising operations on mineral licenses, permits, and leases. The Forest Service coordinates with the Department of Interior agencies to ensure that Forest Service resource management goals and objectives are achieved, that impacts to the land surface resources are minimized, and that the affected land is promptly rehabilitated.

Through the NEPA process, the Forest Service and BLM determine whether a prospecting permit or lease will be issued to an applicant. The decision is based primarily on whether the mineral operation, including the construction and maintenance of access roads and other associated facilities, can be done in a manner which adequately protects other resource values. The Forest Service and BLM develop the lease stipulations needed to protect water quality and other resources.

All prospecting permits and leases require that an operating plan be prepared by the applicant and approved by the Forest Service prior to any ground-disturbing activities.

Implementation: An interdisciplinary team will develop detailed mitigation that will be written into the special stipulations section of prospecting permits and leases. These special stipulations are also required in the Operating Plan. On-the-ground checks for compliance with the stipulations of the lease, or operating plan will be the responsibility of the Forest Service official designated “Authorized Officer” who is usually the District Ranger, or Forest Supervisor.

The BLM is primarily responsible for activities taking place on a lease site. By interdepartmental agreement, all applications to lease lands under Forest Service jurisdiction are referred to the Forest Service for review, recommendation, and development of special stipulations to prevent adverse impacts on the surface resources.

12.31 Exhibit 03
BMP 3.3 - Administering Common Variety Mineral-removal Permits

Objective: To ensure that resource values, including water quality, are protected to the maximum extent possible.

Explanation: Mineral materials such as sand, stone, gravel, pumice, cinders, and clay will be sold when consistent with good public land management and when the sale is in the public interest. Permits and mineral material sale contracts will include reasonable erosion control measures, reclamation of the surface to a predetermined productive second use of the land, and revegetation. Material sales will be approved if adequate measures can be implemented to minimize erosion and stream pollution, and if satisfactory arrangements can be made for restoration. If a choice of mineral deposit locations exists, extraction will be directed to those where the adverse effects of removal can be most readily controlled, or minimized (see also BMP 2.18).

Implementation: Removal is authorized by a Forest Service-issued mineral material permit or contract. Project location and detailed mitigation to prevent adverse effects to land surface resources will be developed through the environmental documentation process using an interdisciplinary team. These mitigations are then incorporated into the permit.

Projects are implemented by the permittee following approval of an operating plan and reclamation plan, if warranted, and issuance of a mineral material permit. the The District Ranger or their representative will ensure compliance with terms of the permit .

12.4 - Recreation

Recreation on NFS lands occurs in developed sites, as well as dispersed areas such as trails, on rivers or lakes, and in wilderness and general forest areas.

Developed recreation sites are those that have been designed and built to provide facilities for the user and commonly require a fee payment for use. An example is a constructed campground where tables, fireplaces, and toilets are provided. Developed recreation sites also include recreation residences, resorts, ski areas and similar facilities.

Dispersed sites are not specifically designed and constructed. However, some structures or facilities will be installed in dispersed recreation areas for the health and safety of the users, to protect resources, and to enhance the quality of visitor experience.

Access roads and parking areas at recreation sites are addressed through appropriate road BMPs (2.1 to 2.13).

12.41 - Recreation BMPs

4.1 Sampling, Surveillance, and Sanitary Surveys of Primary Contact Recreation Waters
4.2 Providing Safe Drinking Water Supplies
4.3 Documenting Water Quality Data
4.4 Control of Sanitation Facilities
4.5 Control of Solid Waste Disposal
4.6 Assuring that Organizational Camps Have Proper Sanitation and Water Supply Facilities
4.7.1 to 4.7.9 Best Management Practices for Off-Highway Vehicle Facilities and Use
4.8 Sanitation at Hydrants and Water Faucets within Developed Recreation Sites
4.9 Protecting Water Quality within Developed and Dispersed Recreation Areas
4.10 Location of Pack and Riding Stock Facilities and Use Areas in Wilderness, Primitive, and Wilderness Study Areas

The following BMPs are for the control of nonpoint source pollution associated with recreation activities. The BMPs were formulated to reflect the administrative directives that guide and direct the Forest Service's development and administration of recreation resources on NFS land.

The line officer on each administrative unit is responsible for fully implementing the directives that provide for water-quality protection and improvement during recreation management activities. The Forest Service Manual, Handbook, and directives provide details on methods to incorporate water-quality controls into each phase of the recreation management program.

Trained and qualified earth scientists, and other professional employees are available to assist the recreation management work force with technical assistance in identifying beneficial uses, the most recent state-of-the-art water-quality control methods and techniques, and to help evaluate results of BMP implementation.

12.41 Exhibit 01
BMP 4.1 - Sampling, Surveillance, and Sanitary Surveys of Primary Contact Recreation Waters

Objective: To ensure the health and safety of recreationists in primary contact waters, (e.g., hot springs, designated NFS swimming sites).

Explanation: Sampling and testing for bacterial water quality (fecal coliform), pH, and clarity will be conducted at all developed, designated primary contact recreation water sites. A prescribed minimum number of tests for fecal coliform, pH, and clarity will be made during the site-use season. Tests for other biological pollutants and for chemical and physical character of the water will be made when there is reason to believe that water quality is not satisfactory for primary contact.

Adjacent areas and the aquatic environment are surveyed to detect potential or existing hazards which may, or may not be demonstrated through water sample analysis from a single sample or short series of samples. The survey provides information needed in defining the cause(s) of contamination of primary contact recreation waters.

Fecal coliform is used as the indicator for the potential presence of pathogens in the water because of the relative ease of detection and measurement. Analysis values are tested against standards for primary-contact recreation as stated by the County Health Departments, California RWQCB, and EPA (“Water Quality Criteria”) swimming water-quality standards.

Implementation: Each forest with designated primary contact recreation water sites will develop a water-quality monitoring plan for that site. This plan will identify water monitoring locations, data requirements, monitoring frequency, procedures, data analysis and interpretations, and reporting. If standards are exceeded, the area will be closed to all contact-recreation use until the cause, or causes have been identified and remedied. The Forest Supervisor will be responsible for closure.

A sanitary survey will be made prior to the development of plans for each new primary-contact recreation facility. All areas where contact is specifically encouraged or permitted should have a sanitary survey conducted as soon as practical prior to use. Subsequent surveys will be repeated periodically in accordance with a prescribed schedule, usually annually, prior to the use season or following a change in the watershed condition; fire, flood, and so forth. All sanitary surveys must be conducted by a person trained in environmental sanitation and experienced in making such surveys. Results of the surveys are documented and provided to the Forest Supervisor and District Ranger for evaluation and action as appropriate.

12.41 Exhibit 02
BMP 4.2 - Providing Safe Drinking Water Supplies

Objective: To provide safe drinking water to Forest Service facilities such as campgrounds, picnic grounds, trailheads, visitor centers, winter sport areas, and developed roadside facilities.

Explanation: Administrative guidelines for water source location and development; testing frequency and maximum contaminant levels for bacteriological, chemical, and physical contaminants; performance of sanitary surveys; closing, correction, and reopening of defective water systems; and documentation of data are provided in the EPA Drinking Water Standards, and State and local health department standards. The strictest standards will be followed for each individual item.

When test results indicate that prescribed limits are exceeded, the water supply will be closed until the problem is corrected and satisfactory results are obtained. Seasonal systems will be tested and proven to be satisfactory prior to opening.

Preventive measures will be taken in the location, construction, operation, and maintenance of water supply systems to minimize possibilities of contamination.

Implementation: Location, design, sampling, and sanitary surveys will be performed by qualified individuals who are familiar with drinking water supply systems and guidelines. Coordination and cooperation will be pursued with State or local health department representatives in all phases of drinking water system management.

Sampling and testing frequencies vary depending on the water source, the number and type of user, and the type of test. Use State-certified laboratories if State, or local health departments do not perform water sample analyses.

12.41 Exhibit 03
BMP 4.3 - Documenting Water Quality Data

Objective: To assure water-quality data and related information is available for making water-quality management analysis and interpretations.

Explanation: An inventory of the location of all designated potable water supplies and primary-contact recreation water sites will document pertinent site information such as times, dates, and results of all water-quality tests and surveys. This is an administrative record-keeping practice to establish a record of cause and effect to aid in identifying any sources of contamination.

Implementation: The EPA STORET system will be the repository for water-quality data collected to monitor designated primary contact recreation water sites. Forests will use the computer-based “potable Water Supply Inventory” for site documentation of potable water supplies. Bacteriological test data will also be placed in a Forest Service computer for storage and review. Each forest will retain all laboratory test results for a minimum of 5 years (see also BMP 7.6).

12.41 Exhibit 04
BMP 4.4 - Control of Sanitation Facilities

Objective: To protect surface and subsurface water from bacteria, nutrients, and chemical pollutants resulting from the collection, transmission, treatment, and disposal of sewage at Forest Service sites.

Explanation: Toilet facilities are provided at developed recreation sites. The type and number depends on the capacity of a given site. Sanitation facilities (which may vary from a portable toilet to a sophisticated treatment plant) will be planned, located, designed, constructed, operated, inspected, and maintained to minimize the possibility of water contamination. Toilet facilities may also be made available at dispersed sites with the same goal of preventing water contamination.

Implementation: The appropriate disciplines will perform field investigations to evaluate soil, geological, vegetative, climatic, and hydrological conditions. The location, design, inspection, operation, and maintenance must be performed, or controlled by qualified trained personnel familiar with the sanitation system and operational guidelines. Proximity of toilets to open water and other sensitive areas will follow guidelines.

State and local authorities will be consulted prior to the installation of new sanitation facilities or modification of existing facilities to assure compliance with all applicable State and local regulations. All phases of sanitation management (planning, design, inspection, operation, and maintenance) will be coordinated with State and local health departments and RWQCB representatives.

12.41 Exhibit 05
BMP 4.5 - Control of Solid Waste Disposal

Objective: To protect water from nutrients, bacteria, and chemicals associated with solid waste disposal.

Explanation: Encourage the users of NFS recreation facilities to cooperate in the proper disposal of solid waste, and to burn their combustible trash in fireplaces or stoves. Receptacles are provided for unburnables at most developed sites. Garbage and trash must be “packed out” by those who use dispersed sites and wilderness areas where receptacles are not available.

Final disposal of collected garbage will be at a properly designed and operated county, or State sanitary landfill. Each landfill site will be located where groundwater and surface waters are at a safe depth and distance from the site, as prescribed in the provisions of the California Administrative Code, Title 23, chapter 3, Subchapter 15, and the State, or local regulations.

Implementation: A public education effort to control refuse disposal will be a continuing process accomplished by using signs, printed information, mass media, and personal contact. Public cooperation is vital.

Solid waste disposal plans, which define and describe collection, removal, and final disposal methods, will be maintained on each forest. Garbage containers will be placed in areas that are easily maintained and convenient for recreationists . Authorized Forest Officers may issue citations to violators.

12.41 Exhibit 06
BMP 4.6 - Assuring That Organizational Camps Have Proper Sanitation and Water Supply Facilities

Objective: To protect the quality of water that is consumed by, and discharged from organizational camps under special use permit.

Explanation: Organizational camps are required to comply with local public health and sanitation ordinances. Camp buildings and grounds must be supplied with at least the minimum sanitary facilities required by local codes. Water systems must provide an adequate volume of acceptably clean water for drinking, cooking, and general sanitation. Structures designed with toilets, showers, and washbasins will be planned and constructed to serve the camps' needs and meet sanitation and water-quality requirements.

Implementation: Management requirements and controls to protect water quality through installation and maintenance of proper sanitation and water supply facilities must be incorporated into the special use permit for each organizational camp. Permittees are required to inspect their facilities and test their drinking water according to local codes and regulations to ensure a safe water supply and proper sanitation. Reports of these test results must be provided periodically to the Forest Service.

Periodic inspection and monitoring of the camp by the authorized Forest Officer and county and State health officers are necessary to assure compliance.

12.41 Exhibit 07
BMP 4.7 - Best Management Practices for Off-Highway Vehicle Facilities and Use (BMPs 4.7.1 to 4.7.9)

Over the past few decades, the availability and capability of off-highway vehicles (OHV) have increased tremendously, as has the intensity of OHV use on NFS lands. While these vehicles have provided new recreational opportunities and access to otherwise remote locations, this increase in OHV use has the potential to impact water resources.

1. OHV use near water bodies, particularly at stream crossings, has the potential to:

   a. Deliver sediment, particularly during storm events

   b. Cause vertical and lateral erosion of stream channels

   c. Destroy or weaken riparian vegetation, compromising stream-bank stability and increasing water temperature

   d. Pollute waters with petroleum and chemical products and other organic and inorganic waste, including human pathogens

2. Careful and wise management of OHV use can mitigate these impacts. The purpose of this set of BMPs is to control nonpoint source pollution that may occur because of OHV recreation activities on NFS lands. The types of OHV activities that could directly or indirectly affect water quality include:

   a. Trail planning

   b. Trail location and design

   c. Trail construction and reconstruction

   d. Operations and maintenance

   e. Monitoring

   f. Restoration of OHV-damaged areas.

12.41 Exhibit 07--Continued
BMP 4.7 - Best Management Practices for Off-Highway Vehicle Facilities and Use (BMPs 4.7.1 to 4.7.9)

3. This set of BMPs applies to OHV trails, with the exception of BMP 4.9, which is specific to concentrated-use area management. For the purpose of this set of BMPs, the term "OHV Trail" means trails managed for OHV use. The three types of OHV trails are:

a. Single-track trails - 12 to 24 inches in width, used by off-highway motorcycles

b. Double-track trails - 50 inches or less in width, used by off-road motorcycles and all-terrain vehicles

c. Four-wheel drive or high-clearance trails - 50 inches or greater in width, used by off-road motorcycles and all-terrain vehicles, side-by side utility terrain vehicles, and high-clearance four-wheel drive vehicles.

Best management practices for roads utilized by OHVs, such as high-clearance vehicle roads (Maintenance Level - 2), are covered under the set of roads BMPs. It is important to recognize

the distinction between OHV trails and OHV routes on roads, because their design, construction, management, and potential impacts to water quality are quite different. This distinction is with the full acknowledgement that a large percentage of OHV use occurs on Maintenance Level - 2 roads, and that many OHV trails have evolved from old roads or firebreaks.

Sediment is by far the primary pollutant associated with OHV activity, although human waste and petroleum products from concentrated use areas can be pollutants locally. Discharges of sediment into California's waters that are associated with OHV activity are caused by accelerated soil erosion.

Trails are linear features that concentrate runoff. When runoff concentrated on a trail flows directly to a watercourse or water body, the trail becomes part of the drainage network, and creates hydrologic connectivity. OHV trails located near watercourses and water bodies have a high potential for hydrologic connectivity. Consequently, watercourse crossings and OHV trails located near them have the greatest risk for sediment delivery from off-highway vehicle activity.

Trails can also alter natural drainage patterns by intercepting, diverting, blocking, and concentrating surface and subsurface flows. Proper off-highway vehicle management, including trail location, design, construction, and maintenance, can reduce the impact to natural hydrologic functions and water resources.

12.41 Exhibit 07--Continued
BMP 4.7 - Best Management Practices for Off-Highway Vehicle Facilities and Use (BMPs 4.7.1 to 4.7.9)

Drainage treatments such as out-sloping, inside ditches, and crowned prisms are effective on roads, but are not typically effective on OHV trails. OHV trails typically occur in native soil material that easily erodes. This is in contrast to roads, which are constructed from deeper sub-soil or regolith. Roads are also typically wider, have larger cut and fill slope, a more compacted prism, and generally have gradients that are less steep than OHV trails. Watercourse crossings on OHV trails are not designed and constructed the same way watercourse crossings for roads are. Because of these differences, the potential for sediment delivery from OHV trails is not the same as for OHV routes on roads, and BMPs developed for OHV trails differ from those developed for roads.

Additional site-specific practices may be needed for water bodies listed pursuant to Clean Water Act section 303(d) as being impaired by sediment, siltation, or turbidity; and for key watersheds in the areas covered by the Northwest Forest Plan and the Sierra Nevada Framework.

Authorities

The Travel Management Rule (36 CFR, Parts 212, 251, and 261) adopted in 2005, and the Forest Service Manual and Forest Service Handbook provide the framework for managing OHV use on

NFS lands. These resources contain the mandate for the Forest Service to designate routes for motor vehicle use by vehicle type, and if applicable by time of year, and to identify the route designations and seasonal restrictions on a motor vehicle use map.

Both the Northwest Forest Plan and the Sierra Nevada Framework incorporate Aquatic Conservation Strategies that encourage identification of key watersheds on NFS lands where protection of aquatic and riparian resources is a priority.

The Forest Service receives grant funding from the California State Parks Off-Highway Motor Vehicle Recreation Division grant program to help manage, operate, maintain, and develop OHV use on NFS lands. Where applicable, the Forest Service will use these BMPs to achieve the California State Parks, 2008 Soil Conservation Standard associated with receiving monies from the California OHV Trust fund. The soil standard specifically requires management of OHV activities to avoid impacts to both on-site and off-site resources, including water quality.

This Water Quality Management Handbook provides specific practices to protect and restore water quality while providing opportunities for OHV recreation.

12.41 Exhibit 08
BMP 4.7.1 - Planning

Objective: To use the travel management planning processes, including travel analysis, to develop measures to avoid, minimize, and mitigate adverse impacts to water, aquatic, and riparian resources during OHV management activities, and to identify restoration for OHV-damaged areas and trails not designated for use.

Explanation: The amount, type, and location of OHV trails are determined through various planning processes. OHV trail planning includes travel analysis as well as trail management at the project level. Planning occurs at scales that can range from forestwide assessments and plans, to watershed-scale analyses, to project-level trail activities. During planning, potential effects on water, and on aquatic and riparian resources are identified, and protection and mitigation measures are proposed.

Trail management objectives are developed to define the type of recreation experience each trail is designed to provide, and to provide direction on management of the trail. In addition to guiding trail management at the site-specific scale, TMOs also document Forest-wide trail maintenance needs and identify the potential for environmental effects and conflicts with other resources.

The risk from OHV trail management activities can be reduced by using the appropriate techniques from the following list, adapted as needed to local site conditions.

Implementation:

1. Conduct travel analysis to determine the appropriate trail system for the recreational objective.

Plan trails to:

a. Minimize the number of stream crossings

b. Avoid locations near wetlands (for example, seeps, springs, marshes, and wet meadows)

c. Favor existing trails over new construction when less damage to water quality will occur

2. To the degree feasible, locate new construction on natural benches, flatter slopes, and stable soils. Avoid locating new trails on:

12.41 Exhibit 08--Continued
BMP 4.7.1 - Planning

a. Areas prone to mass wasting

b. Slopes steeper than 55 percent

c. Slopes steeper than 45 percent where the erosion potential is high or extreme

Limit steep pitches to less than 200 feet where possible.

3. Identify trail segments causing adverse impacts to water resources and prioritize mitigation measures such as:

a. Relocate existing trails or trail segments that are in high-risk locations, including SMZs, riparian areas, and meadows, to restore surface and subsurface hydrologic function

b. Reconstruct trails to improve, modify, or restore effective drainage

c. Upgrade stream crossings

d. Develop or update a trail management objective for each trail:

e. Define the recreation experience and level of difficulty the trail is designed to provide.

f. Identify current and future needs and uses of each authorized trail in the trail management objective.

g. Determine whether existing trail design standards are adequate to support the defined recreational experience, and whether impacts to water, aquatic, and riparian resources are likely to result from not following trail management objectives.

h. Identify trails that are managed differently and/or are serving purposes other than those identified in trail management objectives. Modify the objective to match the intended use and management of the trail.

i. Operate the trail as intended by the trail management objectives until they are revised and/or the trail is reconstructed to accommodate different uses.

12.41 Exhibit 09
BMP 4.7.2 - Location and design

Objective: To reduce the risk that sediment originating from designated OHV trails and OHV areas will enter watercourses and water bodies by locating OHV trails to minimize hydrologic connectivity, and by incorporating drainage structures into trail design to disperse concentrated runoff.

Explanation: Proper on-site location and design of OHV trails are essential, particularly at stream crossings (see BMP 4.3).

The amount of sediment delivered to a water body from an OHV trail is affected by runoff concentration and hydrologic connectivity. Properly located and designed drainage structures disperse concentrated runoff. Typically, runoff as overland flow will not penetrate a buffer strip, but runoff concentrated in rills or gullies will.

1. The potential to deliver sediment originating from OHV trails and OHV areas to watercourses and water bodies is a function of the:

    a. number, location, and design of watercourse crossings

    b. volume and energy of concentrated flow leaving the trail or area

    c. ability of the intervening terrain to absorb or disperse concentrated flow, including slope gradient and surface cover

    d. distance between the trail and the receiving water body

    e. inherent erodibility of the soil

The first four of these five factors determine the hydrologic connectivity between the trail and the watercourse or water body. Watercourses are so important in managing the effects of OHV use on water quality that they have a BMP of their own (BMP 4.3).

Techniques included in this BMP are intended to improve drainage and reduce or eliminate the hydrologic connectivity of trails and watercourses. The risk from OHV use can be managed by using the appropriate techniques from the following list, adapted as needed to local site conditions.

2. Implementation Techniques:

12.41 Exhibit 09 -- Continued
BMP 4.7.2 - Location and design

Trail Location

a. Locate trails and drainage structures to minimize hydrologic connectivity.

b. Limit the number of watercourse crossings to those needed to meet the recreational objective.

c. Maximize the filter distance between the trail and the water body.

d. Locate drainage structures where dispersion or absorption of runoff is effective.

e. Avoid sensitive areas such as riparian areas, wetlands, meadows, bogs, fens, inner gorges, and unstable landforms.

f. Avoid the capture, diversion, and/or concentration of runoff from slopes adjacent to OHV trails.

g. Locate steep trail segments on well-armored locations than can sustain traffic without accelerated erosion.

3. Trail Design to Reduce Potential for Discharge of Pollutants to Surface Waters

a. Design and space trail drainage structures to remove storm runoff from the trail surface before it concentrates enough to initiate rilling.

b. Design trails to dissipate intercepted water by rolling the grade.

c. Where trails cannot be effectively drained by rolling the grade or using reverse grades, provide trail drainage using OHV rolling dips as specified in Rolling Dips for Drainage of OHV Trails, USDA-Forest Service, Pacific SW Region, January, 2006.

d. Wherever possible, incorporate sediment basins at OHV rolling dip outlets instead of lead off ditches.

e. Where sediment basins cannot be installed, provide energy dissipaters at OHV rolling dip outlets.

f. Design trails to be no wider than necessary to provide the recreation experience defined in the trail management objective.

12.41 Exhibit 09 -- Continued
BMP 4.7.2 - Location and design

g. Incorporate design elements that discourage off-route use (for example, taking shortcuts, cutting new lines).

h. Extend drainage outlets beyond the toe of fill or side-cast.

i. Install aggregate, paver blocks, or other surfacing treatment on tread segments that are steep, erodible, or heavily traveled.

12.41 Exhibit 10
BMP 4.7.3 - Watercourse Crossings

Objective: To prevent or minimize the discharge of sediment into water bodies when locating, designing, constructing, reconstructing, and maintaining watercourse crossings.

Explanation: The importance of watercourse crossings in managing the effects of OHV use on water quality cannot be overemphasized. Of the pollutants generated by OHV use, sediment has by far the greatest volume. The greatest potential for sediment delivery is at and near watercourse crossings where the potential for hydrologic connectivity is high. The approaches to watercourse crossings are typically constructed in native soils that can erode and deliver sediment to channels.

Typical OHV watercourse crossings include low-water crossings, fords, bridges, arched pipes, culverts, and permeable fills. Crossing materials and construction vary based on the type of trail and kind of use. To minimize impacts to water quality, design new crossings to provide for the unimpeded flow of water, bed-load, large woody debris, and aquatic organisms. Watercourse crossings must be constructed with minimal disturbance to the streambed and to surface and shallow groundwater resources.

The approaches to watercourse crossings and fill-slopes are especially important. All sediment resulting from erosion on these surfaces is delivered directly into the watercourse.

Construction, reconstruction, and maintenance of watercourse crossings often require equipment to be in and near streams, lakes, and other aquatic habitats. Such disturbance can increase the potential for accelerated erosion and sedimentation by destabilizing stream banks or shorelines, removing vegetation and ground cover, and by exposing and compacting the soil. Permits, including Section 404 permits administered by the U.S. Army Corps of Engineers and Section 401 Water Quality Certifications administered by Regional Water Quality Control Boards may be required for in-stream work associated with stream-crossing construction and maintenance projects.

The risk of sediment delivery at watercourse crossings can be managed by using the appropriate techniques from the following list, adapted as needed to local site conditions. Location, construction, and maintenance of watercourse crossings, and assessment of watercourse crossing condition, require consultation with qualified personnel.

1. Implementation:

Crossing Location--

12.41 Exhibit 10--Continued
BMP 4.7.3 - Watercourse Crossings

a. Locate new OHV trails to limit the number of watercourse crossings to those necessary to meet planned activity objectives (see also BMP 4.1).

b. Avoid long, steep OHV trail segments on approaches to watercourse crossings.

c. Orient stream crossings perpendicular to the channel in straight and resilient stream reaches.

2. Trail Approaches to Watercourse Crossings—

a. Where possible, make crossing approaches short and level, or reverse the grade if possible.

b. Install cross drainage (cut-off waterbreaks) at crossings to prevent water and sediment from being channeled directly into watercourses.

c. Locate cut-off waterbreaks as close to the crossing as possible without being hydrologically connected to the watercourse.

d. Armor steep crossing approaches with stable aggregate or trail-hardening materials.

e. Where possible (for example, at bridges or arch culverts), reverse the grade of the crossing approaches so runoff drains away from the watercourse.

3. Design of Watercourse Crossings--

a. Design crossing approaches and nearby drainage structures to minimize hydrologic connectivity.

b. Design watercourse crossings to avoid diversion of flow down the trail should the crossing fail.

c. Rocked diversion potential prevention dips and rock armoring of downstream crossing fill will be used to minimize potential for failure of trail-stream crossings.

d. Design watercourse crossings for a 100-year storm event, to allow for unobstructed flow including bed-load and organic debris, and to provide for passage of desired aquatic and terrestrial organisms.

e. Harden crossing approaches as needed to minimize soil displacement by traffic.

12.41 Exhibit 10--Continued
BMP 4.7.3 - Watercourse Crossings

f. Place stable materials below the outlets of cut-off waterbreaks to dissipate energy.

g. Set crossing bottoms at natural levels of channel beds.

h. Harden fords with gravel or cobble of sufficient size and depth to prevent movement by traffic.

i. Construct watercourse crossings to sustain bankfull dimensions of width, depth and slope, and to maintain streambed and bank resiliency.

j. Instead of pipe culverts, use bridges, bottomless arches, or buried pipe-arches for watercourses with identifiable floodplains and elevated trail prisms.

k. Cross wet areas with naturally high water tables with permeable fills, perched culverts, and/or culvert arrays to maintain hydrologic function.

l. Use Forest Service design specifications for bridges.

4. Construction of Watercourse Crossings--

a. Conduct construction operations during the least critical periods for water and aquatic resources (usually during low-water conditions and non-spawning/breeding seasons).

b. Disturb as little area as possible when crossing watercourses.

c. Minimize excavation of stream banks and riparian areas during construction.

d. Keep excavated materials out of channels, floodplains, wetlands, and lakes.

e. Stabilize adjacent areas disturbed during construction.

12.41 Exhibit 11
BMP 4.7.4 - Construction, reconstruction

Objective: To prevent or minimize the discharge of sediment into water bodies during construction, reconstruction, and realignment of OHV trails.

Explanation: Vegetation and ground cover is removed during trail construction and reconstruction, exposing the surface and subsurface soil to erosion. Temporary and long-term erosion control measures are necessary to minimize erosion and sediment delivery. The risk of erosion and sediment delivery from trail construction and reconstruction activities can be managed by using the appropriate techniques from the following list, adapted as needed to local site conditions.

Implementation:

Develop and implement an erosion and sediment control plan that describes:

1. Amount of vegetative clearing and amount of soil material to be moved
2. Proposed erosion control measures to prevent soil detachment and mobilization
3. Proposed sediment control measures to capture mobilized sediment
4. Proposed sequence of implementation for erosion and sediment control treatments

Maintain erosion and sediment control measures to function effectively to prevent discharges of pollutants to surface waters throughout the project area during trail construction and reconstruction.

Keep erosion and sediment control measures sufficiently effective during ground disturbance to allow rapid closure and site stabilization if weather conditions deteriorate. For each project, specify a rainfall probability threshold (generally 30 to 50 percent, based on National Weather Service local forecasts) at which wet-weather sediment control measures will be installed.

Complete all necessary stabilization measures prior to predicted precipitation that could result in surface runoff.

Complete erosion and sediment control treatments before leaving project areas for the winter or rainy season.

Do not operate equipment when ground conditions could result in excessive rutting, or runoff, that could deliver sediment directly to watercourses or water bodies.

12.41 Exhibit 11--Continued
BMP 4.7.4 - Construction, reconstruction

When constructing trails near SMZs, do not permit side casting of soil into the SMZ.

Windrow slash and organic litter at the base of fill slopes to trap sediment.

Construct OHV rolling dips when soil moisture is sufficient to allow adequate compaction of OHV rolling dip drainage structures.

Close newly constructed trails for one season to allow consolidation of soils in treads and drainage structures, so treads and structures can better withstand OHV traffic.

12.41 Exhibit 12
BMP 4.7.5 - Monitoring

Objective: To reduce the risk of sediment delivery to water, aquatic, and riparian resources by identifying watercourse crossings and OHV trail segments in need of maintenance, by setting priorities for maintenance, and by identifying OHV areas and trails that require closure and restoration.

Explanation: The Forest Service will schedule systematic monitoring of OHV trails, activities and effects to detect existing and probable impacts to water quality, aquatic and riparian resources. If adverse water-quality effects are occurring, or there is a potential for substantial adverse impacts to water quality, the Forest Service will take immediate corrective action. Corrective actions may include, but are not limited to:

1. Temporary or permanent erosion and sediment control treatments
2. Barriers and signing to redistribute use
3. Temporary closure of trails or areas until completion of corrective action
4. Partial or total closure and restoration of trails or areas
5. Reduction in the amount, type, or season of OHV use

Implementation:

Monitoring specific to OHV trails is included here and in chapter ### of this Water Quality Management Handbook.

Conduct G-Y-R Trail Condition Monitoring as described in Revised OHV Trail Monitoring Form (GYR Form) and Training Guide, USDA-Forest Service, Pacific SW Region, July 30, 2004, to identify trails and watercourse crossings in need of maintenance and to prioritize maintenance activities.

Evaluate all watercourse crossings rated “red” during the G-Y-R Trail Condition Monitoring in consultation with a qualified watershed specialist.

Schedule G-Y-R Trail Condition Monitoring so high-risk and high-maintenance trails are monitored annually; schedule the monitoring of stable trails less frequently, but not less than every 3 years.

12.41 Exhibit 12--Continued
BMP 4.7.5 - Monitoring

Monitor a 2.percent sample of trails each year using the Trail Assessment and Condition Survey (TRACS) protocol.

Monitor the effectiveness of the OHV BMPs using the established the Pacific Southwest Region BMP effectiveness monitoring program.

During routine inspections of OHV trails and while conducting photo point monitoring, use a standardized form to document and report newly created unauthorized OHV use, and trail segments with potential water-quality impacts.

Temporarily close trails that pose immediate significant threats to water quality. As a minimum, install temporary erosion and sediment control treatments prior to the winter season.

Permanently close and restore trails that cannot sustain OHV use without causing adverse effects to the beneficial uses of water per Water Quality Management Handbook objective 2 (page 8).

12.41 Exhibit 13
BMP 4.7.6 - Maintenance and Operations

Objective: To prevent or minimize discharges of sediment into watercourses and water bodies by maintaining OHV trails and associated drainage structures.

Explanation: OHV trails are linear features constructed in native soil that concentrate runoff. Except for occasional hardened segments, trails are not typically surfaced with aggregate. In addition, normal OHV traffic tends to create an outside berm along the tread. Due to the presence of this berm, and to gradients typically steeper than roads, runoff from trails cannot be readily drained by crowning or out-sloping as it can for roads. Drainage and erosion control facilities cease to function if they are worn down by continued traffic. These factors make periodic maintenance and field inspection critically important in minimizing the impacts of OHV use on water quality.

Trail drainage systems may further increase hydrologic connectivity if they deteriorate because of use, weather, or inadequate maintenance. Trail drainage facilities may become inadequate after wildfires or extreme precipitation events due to increased surface runoff, loss of vegetative cover, and stream bulking. New springs and seeps occasionally saturate trails after the occurrence of a wildfire or following unusually wet periods. Timely maintenance can correct these conditions.

Drainage structures constructed with mechanized equipment last longer than hand-constructed drainage. However, trail maintenance with mechanized equipment such as SWECO-type trail tractors and mini-excavators can disturb soil, making it susceptible to erosion. Less aggressive maintenance is often necessary to minimize disturbance of stable sites.

The construction of OHV rolling dips is from native soil material. For these structures to hold up under traffic they need to be well compacted. This requires moist soils and the scheduling of maintenance to exploit the narrow window of time when soil moisture is optimal for compaction.

Obstructions to traffic such as fallen logs and potholes can lead to trail braiding, puddles, and off-trail traffic. Prior to opening trails for use—or periodically for trails open year-round—clearing trails of obstructions can reduce the need for repair and restoration. Volunteers do much of this work.

Trail management objectives define the designed use, type of recreation experience, and the level of difficulty that a trail is designed to provide. It is important to maintain trails to the defined maintenance rotation, designed use and level of difficulty. The deterioration of trails to a more challenging difficulty level due to a lack of maintenance can affect water resources. More challenging trails often produce more sediment.

12.41 Exhibit 13--Continued
BMP 4.7.6 - Maintenance and Operations

The effects of trail maintenance activities on water quality are managed by using the appropriate techniques from the following list, adapted as needed to local site conditions.

Implementation:

1. Maintenance Planning

Develop and implement annual maintenance plans based on the results of the G-Y-R and TRACS trail condition surveys and other periodic inspections (see BMP 4.7.5).

Schedule maintenance to maximize the time period when soils are at optimal moisture levels for soil compaction.

2. Inspection

Periodically inspect, monitor, and assess trail condition to assist in setting maintenance priorities (see BMP 4.7.5).

Identify the need for additional drainage structures, spot rocking, or trail hardening to protect and maintain water, aquatic, and riparian resources.

3. After major storm events, to the extent staffing allows, inspect potential problem trails, drainage structures, and runoff patterns and, as needed:

a. Clean out, repair, or reconstruct drainage structures that are not functioning

b. Clear the tread of obstructions to traffic that could lead to trail braiding or off-site impacts

4. Maintenance Activities

As per Regional Forester's direction dated November 8, 2002, follow the maintenance standards and guidelines in A Field Evaluation of the Use of Small Trail Tractors to Maintain and Construct OHV Trails on National Forests in California, USDA-Forest Service Pacific SW Region, August 22, 2001. Specifically, these standards and guidelines are:

a. Use certified operators, or persons under their direct supervision, to operate trail tractors and mini-excavators.

b. Construct new trails using R-5 design standards.

12.41 Exhibit 13--Continued
BMP 4.7.6 - Maintenance and Operations

c. Close newly constructed trails to all use for one season.

d. Construct OHV rolling dips using design standards

e. Before moving equipment in, examine trails to determine the need for maintenance with mechanical equipment.

f. Lift the blade and walk equipment across sections of trail that need no maintenance.

g. Examine drainage structures, and the tread between them, for evidence of tread loss before starting maintenance.

h. At failed drainage structures, determine the cause of failure before starting repairs.

i. Recycle soil collected in rolling dip outlets into rolling dip structures or back into the trail tread.

j. Do not blade outside berms off the trail as side-cast; work berms back into the trail tread.

k. Repair rills and gullies in treads with soil reclaimed from rolling dip outlets or from outside berms, not with soil bladed from the trail tread.

l. Blade soil sloughed from cutbanks, or from sideslopes above trails, only as needed to maintain a safe trail; do not undercut or blade into cutbanks.

m. Repair “stutterbumps” by ripping, blading, and compacting the trail tread when soil is moist (except for non-cohesive soils).

n. Move the smallest amount of soil necessary to meet the maintenance objective.

o. Defer maintenance on drainage structures, or do hand maintenance, where soil is too dry or too wet for compaction.

p. Maintain trail surfaces to dissipate intercepted water in a uniform manner along the trail by the use of OHV rolling dips.

q. Groom trails as needed with a rock rake to keep drainage outlets open.

12.41 Exhibit 13--Continued
BMP 4.7.6 - Maintenance and Operations

5. Operations

Restrict OHV travel to designated trails or designated motor vehicle use areas.Prior to opening trails for use, clear obstructions to traffic to avoid braiding.

Close trails or restrict OHV use when the potential for sediment delivery is high or during periods when such use would likely damage the tread or drainage features (also see BMP 4.7.7).

12.41 Exhibit 14
BMP 4.7.7 - Wet-weather operations

Objective: To prevent or minimize the discharge of sediment into water bodies by closing OHV trails to traffic when soil strength is low and trail treads and drainage structures are susceptible to damage.

Explanation: Soil strength decreases as moisture increases. When soil strength is low, OHV traffic can lead to tread failure and damage to drainage structures, including OHV rolling dips. Damage to trail drainage structures increases the risk of sediment delivery to watercourses and water bodies. Soil is easily displaced when soil strength is low. Under these conditions OHV traffic near watercourses and on crossing approaches can result in direct delivery of sediment.

The susceptibility of OHV trails to damage when soil strength is low varies with soil type, amount of traffic, and type of vehicle. Each OHV area has a unique combination of soil types and precipitation patterns that determine the appropriate implementation techniques to minimize impacts to water resources during wet weather.

Implementation: To manage the potential for sediment delivery from OHV use when soils are wet, the Forest Service will use its authority under 36 CFR Section 261 to close designated OHV trails and areas to vehicular travel. This must be done seasonally by a given date, or be based on local conditions such as precipitation, or measurements of soil trafficability. Use the following techniques, as appropriate for local conditions, to manage OHV trail systems under wet weather conditions:

1. Develop a wet-weather management plan.

2. Close trails seasonally for the months when soil moisture is typically high and sedimentation is likely to occur; or

3. Close trails for a core period when soil moisture is expected to be high, and extend the closure period as needed, based on precipitation or soil trafficability, or

4. Determine the levels of soil strength and moisture at which OHV trail damage begins to occur for typical traffic, and close trails when measurements of soil strength predict a high risk of damage to drainage structures and trail treads.

Identify benchmark locations where measurements of precipitation or soil trafficability will be taken to determine when trails will be closed.

Identify trails, or loops of trails, with similar conditions that can be selectively closed.

Identify and reroute or reconstruct trail segments that cause entire trail systems to be closed because they retain moisture longer than is typical for the trail system.

12.41 Exhibit 15
BMP 4.7.8 - Restoration of off-highway vehicle-damaged areas

Objective: To prevent or minimize the discharge of sediment into watercourses and water bodies by permanently restoring OHV-damaged areas, watercourse crossings, and OHV trails no longer designated for use.

Explanation: Loss of surface duff, litter, and vegetation leaves soils exposed and easily eroded. Ruts and tracks created by OHV traffic are unnatural channels that concentrate surface runoff and increase its erosive power. OHV traffic can also compact soils, causing increased surface runoff.

OHV traffic in wet meadows and marshes damages the root network that stabilizes sensitive soils. This can cause stream incision, which lowers the water table and results in a loss of meadow and riparian vegetation.

OHV-damaged areas, and OHV trails no longer available for use, are identified during the route designation process at the forest and watershed level and during trail condition surveys and monitoring (see BMP 4.5). Identify additional trail segments for restoration when rerouting trails.

Restoration of OHV-damaged areas and closed trails includes activities that stabilize and restore the landscape to a more natural state. Treatments can range from simply scattering slash or raking in duff and litter, to watercourse or meadow restoration, to using heavy equipment to break up compaction, fill in incised trails, reshape the area to its natural contour, and install drainage structures. Planting native vegetation helps stabilize slopes by absorbing the impacts of rainfall and overland flow.

Effective closure from OHV traffic is essential to allow restored sites to recover.

Accomplish restoration of OHV-damaged landscapes by using the appropriate techniques from the following list, adapted as needed to local site conditions.

1. Implementation:

Restoration of Trails and OHV-damaged Areas

When planning the restoration of OHV-damaged trails and areas, consider the following steps taken from Restoration of OHV-damaged Areas - A Ten-Step Checklist, USDA-Forest Service, Pacific SW Region, May 31, 2006:

12.41 Exhibit 15--Continued
BMP 4.7.8 - Restoration of off-highway vehicle-damaged areas

a. Identify the source of the problem

b. Effectively close the area to OHV traffic

c. Reshape the land surface to its original contour

d. Disperse concentrated runoff

e. Prepare the seedbed

f. Planting or seeding

g. Stabilize the surface

h. Signing

i. Enforcement and monitoring

j. Remove signs and barriers

Few sites will require all ten steps. A more complete description of each step is included in the report. Additional information on restoring OHV-damaged areas can be found in Restoration of Off-Highway Degraded Landscapes (in press) USDA-Forest Service, San Dimas Technology and Development Center 2010.

2. Restoration of Watercourse Crossings

Restoration of watercourse crossings should be done under the direction of—or after consulting—a qualified watershed specialist. A permit may be required if in-channel work is necessary.

When restoring OHV watercourse crossings, follow these general guidelines as appropriate:

a. Remove all trail-hardening materials and fill, and restore the channel bottom to its natural gradient and width.

b. If necessary, replace hardening material in the channel with cobble similar in size to the native bed-load.

12.41 Exhibit 15--Continued
BMP 4.7.8 - Restoration of off-highway vehicle-damaged areas

c. Restore crossing approaches to ensure that surface runoff does not reach the watercourse.

d. If necessary to divert runoff from crossing approaches, install cutoff waterbreaks as close to the crossing as feasible without creating hydrologic connectivity.

e. To the extent possible, reshape the streambanks to their former natural contour.

f. Stabilize and revegetate the streambanks.

12.41 Exhibit 16
BMP 4.7.9 - Concentrated-use area management

Objective: To prevent or minimize the discharge of sediment, petroleum, and chemical products, or human waste into water bodies—and the contamination of groundwater by infiltration through soils—by planning, constructing, installing and maintaining drainage and runoff treatments at OHV staging areas, and by managing the risk of pollution at high-use and high-risk OHV areas.

Explanation: Petroleum products and chemicals from spills during refueling, leaking, damaged or overturned vehicles, and from improper disposal practices can be a source of water contamination. Small amounts can be absorbed by the soil and broken down, but the risk of water contamination is often high in concentrated use areas located near watercourses and water bodies.

Where sanitation facilities are not available or are inadequate, fecal matter and pathogens can enter water bodies. The risk of contamination from fecal matter and pathogens is highest in areas near water bodies with concentrated use. OHV staging areas sometimes constitute large areas with little or no infiltration capacity. Runoff from these areas is high and can transport sediment, nutrients, microbes, and other pollutants to any nearby watercourses or surface waters.

OHV staging areas are sometimes used for winter recreation. Snow removal from these facilities may adversely affect water, aquatic, and riparian resources. Plowing can physically displace native or engineered surfaces, damage drainage structures, or alter drainage patterns. Snow plowing may also remove protective soil cover such as vegetation and mulch. These changes can result in concentrated flow, increased erosion, and a risk of sediment delivery.

The risk of delivering sediment, petroleum and chemical products, and human pathogens to water bodies at concentrated use areas can be reduced by using the appropriate techniques from the following list, adapted as needed to local site conditions.

Implementation:

Staging Areas--

Locate new staging to avoid the potential for hydrologic connectivity with water bodies and watercourses.

Design OHV staging areas to accommodate the amount of use expected.

To determine necessary drainage, calculate the expected runoff using the appropriate design storm.

Include any run-on from adjacent areas in the calculation.

12.41 Exhibit 16 -- Continued
BMP 4.7.9 - Concentrated-use area management

Armor new and existing high-use areas with protective materials appropriate for the site.

Except where the risk of groundwater contamination is high, armor with permeable pavements and/or integrate vegetative islands to trap and filter runoff.

Infiltrate as much of the runoff as possible in areas where the risk of groundwater contamination is low.

Where existing staging areas are located near watercourses or water bodies, and the potential for hydrologic connectivity is high, install a contour berm or trench around the perimeter to contain sediment and potential spills.

Provide permanent or temporary sanitation facilities as appropriate for the level of recreation use.

Adopt and implement a substance spill prevention, containment, and countermeasures (SPCC) plan.

Report hazardous spills and initiate appropriate clean-up action in accordance with applicable State and Federal laws, rules and regulations.

High Risk Areas and Events--

Develop and implement a fuel and chemical management plan (for example. SPCC, spill response plan, emergency response plan) for permitted special events and at locations where the risk of overturned vehicles is high. For example, for extreme (highly technical) 4x4 trails and rock-crawling areas.

Clean up and dispose of spilled materials according to specified requirements in the event permit and plan.

Report hazardous spills and initiate appropriate clean-up action in accordance with applicable State and Federal laws, rules and regulations.

Provide temporary or permanent sanitation facilities as appropriate for the level of use.

Camping Areas

Provide permanent or temporary sanitation facilities at high-use areas, especially at campsites and day-use areas near water bodies, watercourses, and riparian areas and meadows.

12.41 Exhibit 16 -- Continued
BMP 4.7.9 - Concentrated-use area management

As necessary and feasible, provide sanitation facilities at commonly used camping and resting sites and at other areas of concentrated use.

Provide education and training on the principles of backcountry sanitation, pack-it-in and pack-it-out.

12.41 Exhibit 17
BMP 4. 8 - Sanitation at Hydrants and Water Faucets within Developed Recreation Sites

Objective: To maintain high water-quality standards around hydrants and faucets, which provide water for consumptive use in developed recreation site.

Explanation: Regulations prohibit the cleaning, or washing of any personal property, fish, animal, or food at a hydrant or at a water faucet not provided for that purpose. The public must be informed of their responsibilities concerning sanitary regulations. Acceptable designated cleaning areas are located away from consumptive water sources and where effluent from the washing operation can be disposed of properly.

Implementation: The forest officer authorized to administer developed recreation site regulations will inform the public of their sanitary responsibilities by posting signs on recreation site bulletin boards and at hydrants or faucets, by notices in newspapers, and by personal contact. Authorized forest officers may issue citations to violators.

12.41 Exhibit 18
BMP 4.9 - Protection of Water Quality within Developed and Dispersed Recreation Areas

Objective: To protect water quality by regulating the discharge and disposal of potential pollutants.

Explanation: This practice prohibits placing in, or near a stream, lake, or other water body, substances, which may degrade water quality. This includes, but is not limited to, human and animal waste, petroleum products, other hazardous substances, and sediment eroded from the site. Areas will be closed to restrict use or until the problem is mitigated.

Implementation: Encourage the public through the use of signs, pamphlets, and public contact to conduct their activities in a manner that will not degrade water quality. Forest officers may accept and act on violations observed and reported by private citizens. Forest officers may issue citations to violators.

12.41 Exhibit 19
BMP 4. 10 - Location of Pack and Riding Stock Facilities and Use Areas in Wilderness, Primitive, and Wilderness Study Areas

Objective: To avoid degradation of water quality from pack, riding stock facilities, and heavy-use areas.

Explanation: This practice directs the location of pack and riding stock facilities to locations away from springs, streams, lakes, wet meadows, and other surface waters where pollution is likely to occur. This includes large camp sites and trails repeatedly used by customers of commercial stock operators and other recreational uses.

Implementation: Forest Supervisors may authorize the construction and installation of simple temporary facilities when approved in the wilderness implementation plan, including corrals in connection with pack stock operation. Forest Supervisors may authorize the locations and use of large campsites for pack stock users and recreational users. If approved, facilities will not be located immediately adjacent to streams or lakes, and should generally be in place for no more than one season of use.

The wilderness patrol will check the temporary livestock facilities authorized by the Forest Supervisor for compliance with the terms of the authorization.

12.5 - Vegetation Manipulation

Vegetation manipulation on NFS lands is conducted in the course of reforestation, brushland treatment for hazard reduction, brushland conversion to forest, fire or fuels treatment, forest health and range land improvement, and wildlife habitat improvement. The most common means of treatment are chemical, mechanical, burning, and biological (such as grazing). Program environmental impact statements covering these activities are the "Vegetation Management for Reforestation" and "Brushland Management" documents. Individual projects are, however, evaluated by an interdisciplinary team through the environmental analysis process.

The environmental analysis process is the mechanism whereby applicable Federal, State, and local water-quality laws are considered, as well as national, Regional, Forest, and District goals, objectives, management requirements, and management direction. The document specifies where, when, and in most cases, how management practices will be applied to meet project, administrative, and environmental objectives.

12.51 - Vegetation manipulation BMPs

5.1 Soil-disturbing Treatments on the Contour
5.2 Slope Limitations Mechanical Equipment Operation
5.3 Tractor Operation Limitation in Wetlands and Meadows
5.4 Revegetation of Surface-disturbed Areas
5.5 Disposal of Organic Debris
5.6 Soil Moisture Limitations for Tractor Operations
5.7 Pesticide Use Planning Process
5.8 Pesticide Application According to Label Directions and Applicable Legal Requirements
5.9 Pesticide Application Monitoring and Evaluation
5.10 Pesticide Spill Contingency Planning
5.11 Cleaning and Disposal of Pesticide Containers and Equipment
5.12 Streamside Wet Area Protection During Pesticide Spraying
5.13 Controlling Pesticide Drift During Spray Application

The following BMPs are for the control of nonpoint source pollution associated with vegetation manipulation activities. Each BMP was formulated based on the administrative directives that guide and direct the Forest Service to plan and implement vegetation management activities on NFS land.

The line officer on each administrative unit is responsible for fully implementing the Forest Service Manual, Handbooks, and directives that require water-quality protection and improvement during vegetation-manipulation activities. The directives provide details on methods to incorporate water-quality controls into each phase of the vegetation-manipulation program.

Trained and qualified personnel will be available to assist the vegetation-manipulation work force to identify beneficial uses and the most recent state-of-the-art water-quality control methods and techniques, and to help evaluate results of BMP application.

Vegetation manipulation can involve activities such as road construction and use of heavy equipment. The BMPs for those types of activities are described in other sections of this text and are not repeated here. The appropriate BMPs for those activities must be implemented along with the following vegetation-manipulation BMPs.

12.51 Exhibit 01
BMP 5.1 - Soil-disturbing Treatments on the Contour

Objective: To decrease sediment production and stream turbidity, while mechanically treating slopes.

Explanation: This is a preventive measure that limits surface-disturbance activities, such as, but not limited to, disking, seed drilling, and windrowing, to preclude water from concentrating by providing means of adequate infiltration and by decreasing the velocity of surface runoff so infiltration is enhanced. Due to mechanical limitation of the equipment, slopes greater than 30 percent are usually not considered for this type of treatment.

Factors evaluated are slope, infiltration rate, permeability, and water-holding capacity of the soil. Trained and qualified personnel make field evaluations of these factorsas input to project planning. Implementation: Following NEPA procedures and using interdisciplinary team input, project planners will be responsible for formulating the appropriate contract provisions and/or mitigation measures for the contract, or project plans.

The project leader will be responsible for enforcing management requirements and mitigation measures that deal with soil-disturbing treatments through force account projects.

The contracting officer’s representative will be responsible for enforcing provisions of the contract.

12.51 Exhibit 02
BMP 5.2 - Slope Limitations for Mechanical Equipment Operation

Objective: To reduce gully and sheet erosion and associated sediment production by limiting tractor use.

Explanation: This is a preventive measure that limits excessive surface disturbance and keeps surface water from concentrating. This measure facilitates making allowances for proper drainage of disturbed areas by limiting tractor operation to slopes where corrective measures such as water bars can be effectively installed.

Criteria used to determine slope restrictions are onsite evaluations of soil stability, mass stability and geology, climate conditions, and soil water-holding capacity. These field determinations will be made as part of the environmental documentation process during project planning.

Implementation: Project planners will be responsible for ensuring that appropriate tractor operation provisions are included in the decision and activity-controlling documents. This practice will be implemented on vegetation-manipulation projects where determined to be appropriate by the interdisciplinary team.

The project leader will be responsible for applying management requirements and mitigation measures on site-specific areas, with the assistance of selected interdisciplinary team members.

The contracting officer’s representative will be responsible for ensuring implementation of the contract provisions that pertain to tractor operation on steep slopes.

12.51 Exhibit 03
BMP 5.3 - Tractor Operation Limitation in Wetlands and Meadows

Objective: To limit turbidity and sediment production resulting from compaction, rutting, runoff concentration, and subsequent erosion by excluding the use of mechanical equipment in wetland and meadows except for the purpose of restoring wetland and meadow function.

Explanation: This is a preventative practice designed to preclude the concentration of surface runoff and soil compaction, which can lead to rill and gully erosion with associated turbidity and sedimentation. This measure precludes, or reduces the need to take corrective measures to dissipate concentrated surface water runoff.

Target areas will be protected from mechanical operations except when trained and qualified interdisciplinary team personnel identify the areas for treatment. Specific protection measures will be established for each area that could incur adverse water-quality impacts (see also BMP 1.18).

Implementation: The application of this BMP will be mandatory on all vegetation-manipulation projects as prescribed in the environmental documentation.

Project planners will be responsible for including appropriate contract specifications and identifying management requirements and mitigation measures in the project decision and implementation documents.

The project leader will be responsible for identifying wet area and meadows not previously identified by the project planner during the implementation of Forest Service force account projects. The project leader will also be responsible for following project management requirements pertaining to wet areas and meadows.

On contracted projects, the contracting officer’s representative will be responsible for identifying additional wet areas and meadows not previously identified by the project planners.

12.51 Exhibit 04
BMP 5.4 - Revegetation of Surface-disturbed Areas

Objective: To protect water quality by minimizing soil erosion through the stabilizing influence of vegetation foliage and root network.

Explanation: This is a corrective practice to stabilize an otherwise unstable soil surface during vegetation-manipulation projects. The plant species selected will be a mix best suited for site conditions and attainment of multiple management objectives for the area. Native plant species will be used to the fullest extent feasible. Soil amendments and irrigation, along with application of mulch with tackifier, jute netting, or other supplement treatments may be necessary to ensure revegetation.

Grass or browse species will be seeded between previously planted trees where deemed appropriate for control of overland runoff, and to meet wildlife needs. The onsite factors evaluated include soil productivity, topography, EHR, soil water-holding capacity, target species, environmentally associated species, and climatic variables. Evaluation includes the collection of onsite data, and office interpretation by the interdisciplinary team (see also BMP 1.15).

Implementation: During the environmental documentation process, trained and qualified employees will assess the need for treatment, and prescribe the vegetative species mix for each project.

The project leader will implement the BMP on the project, under supervision of the responsible line officer.

12.51 Exhibit 05
BMP 5.5 - Disposal of Organic Debris

Objective: To prevent gully and surface erosion with associated reduction in sediment production and turbidity during and after treatment.

Explanation: This is a preventive practice to reduce excessive volumes and velocities of overland flow, promote infiltration, and prevent wildfires from consuming excessive amounts of surface and soil organic matter and creating hydrophobic soil conditions.

The interdisciplinary team will identify project controls and mitigation measures after evaluating such onsite factors as soil water-holding capacity, EHR, slope and topographic limitations, the quantity of debris: density and ratio of rearranged debris, residual ground cover density objectives, climatic variables, and the probability of creating water-repellant soils.

Implementation: The District Ranger will be responsible for debris treatment following timber sales and other projects such as chaparral manipulation.

Project planners will be responsible for determining the method(s) of debris disposal and/or placement of debris after treatment. Methods of disposal include, but are not limited to: prescribed burning, chipping and mulching, lop and scatter, and mechanical harvesting and collection.

The contracting officer’s representative will be responsible for enforcing the contract clauses that provide for debris disposal in contracted projects.

The project leader will implement the water-quality protection measures either through the contract provisions, or by use of force account crews.

12.51 Exhibit 06
BMP 5.6 - Soil Moisture Limitations for Mechanical Equipment Operations

Objective: To prevent compaction, rutting, and gullying, with resultant sediment production and turbidity.

Explanation: This is a preventive practice that reduces surface disturbance during wet soil conditions, which would result in compaction, rutting, and gullying. Soil moisture guidelines will be developed for each site, based on the characteristics of the soil.

The project should then be conducted as guided by soil erodibility, climate factors, soil and water relationships, and mass stability hazards identified by trained and qualified earth scientists (see also BMP 1.5).

Implementation: Soil conditions will be evaluated during the environmental documentation process and the interdisciplinary team will develop operating limitations as the alternatives are formulated. Project planners will also be responsible for including appropriate contract provisions and management requirements in project work plans and environmental documentation.

For force account projects, the project leader will be responsible for determining when the soil surface is unstable and susceptible to damage, and for terminating operations.

The contracting officer’s representative will determine when optimum soil conditions exist, and administer the operation to prevent adverse soil effects, in addition to suspending, or terminating operations for contracted projects as soil moisture conditions warrant.

12.51 Exhibit 07
BMP 5.7 - Pesticide Use Planning Process

Objective: To introduce water quality and hydrologic considerations into the pesticide use planning process.

Explanation: The pesticide use planning process is the framework for incorporating water-quality protection requirements contained in BMPs 5.8 through 5.14 into project design and management. The project environmental document will incorporate these considerations in discussion of environmental effects and mitigation measures.

Implementation: The interdisciplinary team will evaluate the project in terms of site response, social and environmental impacts, and the intensity of monitoring needed.

The responsible line officer will prepare environmental documentation, project plan, and the safety plan. Project plans and safety plans will specify management direction.

Approval for proposed pesticide projects will proceed according to direction established in Pacific Southwest Region supplement No. 2100-95.1 to 2150.

12.51 Exhibit 08
BMP 5.8 - Pesticide Application According to Label Directions and Applicable Legal Requirements

Objective: To avoid water contamination by complying with all label instructions and restrictions for use.

Explanation: Directions on the label of each pesticide are detailed and specific, and include legal requirements for use.

Implementation: Constraints identified on the label and other legal requirements of application must be incorporated into project plans and contracts.

For force account projects, the Forest Service project supervisor (who will have a Qualified Applicator Certificate) is responsible for ensuring that label directions and other applicable legal requirements are followed.

For contracted projects, the contracting officer, or the contracting officer's representative will be responsible for ensuring that label directions and other applicable legal requirements are followed.

12.51 Exhibit 09
BMP 5.9 - Pesticide Application Monitoring and Evaluation

1. Objective:

   a. To determine whether pesticides have been applied safely, were restricted to intended target areas, and have not resulted in unexpected non-target effects.

   b. To document and provide early warning of hazardous conditions resulting from possible pesticide contamination of water or other non-target areas.

   c. To determine the extent, severity, and duration of any potential hazard that might exist.

Explanation: This practice documents the accuracy of application, amount applied, and any water-quality effects so as to reduce, or eliminate hazards to non-target species. Monitoring methods include spray cards, dye tracing (fluorometry), and direct measurement of particles in, or near water. Type of pesticide, type of equipment, application difficulty, public concern, beneficial uses, monitoring difficulty, availability of laboratory analysis, and applicable Federal, State, and local laws and regulations are all factors considered when developing the monitoring plan.

Implementation: The need for a monitoring plan will be identified during the pesticide use planning process as part of the project environmental evaluation and documentation.

2. The water-quality monitoring plan will specify:

   a. Who will be involved and their roles and responsibilities;

   b. What parameters will be monitored and analyzed;

   c. When and where monitoring will take place;

   d. What methodologies will be used for sampling and analysis, and the rationale behind each of the preceding specifications.

A water-quality specialist and the project leader will evaluate and interpret the water-quality monitoring results in terms of compliance with and adequacy of project specifications.

12.51 Exhibit 10
BMP 5.10 - Pesticide Spill Contingency Planning

Objective: To reduce contamination of water by accidental pesticide spills.

Explanation: This is a preventative and corrective practice. The pesticide spill contingency plan prepared by each forest consists of predetermined actions to be implemented in the event of a pesticide spill. The plan lists who will notify whom and how, time requirements for the notification, guidelines for spill containment, and who will be responsible for cleanup.

Site-specific planning will be included in the project safety plan.

Implementation: Pesticide spill contingency planning will be incorporated into the project safety plan.

The site-specific environmental evaluation and resulting documentation will include public and other agency involvement in plan preparation. The plan will list the responsible authorities.

12.51 Exhibit 11
BMP 5.11 - Cleaning and Disposal of Pesticide Containers and Equipment

Objective: To prevent water contamination resulting from cleaning, or disposal of pesticide containers.

Explanation: The cleaning and disposal of pesticide containers must be done in accordance with Federal, State, and local laws, regulations, and directives. Specific procedures for the cleaning and disposal of pesticide containers are documented in the Forest Service Pesticide Use Management and Coordination Handbook (FSH 2109.114), and State and local laws.

Implementation: The forest, or district Pesticide Use Coordinator (Qualified Applicator) will approve proper rinsing procedures in accordance with State and local laws and regulations, and arrange for disposal of pesticide containers when Forest Service personnel apply the pesticide.

When a contractor applies the pesticide, the contractor will be responsible for proper container rinsing and disposal in accordance with label directions and Federal, State, and local laws.

12.51 Exhibit 12
BMP 5.12 - Streamside Wet Area Protection during Pesticide Spraying

Objective: To minimize the risk of pesticides inadvertently entering waters, or unintentionally altering the riparian area, SMZ, or wetland.

Explanation: When spraying pesticides for the purpose of meeting non-riparian area land management objectives, an untreated strip of land and vegetation will be left alongside surface waters, wetlands, riparian areas, or SMZ. The interdisciplinary team will establish strip width and, when county permits are required, in consultation with the county agricultural commissioner. When spraying pesticides for purposes of meeting riparian-area land management objectives, localized buffers around target species will be established and only hand application will be used.

Factors considered in establishing buffer strip widths are beneficial water uses, adjacent land uses, rainfall, wind speed, wind direction, terrain, slope, soils, and geology. The persistence, mobility, acute toxicity, bio-accumulation, and formulation of the pesticide are also considered. Equipment used, spray pattern, droplet size, and application height and past experience are other important factors.

Implementation: The interdisciplinary team will identify the perennial and intermittent surface waters, wetlands, riparian areas, and SMZ from onsite observation, and map them during project planning.

When included as part of the environmental evaluation and documentation, the project work plan, the protection of surface waters, wetlands, riparian areas, or the SMZ will be the responsibility of the project supervisor for force account projects, and the COR will be responsible on contracted projects.

The certified applicators must be briefed about the location of surface waters, wetlands, riparian areas, or SMZ. Buffer strip boundaries will be flagged, or otherwise marked, when necessary, to aid identification from the air.

12.51 Exhibit 13
BMP 5.13 - Controlling Pesticide Drift during Spray Application

Objective: To minimize the risk of pesticide falling directly into water, or non-target areas.

Explanation: The spray application of pesticide is accomplished according to prescription which accounts for terrain and specifies the following: spray exclusion areas; buffer areas; and factors such as formulation, equipment, droplet size, spray height, application pattern, and flow rate; and the limiting factors of wind speed and direction, temperature, and relative humidity.

Implementation: An interdisciplinary team will prepare the prescription, working with the Forest or District Pesticide Use Coordinator during project planning.

For force account projects, the Forest Service project supervisor will be responsible for ensuring that the prescription is followed during application and for closing down application when specifications are exceeded.

On contracted projects, the contracting officer, or the contracting officer's representative will be responsible for ensuring that the prescription is followed during application and for closing down application when specifications are exceeded.

12.6 - Fire Suppression and Fuels Management

Emergency fire suppression rehabilitation activities on NFS lands are conducted to reduce erosion and the loss of soil productivity, degradation of water quality, and threats to life and property both onsite, and off site. Suppression activities include fireline construction, construction of temporary access roads, back-firing operations, and aerial or ground application of short-term and long-term fire retardants.

Water quality objectives are weighed along with the need for rapid suppression during the development of fire attack plans. Objectives of the fire-suppression program are to preclude catastrophic watershed damage and rehabilitate suppression-related damage.

An interdisciplinary team will conduct a burned area rehabilitation survey on all fires exceeding 300 acres to assess actual fire damages. The District Ranger may request that an interdisciplinary team perform a survey for smaller fires where significant resource damage has, or could occur.

An emergency rehabilitation proposal must be submitted to the Regional Office, Ecosystem Conservation Staff for approval and funding, no later than 3 days after the fire is controlled. Rehabilitation work is accomplished both by the Forest Service force account crews and through contracts.

Fuels management activities are intended to reduce the size, cost, and damage from wildfire. Fuel biomass is altered by changing fuel type, creating fuel breaks, or by reducing or altering fuels over extensive areas.

Fuels management is also concerned with controlling dead biomass such as cull logs and slash. These materials will be rearranged, removed, or burned to reduce fuel loading.

12.61 - Fire Suppression and Fuels Management BMPs

6.1 Fire and Fuels Management Activities
6.2 Consideration of Water Quality in Formulating Fire prescriptions
6.3 Protection of Water Quality from Prescribed Burning Effects
6.4 Minimizing Watershed Damage from Fire-suppression Efforts
6.5 Repair or Stabilization of Fire-suppression-related Watershed Damage
6.6 Emergency Rehabilitation of Watersheds Following Wildfires

The following BMPs are for the control of nonpoint source pollution associated with fire suppression and fuels management activities. Each BMP is based on the administrative directives that guide and direct the Forest Service permitting and administering fire suppression and fuels management activities on NFS land.

The line officer on each administrative subunit is responsible for fully implementing the directives that require water-quality protection and improvement during fire suppression and fuels management activities. The directives provide details on methods and techniques to effectively incorporate water-quality controls into each phase of the fire suppression and fuels management program.

Trained and qualified earth scientists, and other professional employees, are available to assist the fire suppression and fuels management work force identify beneficial uses and the most recent state-of-the-art water-quality control methods and techniques, and to help evaluate results.

12.61 Exhibit 01
BMP 6.1 - Fire and Fuels Management Activities

Objective: To reduce public and private losses and environmental impacts which result from wildfires and/or subsequent flooding and erosion by reducing or managing the frequency, intensity, and extent of wildfire.

Explanation: These administrative, corrective, and preventive measures include the use of prescribed fire or mechanical methods to achieve:

1. Defensive fuel profile zones,
2. Type conversions,
3. Greenbelt establishment to separate urban areas from wildlands,
4. Fuel reduction units,
5. Access roads and trails for rapid ingress and egress,
5. Fire-suppression activities,
7. Fuel utilization and modification programs, and
8. Public information and education programs.

Implementation: Fuel management will be implemented through normal program planning and budgeting and NEPA processes, predominantly, but not exclusively, by personnel in the Forest Service fire management organization.

Other resource managers, such as timber, range; watershed, and wildlife may initiate fuel-modification projects that also benefit fire management. Fuel-management projects will be evaluated by the interdisciplinary team. Management requirements, mitigation measures, and multiple resource-protection prescriptions are documented in the project-specific decision and implementation documents.

The project planners and supervisor are responsible for applying mitigation measures and prescriptions.

12.61 Exhibit 02
BMP 6.2 - Consideration of Water Quality in Formulating Fire Prescriptions

Objective: To provide for water-quality protection while achieving the management objectives through the use of prescribed fire.

Explanation: Prescription elements will include, but not be limited to, such factors as fire weather, slope, aspect, soil moisture, and fuel moisture. These elements influence the fire intensity and thus have a direct effect on whether a desired ground cover remains after burning, and whether a water-repellent layer is formed. The prescription will include at the watershed- and subwatershed-scale the optimum and maximum burn block size, aggregate burned area, acceptable disturbance for contiguous and aggregate length for the riparian/SMZ; and expected fire return intervals and maximum expected area covered by water-repellant soils.

Implementation: Field investigations will be conducted as required to identify site-specific conditions, which may affect the prescription. Both the optimum and allowable limits for the burn to ensure water-quality protection will be established prior to preparation of the burn plan. An interdisciplinary team will assess the prescription elements and the optimum and maximum acceptable disturbance, and the fire management officer or fuel management specialist will prepare the fire prescription. The fire prescription will be reviewed by the interdisciplinary team and approved by the appropriate line officer.

12.61 Exhibit 03
BMP 6.3 - Protection of Water Quality from Prescribed Burning Effects

Objective: To maintain soil productivity; minimize erosion; and minimize ash, sediment, nutrients, and debris from entering water bodies.

Explanation: Some of the techniques used to prevent water-quality degradation are:

1. Constructing water bars in fire lines,

2. Reducing fuel loading in drainage channels,

3. Maintaining the integrity of the SMZ within the limits of the burn plan,

4. Planning prescribed fires for burn intensities so that when water-repellant soils are formed, they are within the limits and at locations described in the burn plan, and

5. Retaining or re-establishing ground cover as needed to keep erosion of the burned site within the limits of the burn plan.

Implementation: Forest Service and other crews will be used to prepare the units for burning. This will include, but not be limited to, water barring firelines, reducing fuel concentrations, and moving fuel to designated disposal and burning areas.

The interdisciplinary team will identify the SMZ and soils with high risk of becoming water-repellant as part of project planning.

12.61 Exhibit 04
BMP 6.4 - Minimizing Watershed Damage from Fire-suppression Efforts

Objective: To avoid watershed damage in excess of that already caused by the wildfire.

Explanation: Avoid heavy equipment operation on fragile soils and steep slopes whenever possible.

Major project fires will utilize a Resource Advisor to assist the Incident Commander in protecting resource values during the suppression effort. National fire management policies provide in part that a wildland fire situation analysis will be prepared for all fires where containment of the fire is not expected prior to the second burning period. The analysis will be prepared by a line officer with Incident Management Team input. Watershed considerations must be part of the analysis.

Implementation: A Resource Advisor will be assigned by the Forest Supervisor and work for the Incident Management Team, specifically for the Planning Section chief.

An earth scientist will be available to identify fragile soils and unstable areas, and will be assigned to the fire as a Resource Advisor.

12.61 Exhibit 05
BMP 6.5 - Repair or Stabilization of Fire-suppression-related Watershed Damage

Objective: To stabilize all areas that have had their erosion potential significantly increased, or their drainage pattern altered by suppression-related activities.

Explanation: Treatments for fire-suppression damages include, but are not limited to, installing water bars and other drainage diversions in fire roads, firelines, and other cleared areas; seeding, planting and fertilizing to provide vegetative cover; spreading slash, or mulch to protect bare soil; repairing damaged road drainage facilities; clearing stream channels or structures and removing debris deposited by suppression activities which can have adverse life, property, and environmental impacts.

Implementation: This work will be done by the fire fighting forces either as a part of the suppression effort, or before personnel and equipment are released from the fire lines. The incident commander will be responsible, under the direction of the local line officer, for repair of suppression-related resource damage.

12.61 Exhibit 06
BMP 6.6 - Emergency Rehabilitation of Watersheds Following Wildfires

1. Objective: To minimize as far as practicable:

   a. Loss of soil and onsite productivity;

   b. Overland flow, channel obstruction, and instability; and

   c. Threats to life and property, both on-site and off-site.

Explanation: Emergency rehabilitation is a corrective measure that involves a variety of treatments.

2. Treatments may include, but are not limited to:

   a. Providing a protective soil cover, prior to the rainy season, such as seeding, mulching, or installing log erosion barriers;

   b. Installing log or straw bale check dams;

   c. Clearing hazardous debris from stream channels; and

   d. Constructing trash racks, channel-stabilization structures, and debris-retention structures.

Treatments are selected on the basis of onsite values, downstream values, probability of successful implementation, social, and environmental considerations, and cost as compared to benefits.

Implementation: Burned-area surveys will be made promptly on all burned over areas to determine if watershed emergency rehabilitation treatment is needed. Burned-area surveys of all class E (300 acres) and larger fires will be conducted by an interdisciplinary team. Team members normally include a hydrologist, a soil scientist, and representatives of other disciplines, as needed.

The burned-area survey and proposed rehabilitation treatment measures will be transmitted to the Regional Office, within 3 days of control of the fire for approval. Upon approval of the rehabilitation project, a project supervisor and restoration team will begin work with the objective of project completion before damaging storms occur.

12.61 Exhibit 06--Continued
BMP 6.6 - Emergency Rehabilitation of Watersheds Following Wildfires

Rehabilitation projects will be evaluated following major storms and runoff events, and at least annually until the watershed is stabilized. The evaluation will determine the effectiveness of the rehabilitation measures and indicate if follow-up actions are warranted.

12.7 - Watershed Management

Watershed management is the art and science of protecting, maintaining, and enhancing soil, water, and geologic resources.

Management is oriented toward maintaining, or improving watershed conditions for optimum water yield and timing, water quality, and soil productivity. It also includes the rehabilitation and restoration of NFS lands damaged by catastrophic events (for example, fire, flood, or earthquake), or degraded by past use.

12.71 - Watershed management BMPs

7.1 Watershed Restoration

7.2 Conduct Floodplain Hazard Analysis and Evaluation

7.3 Protection of Wetlands

7.4 Forest Hazardous Substance Spill Prevention Control and Countermeasures Plan

7.5 Control of Activities under Special Use Permit

7.6 Water Quality Monitoring

7.7 Management by Closure to Use (Seasonal, Temporary, and Permanent)

7.8 Cumulative Off-site Watershed Effects

The following BMPs are for the control of nonpoint source pollution associated with watershed management activities. Each BMP is based on administrative directives that guide and direct the Forest Service management of the watershed resources on NFS lands.

The line officer on each administrative subunit is responsible for fully implementing the directives that require water-quality protection and improvement during watershed management activities. The directives provide details on methods and techniques to incorporate water-quality controls into each phase of the watershed management program.

Trained and qualified earth scientists and other professional employees are available to provide technical assistance and identify beneficial uses, the most recent state-of-the-art water-quality control methods and techniques, and help evaluate results.

The full implementation of BMPs in watershed management activities may require the application of other BMPs as well as those listed in this section. The BMPs listed in this section may also be applicable to many other resource management activities. Coordination of these BMPs with other resource issues and concerns is an essential part of project planning.

12.71 Exhibit 01
BMP 7.1 - Watershed Restoration

Objective: To repair degraded watershed conditions, and improve water quality and soil stability.

Explanation: Watershed restoration is a corrective measure to:

1. Improve ground cover density;
2. Improve infiltration;
3. Prevent excessive overland runoff and conserve the soil resource;
4. Stabilize stream banks and stream channels;
5. Improve soil productivity;
6. Reduce flood occurrence and flood damage;
7. Enhance economic, social and/or aesthetic values of the watershed; and
8. Improve overall watershed function.

The following factors will be considered during development of restoration projects: predicted changes in water quality and any direct or indirect impacts on the beneficial uses of water, downstream values, site productivity, and threats to life and property.

Watershed restoration measures will reflect the state-of-the-art and must be chosen to custom fit the unique hydrological, physical, biological, and climatic characteristics of each watershed. Examples of watershed-restoration measures are check dam installation, streambank and channel stabilization structures, soil scarification, and seeding and planting.

Implementation: This management practice is implemented through the development of a Watershed Improvement Needs (WIN) inventory, identification of projects, preparation and approval of restoration plans and related environmental documentation, and the funding and implementation of the restoration actions.

The Forest Supervisor ensures that a WIN inventory is completed and identified restoration projects prioritized (the current USFS data base for documenting watershed improvement projects is the USFS NRM WIT data base)..

12.71 Exhibit 01--Continued
BMP 7.1 - Watershed Restoration

Planning will be through an interdisciplinary team effort. Multifunctional funding of projects will be pursued where improvement of watershed conditions will benefit multiple resource areas and/or where causal actions of deteriorated conditions can be identified.

The actual work will be done by force account or through contract. Effectiveness of the restoration measures used will be monitored by project proponents. Physical, hydrological, biological, or aquatic indicators of deteriorated conditions will be the focus of the monitoring effort.

12.71 Exhibit 02
BMP 7.2 - Conduct Floodplain Hazard Analysis and Evaluation

Objective: To avoid, where possible, the long- and short-term adverse impacts to water quality associated with the occupancy and modification of floodplains.

Explanation: Floodplain analysis and evaluation are part of the environmental documentation process. Analysis must be performed prior to acquisition or exchange of land within floodplains and when sites within floodplains are being considered for structures or developments.

Environmental quality, ecological effects, and individual safety and health must be considered as well as flood frequencies, watershed conditions, climatic and environmental factors associated with past flood events, flood flow quantities and specific flood boundaries.

1. Implementation: The Regional Forester will be responsible for ensuring consideration of floodplain hazards and values in all NEPA environmental analysis.

   a. Ensure that flood hazards, floodplain and wetland values, and all alternatives that affect floodplain or that involves new construction in wetlands are fully considered in the Forest Service planning and decision-making process.

   b. Coordinate activities and interchange of floodplain and wetlands information with other concerned Federal and State agencies.

   c. Ensure that cooperative technical and financial assistance programs include an evaluation of floodplain and wetland values.

   d. Ensure that all documents conveying interest in or authorizing use of floodplains and wetlands on NFS lands contain disclosure of and/or restrictions as warranted which will reduce the risk of loss and preserve the national and beneficial values served by floodplains and wetlands.

2. The Forest Supervisor, through use of earth scientists, will:

   a. Analyze proposed actions affecting floodplains or involving new construction in wetlands to access the specific flood hazards, quantify floodplain or wetland values of the areas; determine the impacts of the proposal on those hazards and values; formulate and evaluate land and resource management options; develop practicable alternative actions or locations for evaluation and decision making.

   b. In actions where an alternative affecting the floodplain or new construction in a wetland is not practicable, modify plans, activities, and designs to minimize impacts

12.71 Exhibit 02 -- Continued
BMP 7.2 - Conduct Floodplain Hazard Analysis and Evaluation

of the action and mitigate its effects on the national and beneficial values of the floodplain or wetland.

c. Ensure that all practicable and necessary mitigation measures are incorporated in specifications for the proposed action, and that the implementation of the selected action is accomplished in a manner that to the extent practicable restores and preserves the

d. natural and beneficial values served by the floodplains and preserves and enhances the natural and beneficial values of wetlands.

e. Require flood hazard and wetland evaluations prior to issuing licenses, permits, loans, or grants-in-aid. Provide assistance to applicants in obtaining help to make such evaluations in their proposals.

f. Ensure that design, construction or rehabilitation of Forest Service real property is in accordance with standards and criteria outlined in the National Flood Insurance Program (42 U.S.C. 4001 and following) using flood-proofing measures and structural elevation where practicable.

g. Provide for the placement of appropriate signs to enhance public awareness and knowledge of flood hazards.

h. Establish specific management standards and guidelines for floodplains and wetlands as part of forest planning actions.

i. Cooperate with State and county governments in developing and implementing appropriate early flood warning and evacuation plans.

12.71 Exhibit 03
BMP 7.3 - Protection of Wetlands

Objective: To avoid adverse water-quality impacts associated with destruction, disturbance, or modification of wetlands.

Explanation: The Forest Service will not permit the implementation of activities and new construction in wetlands when there is a practical alternative. Factors relevant to the effect of the proposal on the survival and quality of the wetlands will be considered when evaluating proposed actions in wetlands. Factors to be evaluated include, but are not limited to, water supply, water quality, recharge areas, functioning of the wetland during flood and storm events, flora and fauna, habitat diversity and stability, and hydrologic function of riparian areas.

Implementation: The Regional Forester will be responsible for ensuring that wetland values are considered and documented as an integral part of all planning processes.

The Forest Supervisor, through the use of earth scientists, will determine whether proposed actions will be located in wetlands and, if so, whether there is a viable alternative. Replacement in kind of lost wetlands should be evaluated to apply a “no net loss” perspective to wetland preservation. During project planning, the Forest Supervisor will establish communications with other agencies legislatively responsible for protecting wetlands, Corps of Engineers and EPA at the minimum, to ensure that local requirements are identified and incorporated into the project plan.

The Forest Supervisor must ensure that all mitigating measures are incorporated into project plans and designs, and that the actions maintain the hydrologic and biologic function of the wetlands. All potentially impacted wetlands will be identified on maps as part of project development.

Identification and mapping of wetlands will be a part of the LRMP data inventory process.

12.71 Exhibit 04
BMP 7.4 - Forest and Hazardous Substance Spill Prevention Control and Countermeasure Plan

Objective: To prevent contamination of waters from accidental spills.

Explanation: This is a preventive and corrective practice. The forest substance spill prevention control and countermeasure (SPCC) plan is a document designed to guide the emergency response to spills, or discovery of hazardous materials (HazMat) within the boundaries of each national forest. Spills are defined as either an intentional or accidental release, known or unknown substance; or the incidental discovery of a known or unknown substance. Each forest SPCC Plan must be compatible with appropriate county SPCC Plans that also guide emergency responses to spills and discoveries of HazMat. Forest SPCC Plans are prepared according to references and county SPCC Plans are prepared according to State guidelines.

The composite of forest and county SPCC Plans provide a process to coordinate the various local, State and Federal agencies that have emergency response capabilities, into a unified force that can effectively react to actual or threatened releases or HazMat within the forest boundary. Factors considered for each spill include, but are not limited to, the specific substance spilled, the quantity, its toxicity, proximity of the spill to waters, and the hazard to life and property.

An SPCC Plan must be prepared if the total oil products on site in above-ground storage exceed 1,320 gallons, or if a single container exceeds a capacity of 660 gallons. Other HazMat (pesticides, raw sewage, road oils) also have specific criteria that determine when a SPCC Plan must be prepared and implemented.

Implementation: Each Forest Supervisor will be responsible for designating emergency spill response coordinators and documenting names with telephone numbers of agencies to call regarding response to emergency incidents. Individual forests should maintain an inventory of materials to use during the emergency response phase of HazMat within their capability. Disposal methods and sites must be coordinated with EPA, State, and local officials responsible for safe disposal.

All forests will maintain a SPCC plan, which meets the criteria of the referenced directives in Section 13, and require appropriate special use permittees, timber sale operators, other contractors, and forest users to develop companion SPCC Plans before operating within the national forest boundary. Forest SPCC Plans and forest users' SPCC Plans must be approved by the Forest Supervisor. Timber sale SPCC Plans must be approved by a licensed professional engineer.

12.71 Exhibit 05
BMP 7.5 - Control of Activities under Special Use Permit

Objective: To protect surface and subsurface water quality from physical, chemical, and biological pollutants resulting from activities that are under special use permit.

Explanation: Some activities and uses by others take place on NFS lands, which are not directly related to Forest Service management activities (for example, electronic sites; highway, road, and railroad rights-of-way; waste water treatment and disposal; and power transmission lines).

There are also uses by others on NFS land, which are related to NFS management activities. (Examples of these types of uses are organization camps, recreation residence tracts, and ski areas.) Both the related and non-related uses of NFS lands by others are administered through permits issued by the Forest Service to public or private agencies, a group, or an individual.

Activities on lands withdrawn under authority of the Federal Energy Regulatory Commission (FERC) will be exempt from Forest Service administrative control through the NFS permit system. When a FERC permit is issued, or renewed, the Forest Service makes a complete study of water quality and quantity needs, and provides FERC with recommended requirements and mitigation measures under which the permittee should operate to protect natural resources.

Implementation: The Forest Service official responsible for permit issuance and administration will include in the special use permit under which the permittee must operate, details of the conditions that must be met including management requirements and mitigation measures necessary to protect water quality. The permittee will be required to conform to all applicable State and local regulations governing water quality and sanitation.

State water quality law may require that the permittee obtain a waste discharge requirement from a RWQCB. Failure on the part of the permittee to meet the conditions of the special use permit may result in the permit being revoked.

12.71 Exhibit 06
BMP 7.6 - Water Quality Monitoring

Objective: To collect representative water data to determine base line conditions for comparison to established water-quality standards that are related to beneficial uses for that particular watershed.

Explanation: Water quality monitoring is a mechanism which evaluates the implementation and effectiveness of a management prescription in protecting water quality (beneficial uses identified in the environmental analysis.) A water quality monitoring plan will be part of an environmental document, a management plan, or a special use permit, or it will be developed in response to other needs.

Implementation: A water quality monitoring plan will be written, or reviewed by a hydrologist and will be implemented by the hydrologist, or by other qualified forest personnel. The actual analysis of the data will be performed by the hydrologist, State-certified laboratory, or other trained forest personnel, or combinations of these as appropriate. (See also BMP 4.2 and BMP 4.3.)

Interpretation of the data and any reporting will be accomplished by the hydrologist, or trained personnel. The EPA STORET system will be used for computer storage of all data collected.

12.71 Exhibit 07
BMP 7.7 - Management by Closure to Use (Seasonal, Temporary, and Permanent)

Objective: To exclude activities that could result in damages to either resources or improvements, such as roads and trails, resulting in impaired water quality.

Explanation: A watershed may be in such a sensitive condition that any use during a given portion of the year, usually the rainy season, could result in soil and/or land stability problems and associated adverse effects to water quality. In other cases, water quality may already be impaired, and improvement may not be considered practical without substantially reducing or eliminating further use.

These conditions could have resulted from past land use or natural disasters. Closure to use will be used when the condition of the watershed must be protected to preclude adverse water-quality effects. (See also BMP 1.5 and BMP 2.9.)

Implementation: Closures will be made when the Forest Supervisor, District Ranger, or Forest Service officer responsible for resource protection determines that a particular resource or improvement needs protection from use. An interdisciplinary team or resource specialist normally recommends closure. The decision will be made to close an area after an evaluation of alternative methods of protection dictates that closure is a required action. This is usually a last-step protective measure.

12.71 Exhibit 08
BMP 7.8 - Cumulative Off-site Watershed Effects

Objective: To protect the identified beneficial uses of water from the combined effects of multiple management activities which individually may not create unacceptable effects, but collectively may result in degraded water-quality conditions.

Explanation: Cumulative off-site watershed effects (CWE) include all effects on beneficial uses that occur away from the sites of actual land use activities and which are transmitted through the drainage system. Effects can be either beneficial or adverse and result from the synergistic or additive effects of multiple management activities within a watershed.

Professional judgment is used to evaluate CWE susceptibility, on a watershed basis, as part of the decision-making process. These assessments are made using known information about beneficial uses, climate, watershed characteristics, land use history, and present and reasonably foreseeable future land use activities. Initial evaluation of CWE susceptibility is based on what is known about the study watershed and other watersheds with similar physical and climatic characteristics. Comparison of land-disturbance history and resulting impacts to beneficial uses in these watersheds results in an estimate of the upper limit of watershed tolerance to land disturbance.

Implementation: CWE susceptibility evaluations and development of mitigative measures are accomplished through the environmental documentation process, using an interdisciplinary approach, guided by the Regional methodology. Forests having similar climatic, watershed, and land-use characteristics will work together to refine CWE assessments to be responsive to local conditions. Each forest will monitor to determine the effectiveness of CWE analysis in reducing the risk of adverse effects and obtaining desired results from mitigation measures and management requirements. Monitoring results will also be used to refine the analysis and, where necessary, modify the analysis process.

12.8 - Range Management

Lands that are now part of the National Forest System (NFS) were, for the most part, being used by domestic livestock prior to establishment of the national forests in California. Grazing is a recognized and compatible use of public lands. Grazing can be a means of managing vegetation to meet other resource management objectives, such as fuels management, and reducing competing vegetation in plantations.

Many years ago, grazing use was often uncontrolled and much heavier than it is today. Through the application of improved grazing systems, improved forage management technology, and adjustments of animal numbers to better fit the range capacity, grazing use has been adjusted to a level more compatible with resource capability. Range use includes grazing by cattle, sheep and goats, and horses and saddle stock used to manage the range.

Designated grazing allotments are managed to accommodate livestock grazing and are typically 4 to 40 square miles in size. Livestock owned by local ranchers graze on NFS land, authorized by both term and temporary permits administered by the Forest Service.

Range management involves range analysis, allotment management planning and improvement, and the grazing permit system. It includes controlling overall livestock numbers and season of use, livestock distribution, structural and non-structural improvements, providing for other uses, and restoration of deteriorated range land.

Pacific Southwest Region national forests address water quality on grazed allotments following the procedures described below.

1. Plans that guide range management activities with respect to water quality

   a. Forest Land and Resource Management Plans (LRMPs)

   (1) Set standards and guidelines for range management.

   (2) Set goals and objectives for water quality.

   b. Northwest Forest Plan Aquatic Conservation Strategy (ACS)

   Directive to “maintain and restore” water quality with all actions.

   c. Sierra Nevada Forest Plan Amendment (SNFPA) Riparian Conservation Objectives

   Strategy for aquatic management provides broad goals which are endpoints toward which management moves watershed processes and maintain and restore water quality to meet goals.

   d. Southern California Forest Plans

2. Allotment NEPA

The Rescissions Act of 1995, Public Law 104.19 (Pub. L. 104.19) became law on July 27, 1995. Section 504 addresses allotment analysis, grazing permit issuance, and compliance with the National Environmental Policy Act (NEPA) and other environmental laws. Term grazing permits which expire or are waived before the NEPA analysis and decision is completed shall be issued on the same terms and conditions and for the full term of the waived or expired permits. Upon completion of the scheduled NEPA analysis and decision for the allotment, the terms and conditions of existing grazing permits may be modified or re-issued, if necessary to conform to such NEPA analysis.

The 2004 Interior Appropriations Act, Public Law 108.108 (Pub. L. 108.108), Section 325 provides that the Forest Service has the discretion to periodically update the allotment NEPA schedules and reprioritize which allotments will be done, based on emerging environmental issues and available funding for allotment NEPA analyses.

NEPA for range allotments may be either environmental assessments or environmental impact statements. Except as authorized under section 504(a) of the Rescissions Act of 1995 (Pub. L. 104.19) or the 2004 Omnibus Appropriations Resolution (Pub. L. 108.108, Nov. 10, 2003), the project-level NEPA-based decision to authorize grazing on one or more allotments is made by the authorized officer upon completion of site-specific environmental analysis. The decision to authorize grazing is made in the NEPA-based decision document whose major focus is on maintaining or achieving the desired land condition. The grazing permit, accompanying allotment management plan AMP) (sec. 94.1) as appropriate, and annual operating instructions (sec. 94.3) all serve to implement the project-level decision to authorize grazing (sec. 96). The AMP becomes a part of the grazing permit. If an AMP currently exists, it should be revised to reflect new information from the most recent project-level decision. The grazing permit is then modified to include the revised AMP. Subsequent modifications to grazing or related management activities may be made as long as those changes are within the scope of the project-level decision.

3. Permit administration

The Region 5 Grazing Permit Administration Handbook (FSH 2209.13 chapter 10) sets procedures for administering permits and handling non-compliance issues. Grazing permits with term status, also known as “term grazing permits” authorize the use of NFS lands and lands under Forest Service control for commercial livestock production purposes. Objectives and policy for issuing grazing permits with term status are set forth in FSM 2230.2 and 2230.3.

Permits are issued to a permittee to authorize grazing of owned livestock on designated lands administered by the Forest Service. Permits include a description of the range including a map of the grazing allotment(s) and specify the number, kind, and class of livestock, period of use, and grazing allotment on which the livestock are permitted to graze. At most, a permit is for a renewable 10-year term.

Part 3 of term grazing permits contains terms and conditions which outline permittee responsibilities for constructing and maintaining structural improvements or for range rehabilitation. Part 3 is also where the authorized officer includes standards, guidelines, and other provisions that specify requirements related to the management of vegetation, soil, water, and other resources affected by livestock grazing that may be found in forest and grassland land management plans, allotment management plans, and annual operating instructions.

In managing permitted livestock use over time, changes in the term grazing permit terms and conditions are based on changes in laws, regulations, policies, Endangered Species Act consultation requirements, and LRMPs, as well as decisions from Federal courts. In addition, analysis of monitoring results as described below and in chapter 6 constantly provides information to the authorized officer regarding status of management in terms of meeting or moving toward established objectives and points out the need for the adjustment in livestock grazing to achieve the objectives. These types of changes to the grazing authorization can be made administratively through modification of the term grazing permit (FSH 2209.13 Ch 10 sec. 16). Examples of actions that can be taken administratively through modification of the term grazing permit include annual adjustments of numbers and dates for grazing, and changes in grazing system or livestock numbers based on evaluation of monitoring results. These types of changes do not require analysis and disclosure through the NEPA process, but they may be appealed by the permittee under provisions of 36 CFR 251.81.

If changes are based on current or previous-year monitoring results, Part 2 Clause 8(c) of the term grazing permit states the authorized officer may require the permittee to defer placing livestock on the allotment at the beginning of the use season or may require early removal if available forage has been consumed. In these two cases, the decision of the authorizing officer cannot be appealed.

Grazing permits are subject to administrative actions such as partial or total suspension or cancellation for violations of terms and conditions of the permit, which are found in Parts 1, 2 and 3 of the grazing permit with term status and set forth at 36 CFR. 222.4. Suspensions are the temporary withholding of some or all of a permit holder’s grazing privileges. Cancellations are the permanent invalidation of some or all of a permit holder’s grazing privileges. Suspensions and cancellations can apply to permitted livestock numbers, seasons of use, or grazing allotments. Forests must follow the

Suspension and Cancellation Guidelines included in FSH 2209.13. An allotment may be "vacant" with no current permit, or "active" with a current permit to graze held by a permittee. An active allotment may be in "non-use" in any given year for either the permittee's "personal convenience" or for "resource protection" reasons, and the allotment will be either not grazed, or grazed with reduced numbers of animals.

In response to concerns with bacterial contamination of surface waters used for recreation, the Forest Service is including as part of this Water Quality Management Handbook an in-stream bacterial monitoring program linked to field evaluations and potential permit actions under the authorities and following the procedures described above. Monitoring (described in chapter ###) will focus on sites in or downstream of range allotments where public water contact recreation or use of surface water for drinking is frequent. The Forest Service will concentrate its efforts to control livestock access to surface waters in and upstream of these high-use areas, and if persistent problems are detected through monitoring, the Forest Service will take actions to reduce livestock access to streams through water-source development, fencing, active herding, reduced stocking rates, or reduced seasons of use following the established guidelines for permit administration described above.

4. Allotment Management Plans

AMPs contain the pertinent livestock management direction from the project-level NEPA-based decision (sec. 92.23, para. 2). AMPs also refine direction in the project-level NEPA-based decision deemed necessary by the authorized officer to implement that decision. The plans should be developed concurrently with the completion of the site-specific analysis and project-level decision. Each plan becomes a part of Part 3 of the grazing permit.

5. Annual Operating Instructions

The annual operating instructions (AOI) specify those annual actions that are needed to implement the management direction set forth in the project-level NEPA-based decision. Actions in the AOIs must be within the scope of the project-level decision, and, as such, are not required to undergo any additional site-specific environmental analysis.

6. The AOIs set forth:

a. The maximum permissible grazing use authorized on the allotment for the current grazing season (should specify numbers and timing and duration of use).

b. The planned sequence of grazing on the allotment, or the management prescriptions and monitoring that will be used to make changes.

c. Structural and non-structural improvements to be constructed, reconstructed, or maintained, and who is responsible for these activities.

d. Allowable use or other standards to be applied and followed by the permittee to properly manage livestock.

e. Monitoring for the current season that may include, among other things, documentation demonstrating compliance with the terms and conditions in the grazing permit, AMP (sec. 94.1), and AOI. Where adaptive management prescriptions are being followed, this section of the AOI must provide details about those monitoring items and decision points needed to determine when a change is necessary and to guide the direction that those changes take (sec. 95). See description of compliance and effectiveness monitoring below and chapter 6 of this Water Quality Management Handbook.

7. Compliance and effectiveness monitoring

a. Allotment inspections: performed periodically to ensure compliance with stocking rates, season of use, allotment boundaries, and range improvement.

b. Utilization monitoring: performed at a minimum at the end of grazing season to ensure compliance with forage utilization limits and other requirements included in the terms and conditions of the permit.

c. Riparian (greenline) monitoring: performed once every 5 years on selected sites and allotments in key areas to track the ecological trend of riparian vegetation and streambank stability. The Regional long-term goal is to identify additional sites as funding and resources allow, based on identified needs.

d. Rooted frequency monitoring or other assessment of rangeland condition and trend: performed once every 5 years on selected allotments in key areas to track the ecological trend of upland and meadow vegetation. Currently, over 900 permanent monitoring locations are established on 17 national forests in California.

e. BMP evaluation program: performed annually at one or more, randomly selected site on each forest to assess implementation and effectiveness of best management practices identified in Water Quality Management for Forest System Lands in California, Best Management Practices (USFS, Pacific Southwest Region 2000) and fulfills requirements of the Management Agency Agreement with the California State Water Resources Control Board. This monitoring assesses whether site-specific BMPs have been developed and implemented, as well as vegetation and riparian condition.

f. Regional monitoring of fecal coliform bacteria in representative range allotments: this program is described in chapter ###.

8. Examples of practices used to comply with the Aquatic Conservation Strategy, Forest LRMP, and Allotment NEPA

a. Management of livestock numbers and season of use.

b. Use of drift fencing, fence enclosures, salt blocks or other supplementation, water developments, and herding to manage livestock distribution and forage utilization.

c. Prohibition on the use of salt blocks closer than ¼ mile from water.

d. Locating new and relocating existing animal handling structures (corrals) outside of riparian reserves if existing facilities pose a risk to riparian objectives.

e. Use of spring developments and pipelines to reduce impacts to sensitive and impaired wetlands.

f. Other forest activities also address vegetation and watershed management (prescribed fire, fuels management, noxious weed control, habitat management, timber harvest, road management), with planning that includes the analysis of the cumulative effects of multiple activities.

12.81 - Range Management BMPs

8.1 Range Analysis and Planning
8.2 Grazing Permit Administration
8.3 Rangeland improvements

The purpose of this set of BMPs is to protect water quality and aquatic and riparian resources that may be affected by rangeland management activities. Rangeland management involves range analysis of multiple resources, allotment management planning and improvement, and the grazing permit system. Administration of the program includes controlling overall livestock numbers and season of use, controlling livestock distribution, implementation and maintenance of structural and non-structural improvements, and improvement of deteriorated rangeland soil and water resources.

Livestock grazing is recognized as an appropriate and compatible use of NFS lands when properly managed. A primary purpose of the rangeland management program is to provide forage for commercial livestock operations. Grazing can also be a means of managing vegetation to meet other resource management objectives, such as fuels management and reduction of competing vegetation in plantations.

Historically, grazing use was often uncontrolled and much heavier than it is now. In many allotments, grazing use has been adjusted to a level more compatible with resource capability by applying improved grazing systems and forage management technology, eliminating grazing in

unsuitable land types, and adjusting animal numbers. Rangeland use includes grazing by cattle, sheep and goats, and horses and saddle stock used to manage the range. On some national forests there is also grazing use by transportation or recreational stock. The Forest Service administers both term and temporary livestock grazing permits that define criteria for privately owned stock to graze within defined areas (allotments) on NFS lands.

Trained and qualified watershed and other specialists are available to work with range management specialists in planning and administration. Tasks include identifying beneficial water uses, developing and applying state-of-the-art water-quality control methods and techniques, and assisting in evaluating management and monitoring results.

The Forest Supervisor or delegated District Ranger approves the AMPs. AMPs, including numbers permitted and seasons of use, are revised at any time during the term of the permit. Reasons for revisions include resource conditions, or the need to conform to changes brought about by law, regulation, Executive order, or land management planning.

The line officer on each administrative subunit is responsible for implementing the Forest Service administrative directives that require water-quality protection and improvement during livestock grazing activities. The directives referenced in this section provide details on methods to incorporate water-quality controls into each phase of the range management program.

The full implementation of BMPs in livestock grazing activities may require application of other BMPs as well as those listed in this section. For example, if burning is a means of range improvement, appropriate BMPs for wildland fire management will be implemented. Similarly, if system roads are involved, appropriate BMPs for road management will be implemented. Often improvements to stream channels and riparian areas are implemented as watershed improvement projects (aquatic ecosystem activities) and are not the responsibility of the permittee as outlined in BMP 8.3.

The BMPs that follow are to be applied as needed for the control of nonpoint source pollution associated with livestock grazing activities on NFS land. Each BMP is based on administrative directives that guide and direct the Forest Service planning and permitting of livestock grazing activities on NFS land.

12.81 Exhibit 01
BMP 8.1 - Rangeland Management Planning

Objective: Use the allotment management planning process to develop measures to avoid, minimize, mitigate and/or restore adverse impacts to water and aquatic and riparian resources during rangeland management activities.

Explanation: Analysis of existing rangeland conditions and other resource values is conducted for each allotment in the development of an AMP. The AMP is the primary document that guides implementation of forest plan direction for rangeland resources at the allotment (project) level. It is included as part of the grazing permit and provides special management provisions, instructions, and terms and conditions for that permit. The risk from livestock grazing can be managed in the planning process by using the appropriate techniques from the following list adapted as needed to local site conditions.

1. Implementation:

   a. Determine potential grazing suitability.

   b. Determine rangeland condition as part of rangeland analysis and planning process.

   c. Assess the current functionality in relation to compliance with water-quality objectives and protection of the beneficial uses of water of rangeland and riparian areas using proper functioning condition protocols.

   d. Identify sites at risk of degradation using proper functioning condition protocols.

   e. Assess long-term trends of rangeland sites within riparian allotments using accepted protocols (the rooted frequency protocol).

   f. Establish desired conditions for rangelands that consider linkages to riparian and aquatic systems.

   g. Establish desired conditions for riparian and aquatic systems that reflect their ecological potential.

   h. Review past management within the allotment.

   i. Identify potential management strategies.

   j. Identify improvement needs.

12.81 Exhibit 01 -- Continued
BMP 8.1 - Rangeland Management Planning

k. Include management objectives for livestock grazing and all resources including compliance with water-quality objectives and protection of the beneficial uses of water affected by livestock grazing in AMP, Grazing Permit and Annual Operating Instructions (AOI). The objectives are derived from management direction in the forest plan, biological opinions, or other binding direction.

l. Establish management requirements such as the season of use; number, kind, class of livestock; and the grazing system to be used in the AMP. Management requirements should maintain or move resources in the allotment toward desired conditions.

m. Establish annual endpoint indicators of use related to the desired conditions and triggers (thresholds) for management actions, including modification of livestock intensity; frequency, duration and timing of livestock use (better distribution of stock); change in animal months and/or season of use; and livestock exclusion.

n. Set the indicator thresholds at levels that protect or improve condition of riparian areas and aquatic ecosystems.

o. Include schedules in the AMP for:

(1) rehabilitating rangelands that do not meet forest plan objectives;

(2) initiating range improvements; and

(3) maintaining existing improvements (see BMP 8.3).

p. Include monitoring requirements in the allotment management plan to evaluate:

(1) compliance with triggers and annual endpoint indicators of use (for example, utilization, stubble height, stream alteration) and other forest plan standards as appropriate; and

(2) indicators of management effectiveness, such as greenline vegetation stability, bank stability, greenline-to-greenline width, and shrub height.

12.81 Exhibit 02
BMP 8.2 - Rangeland Permit Administration

Objective: Manage rangeland vegetation and grazing to protect water and aquatic and riparian resources through administration and monitoring of grazing permits and annual operating instructions.

Explanation: Improper grazing can adversely affect watershed condition in several ways. Loss of effective ground cover in the uplands leads to increases in overland flow and peak runoff. Soil compaction and loss of ground cover and plant vigor in riparian areas decrease the ability of the riparian area to filter pollutants and function as a floodplain. Streambank trampling increases stream channel width/depth ratio, resulting in a change in stream type and a lowering of the water table. Wider and shallower streams have higher stream temperatures and lower dissolved oxygen content. Introduction of sediment, nutrients, and pathogens from grazing can lower water quality. The potential for these impacts can be limited by managing livestock numbers, distribution, timing and season of use.

A temporary or term grazing permit authorizes livestock grazing on NFS lands. The permit delineates the area to be grazed and defines the number, kind, and class of livestock to be grazed, and the season of use. The permit includes both general and special terms and conditions. Required management practices are included under the special terms and conditions. These practices contain standards designed to protect water quality and other resource values. Standards included in the permit may be derived from the forest plan, applicable biological opinions, or site-specific measures developed during range analysis. The permit also includes the location and type of monitoring to be conducted to assess compliance with standards, and determine trend in range condition.

When an AMP is in place, AOIs are issued to the grazing permit permittee. The instructions specify those annual actions needed to implement the management direction set forth in the project-level NEPA-based decision. Actions in the instructions must be within the scope of the project-level decision, and as such, are not required to undergo any additional site-specific environmental analysis. The AOIs identify the obligations of the permittee and the Forest Service, and clearly articulate annual grazing management requirements, standards, and monitoring necessary to document compliance.

The Forest Supervisor or District Ranger will approve grazing permits and annual operating instructions; the permittee carries out the terms and conditions of the permit under the immediate direction and supervision of the District Ranger.

The risk from livestock grazing can be managed by using the appropriate techniques from the following list adapted as needed to local site conditions.

12.81 Exhibit 02--Continued
BMP 8.2 - Rangeland Permit Administration

Implementation:

Monitoring--

1. Make field checks and measurements at least annually as described below (by Forest Service or permittee with quality control provided by the Forest Service).

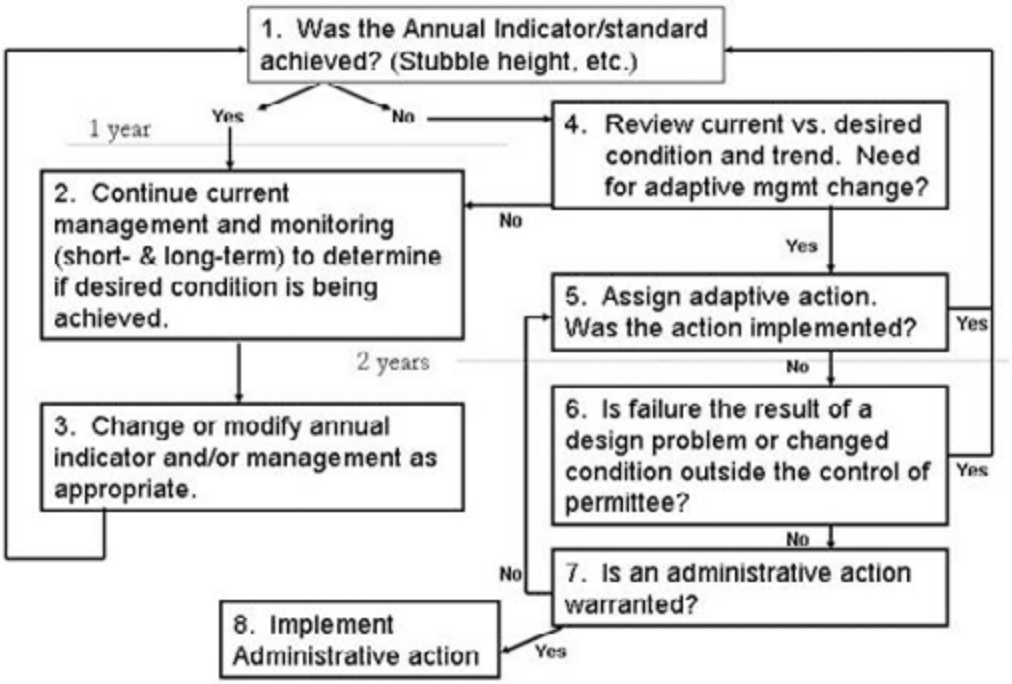
2. Emphasize monitoring that determines permittee compliance with permit provisions.

3. Include indicators of annual use that relate to water quality, riparian and aquatic ecosystem protection in compliance monitoring, such as forage utilization, streambank alteration, or utilization of woody riparian vegetation.

4. Use monitoring results as an adaptive management feedback loop to revise the AOIs to account for current allotment conditions and trends. Figure 2 illustrates the adaptive management process used in managing range allotments.

5. Monitor indicators of management effectiveness and trends that affect water quality, as well as habitat or other beneficial uses as necessary (for example, 303.listed streams and terms of biological opinions).

12.81 Exhibit 03
Adaptive management process for managing range allotments



1. Livestock Number and Distribution—

   a. Use results of annual compliance monitoring and periodic trend monitoring, as well as forage utilization by wildlife, to determine allowable annual amount of livestock use to meet rangeland desired conditions.

   b. Document allowable use, the planned sequence of grazing on the allotment, and any other operational changes in the AOIs issued to the permittee each year.

   c. Alter livestock distribution when monitoring and periodic assessments indicate consistent non-compliance with permit provisions.

   d. Manage livestock use through control of time/timing, intensity, and duration/ frequency of use in riparian areas and wetlands to maintain or improve long-term functional stream condition, and allow for riparian hardwood growth extension and/ or other stabilizers (herbaceous plants) and reproduction where the riparian plant community is below its desired condition and livestock are a key contributing factor.

12.81 Exhibit 03--Continued
Adaptive management process for managing range allotments

e. Manage livestock to prevent further degradation of riparian areas and wetlands that are not meeting or moving toward desired condition objectives.

f. Exclude livestock if monitoring information shows continued livestock grazing would prevent attainment of those objectives.

g. Locate stock tanks, salt supplements, and similar features to distribute cattle evenly over the allotment and prevent concentrations of cattle in SMZs and wetlands.

h. Keep stock driveways out of riparian areas except to cross at designated points.

i. Establish triggers for livestock trampling and riparian vegetation utilization on or immediately adjacent to stream banks for timing livestock moves between units.

j. Manage livestock herds to avoid concentrating in riparian areas and wetlands during the hot season (mid-to-late summer).

2. Season of Use--

a. Adjust livestock numbers and/or season of use when monitoring and periodic assessments show consistent non-compliance with permit provisions.

b. Manage to avoid livestock grazing through an entire growing season in pastures that contain riparian areas and wetlands.

c. Apply short-duration grazing as practicable (generally less than 20 days) to minimize re-grazing of individual plants, to provide greater opportunity for regrowth, and to manage utilization of woody species and reduce soil compaction.

3. Permit Administration--

a. Use permit authorities to change operations to protect water and aquatic and riparian resources when special circumstances (such as drought) occur.

b. Take corrective actions if monitoring and periodic assessments show consistent non-compliance with permit provisions. Actions might include:

(1) adjusting livestock numbers and/or season of use

(2) altering livestock distribution

12.81 Exhibit 03--Continued
Adaptive management process for managing range allotments

(3) installing fences and water developments. And

(4) rest, placing the allotment (or unit of concern) in non-use status for a period of time that allows for natural recovery of resource condition where potential exists.

c. Apply suspension and cancellation guidelines in cases of intentional noncompliance with the terms and conditions of the permit.

d. Modify, cancel or suspend the permit in whole or in part as needed where it has been determined to be necessary to ensure proper use of the rangeland resource and protection of other resources, such as water quality.

12.81 Exhibit 04
BMP 8.3 - Rangeland Improvements

Objective: Implement range improvements to protect, maintain or improve water and aquatic and riparian resources and associated beneficial uses.

Explanation: Rangeland improvements targeted at water and aquatic and riparian resources are designed to protect or improve conditions of sensitive areas such as streams, riparian areas, and wetlands or upland areas in danger of crossing a threshold to a less desirable condition and move these resources toward desired conditions. Improvements should emphasize protecting the beneficial uses in these areas. Improvements may supplement administrative actions such as rest or changes in annual use levels, seasonal use, distribution, and number.

Either the permittee or the Forest Service can be responsible for developing and maintaining rangeland. The District Ranger will ensure that the permittee is involved as a cooperator in rangeland improvements. And, as appropriate, the permittee may participate in the construction and/or maintenance of improvements under Forest Service direction. Implementation may also be done by Forest Service crews, or contractors.

Use the appropriate techniques from the following list adapted as needed to local site conditions to implement rangeland improvements.

Implementation:

1. Identify range improvement needs during watershed analysis, watershed condition assessment, AMPs, or other assessment efforts.

2. Evaluate improvement needs in the AMP.

3. Include and schedule improvement actions as appropriate in the AMP and grazing permit.

4. Design improvements to sustain forage production for livestock and provide protection to the other resources.

5. Consider the following when evaluating need for improvements:

    a. Fencing

    b. Soil and stream rehabilitation

    c. Off-site water development

    d. Seeding and planting

13 - ADMINISTRATIVE PROCEDURES

One of the objectives of this Water Quality Management Handbook is "to enhance Forest Service performance as a water-quality management agency, and increase and improve its responsibility, transparency and accountability in its relationships with the Water Boards." This chapter describes Forest Service administrative processes that are intended to meet this objective by providing formal and systematic processes to ensure that measures for water-quality protection and improvement are incorporated into all activities on National Forest System lands in California.

The Forest Service Best Management Practices Evaluation Program (BMPEP) monitoring report for 2003 to 2007 (USFS 2009) showed that 86 percent of the evaluated BMPs were properly implemented, and of these, 93 percent were effective in protecting water quality. A major conclusion of this report was that "improved implementation of BMPs is the single most useful step that can be taken to improve water-quality protection on National Forests in California." The changes to administrative practices described in this chapter and the adaptive management system described in chapter 4 constitute an effort to put this recommendation into practice.

13.1 - General Procedures

Responsibility, transparency, and accountability depend on Water Board and public access to Forest Service information and decisions and opportunities to exchange information and viewpoints with diverse stakeholders. The Water Quality Management Handbook includes the following steps to enhance overall information exchange and accountability:

1. Beginning in 2011, the Forest Service will track the condition of all 6th-field hydrologic units on NFS lands using protocols developed by the Washington Office headquarters staff at intervals of approximately 3 years. Watersheds will be classified into 1 of 3 condition classes representing high, moderate, and low geomorphic, hydrologic, and biotic integrity in relation to natural potential conditions. Changes in conditions will be related to Forest Service resource management actions and compared to assigned targets as a basis for funding allocations, and will be considered in performance appraisals of Forest Service staff.

2. The Forest Service will create a publically accessible Internet site where information related to water-quality protection and improvement and current activities on NFS lands that may affect water quality will be posted or made available through links. Documents available on this site will include our current Water Quality Management Handbook, including all BMPs; the current Users Guide for the Best Management Practices Evaluation Program; the Stream Condition Inventory protocol; and Regional and National Forest BMPEP reports. Links will be provided to relevant supporting information, including Forest Service directives (FSM, FSH) and plans (Northwest Forest Plan, Sierra Nevada Framework Planning Amendment, individual national forest LRMPs

and Schedules of Proposed Actions (SOPAs), project documents, including NEPA documents and contracts, current wildfire and prescribed fire information (InciWeb), current weather (National Weather Service), and streamflow (U.S. Geological Survey). Following the conversion of the BMPEP data base to a new server, expected in 2011, the Forest Service will develop methods to provide data from BMPEP and in-channel monitoring via the Internet. Until such methods are developed, these data can be obtained by request to the appropriate national forest.

3. Interagency (Forest Service-Water Board) training sessions will be held annually on BMP development, implementation, and monitoring. Each annual training session will focus on specific issues and topics of current importance, and will cover any changes made to BMPs or evaluation protocols in the preceding year. Training will generally be held in late fall or early winter, and training locations will be rotated. Training for the Forest Service will not be required annually, but all permanent full-time (GS-9 level and above) Forest Service watershed, timber, fire and fuels, engineering, range, and recreation staff will attend an introductory training within 3 years of the implementation of this Water Quality Management Handbook (or within 3 years of being hired as new employees), and will attend refresher training at least once every 5 years. Water Board staff will be invited. Web-based training will be developed to reduce travel costs. The Forest Service Regional Hydrologist will coordinate the training.

4. Each national forest will continue to coordinate with their appropriate Regional Board(s) regarding monitoring, restoration, and other issues on an annual basis. This may involve meetings, reports, field visits, or other methods of communication.

5. An interagency coordination meeting will be held annually between the Forest Service Regional Office and the State Board. The purpose of these meetings is to present and discuss monitoring results, approve or reject recommended changes to BMPs, and evaluate progress on restoration of legacy sites. The Forest Service Regional Hydrologist will coordinate this meeting.

6. A public stakeholder and tribal advisory group will be established and will meet annually with the Forest Service Regional Office and the State Board to discuss any issues of concern related to water quality on NFS land. The stakeholder and tribal advisory group will be provided with all monitoring plans and reports, and the group will participate in field reviews of selected Forest Service activities on an annual basis. The stakeholder and tribal advisory group will select the activities to be reviewed. This group, its meetings, and the field reviews will be arranged and coordinated by the Forest Service Regional Hydrologist with assistance from the Regional Forester’s RepresentativeLiaison Officer and Public Affairs staff.

7. Actual or potential water-quality problems observed on NFS lands can be reported by email to national_forest_water_quality@fs.fed.us.or telephone to the Forest Service Regional Hydrologist. The current email address for the regional hydrologist is bhill@fs.fed.us, and the current telephone number for the regional hydrologist is (707) 562.8968. A response will be provided to all observations as soon as possible, which will normally be within 1 to 5 business days. The regional hydrologist's email and voicemail will be updated to provide alternative contact information during periods of travel or leave.

8. Each national forest will designate an emergency response team of Forest Service employees available year-round and trained to respond to non-hazardous pollutant discharges (any discharges that appear likely to result in immediate violations of basin plan objectives). Examples of discharges that would be controlled by a national forest emergency response team include blockage and diversions at road-stream crossings. Potential actions that the teams might take include removal of debris blocking culvert inlets and modifications of road drainage to prevent diversions and erosion. The emergency response teams may include permanent full-time firefighters; recreation, range, and forestry technicians; and engineering staff. Adjacent or nearby forests may "pool" staff for emergency response teams if necessary. Hazardous materials will be handled by Forest Service Hazardous Materials Coordinators and trained contractors only.

9. "Tailgate" water-quality discussions will be held during project implementation, and will involve Forest Service project and watershed staff, contracting officer's representatives, contractors, and operators.

13.2 - National Environmental Policy Act Procedures

Under the National Environmental Policy Act (NEPA), all ground-disturbing activities on NFS lands are required to be analyzed for environmental impacts prior to implementation. All NEPA analyses result in a documented decision by the appropriate Forest Service line officer, usually a district ranger or forest supervisor, and all NEPA decisions incorporate site-specific best management practices for protecting water quality. Most low-impact activities that do not involve "extraordinary circumstances" such as impacts to floodplains, wetlands, municipal watersheds, cultural resources, wilderness, or listed species, may be categorically excluded from the requirement to fully analyze environmental impacts in an environmental assessment or environmental impact statement. Decisions to use categorical exclusions are documented with decision memos signed by line officers. Environmental assessments normally require two or more alternatives and are used for activities that may involve "extraordinary circumstances," but pose a low risk of significant adverse environmental impacts. A decision to select an alternative with an environmental assessment is documented in a decision notice and accompanied by a finding of no significant impact. Activities that may include significant adverse effects require an environmental impact statement, which includes a broader range of alternatives.

A decision to select an alternative in an environmental impact statement is documented in a record of decision. Although an alternative selected in a record of decision may include adverse environmental effects, all alternatives must comply with the Federal Clean Water Act, the Porter-Cologne Act, and all other applicable laws. Similarly, all decisions made using an environmental assessment or categorical exclusion must comply with the Clean Water Act and the Porter-Cologne Act.

The Forest Service will incorporate the following practices for NEPA analyses and decisions:

1. National forest schedules of proposed actions will continue to be updated via the Internet quarterly, in March, June, September, and December each year.

2. NEPA analyses for timber harvest, fuels, vegetation management, engineering, and recreation activities that include ground-disturbing activities will include an inventory of controllable sediment discharge sources and other legacy sites that may affect water quality within project boundaries and along appurtenant Forest Service roads. Inventories of legacy sites will not be required for range allotments, routine road maintenance, hazard-tree removals, or other activities that are not restricted to a discrete project area. Legacy sites will be restored as described in chapter 5, either on a watershed or project basis.

3. Maps will be provided at scales of 1:24,000 or larger when needed to show road and project details or proposed alternatives.

4. For projects that require discretionary actions by state regulatory agencies, national forests will coordinate their NEPA analyses with CEQA analyses by state agencies to the extent possible.

13.3 - Project Implementation

Projects on NFS lands are implemented through contracts of various types, permits, and using Forest Service (force account) staff. Protection of water quality depends on a complete and accurate transfer of the site-specific BMPs described in NEPA decision documents into contracts, permits, and force-account job specifications. The procedures described below are specific to the various types of project documents used by the Forest Service. Common to all projects involving ground disturbance is the requirement for the development and completion of BMP checklists before ground disturbance begins and as needed, based on weather conditions and project activities.

Timber Sales, Stewardship, and Service Contracts--Site-specific BMPs will be included in timber sales, stewardship, and service contracts using standard regional C-clauses that include “fill in the blank” tables to allow development of site-specific measures similar to standard Regional clause R5 C6.6. If necessary, special non-recurring C clauses will be used when

standard Regional C clauses do not apply. BMP checklists (see chapter 6) will be completed for timber sales and all other activities. Copies of timber sales and other contracts will be provided upon request.

Stewardship and Service Contracts--BMPs will be added directly as requirements in stewardship and service contracts.

Engineering Contracts--Implementation of BMPs will be required in contracts through drawings and plans, specifications, submittals, and pertinent clauses from Federal Acquisitions Regulations. Lack of compliance to the contract requirements can result in actions ranging from reduced payment, termination of contract due to default, and potential for fiscal liability of fines, depending on the severity of water-quality impact by a contractor's operations or negligence.

Erosion control plans (see BMP 2.13 12.2) will be included as part of the project record for all projects involving ground disturbance and with a risk of adverse impacts to water quality.

Force-Account (Forest Service staff) Projects--Although the work done with in-house agency personnel does not require written binding direction between staffs to carry out the Forest Service mission, force account projects and activities with potential to adversely affect water quality will incorporate BMPs through planning, design; drawings; and carefully selected methods and procedures, equipment, and materials, in addition to development, implementation, and monitoring of an approved project erosion control plan.

Road-Use Permits and Agreements--BMPs will be included in road-use permits, annual operating plans, reconstruction plans and specifications, and maintenance requirements.

Rangeland Grazing Permits--Range allotment grazing permits are managed under Allotment Management Plans (AMPs) and Annual Operating Instructions (AOIs). AMPs and AOIs can be modified based on a NEPA decision for permit renewal. BMPs will be added to AMPs and AOIs when permits are analyzed through NEPA. Range NEPA will include analysis of legacy problems within range allotments. Specific measures for monitoring and controlling bacterial contamination are described in 12.2 and 12.6

14 - ADAPTIVE MANAGEMENT

14.1 - Purpose and Scope

Adaptive management is "an approach to managing complex natural systems that builds on learning - based on common sense, experience, experimenting, and monitoring - by adjusting practices based on what was learned" (Bormann et al. 1999). An adaptive approach is necessary for water-quality management, given that the conceptual models underlying most resource management decisions rely on an imperfect understanding of the cause-and-effect relationships between land use activities and water-quality response. This imperfect knowledge can increase the risk of a management activity on the resource of concern, and can potentially result in

unintended consequences to these resources. Adaptive management is considered an effective process for dealing with this type of uncertainty and risk (Ralph and Poole 2002).

1. The purpose of this adaptive management system (AMS) is to provide the information needed for the Forest Service, the State and Regional Water Boards, and stakeholders and tribes to ensure that the implementation of activities on the National Forest System lands of California occur in a manner that protects, maintains, and restores water quality and the beneficial uses of water, and complies with Federal water-quality statutes and regulations (for example, the Clean Water Act), in addition to California water-quality requirements (for example, the Porter-Cologne Water Quality Control Act). The primary mechanism for achieving this goal is through the implementation of BMPs. Explicit in the Water Quality Management Handbook is the acknowledgement that there is still uncertainty regarding how well BMPs are implemented, and how effective BMPs are in achieving objectives across time and space. As such, the handbook recognizes that an adaptive approach is necessary to optimize the implementation and effectiveness of BMPs on National Forest System lands.

2. By designing and implementing an adaptive management system developed cooperatively between the Forest Service and the State and Regional Water Boards, the process can achieve the following desirable outcomes:

a. Land use activities are addressed in a manner that prevents or minimizes nonpoint source pollution and protects, maintains, and restores water quality and the beneficial uses of water on National Forest System lands

b. Sufficient feedback mechanisms are in place so that the Forest Service, State Water Board, stakeholders and tribes can determine whether the program is achieving its stated objectives

c. Predictability in the process of change so that Forest Service, State and Regional Water Boards, stakeholders, tribes, and members of the public can prepare for this change

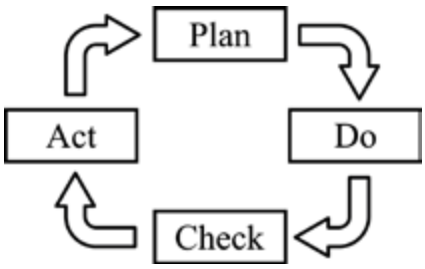
d. Application of quality controls to scientific study design, project execution, and interpretation of results

e. A hierarchical (nested) approach to monitoring that can elucidate “patterns and process across spatial scales and link to the scale at which outcomes of management decisions are expressed” (Ralph and Poole 2002). For the purposes of the Water Quality Management Handbook, this involves implementing monitoring at the programmatic, project, and watershed scale.

f. Increased clarity, transparency, and accountability in management and decision-making processes.

3. Adaptive management uses a multi-stage process for improving management actions. Most adaptive management processes describe explicit variations of the various steps to be taken following a basic Plan-Do-Check-Act model common in most environmental management systems, and based on the ISO 14001 international standards for environmental management systems. This document describes the explicit steps to be taken as part of this adaptive management process under these basic four categories of actions.

14.1 Exhibit 01



Plan - Identify roles and responsibilities of program participants, identif identify the goals and objectives to be achieved, define how potential management actions relate to the goal, identify risks and uncertainty, define areas of uncertainty to investigate, develop and document key monitoring questions, and choose and develop monitoring protocols.

Do - Implement Water Quality Management Handbook, including implementation of BMPs and restoration of legacy sites.

Check -Track, monitor, and evaluate the results of implemented actions. Synthesize research and monitoring results useful for managers, planners, and policy makers. Evaluate adequacy of monitoring protocols.

Act - Adjust activities based on performance of planned actions. Adapt future actions in light of reduced uncertainty and increased learning. Potentially revise monitoring questions or adopt new ones, based on new information.

The Plan-Do-Check-Act adaptive management approach will be applied over at least two distinct temporal and spatial scales, the project level and the programmatic level.

4. Project-level application is intended to do the following:

a. Improve the speed and certainty with which problems and threatened problems caused by a project are identified and corrected, so as to minimize water-quality impacts that may have already begun, and to prevent future impacts.

b. Shorten the institutional feedback loop whereby field personnel and their supervisors learn from their own experience and that of others what has worked well, what has not, and why, so that knowledge can be immediately applied to future projects.

5. Programmatic-level application is intended to do the following:

a. Identify the degree to which BMPs are being properly implemented and are effective in protecting the quality and beneficial uses of water, so that needed statewide programmatic changes can be made in the BMPs and/or the processes by which they are administered.

b. Identify the knowledge gaps where more rigorous scientific studies are needed.

Where it is beneficial to do so and resources permit, the Plan-Do-Check-Act approach will also be applied in selected priority watersheds to evaluate causal linkages between off-stream management activities and instream conditions, or to evaluate cumulative watershed effects.

14.2 - PLAN

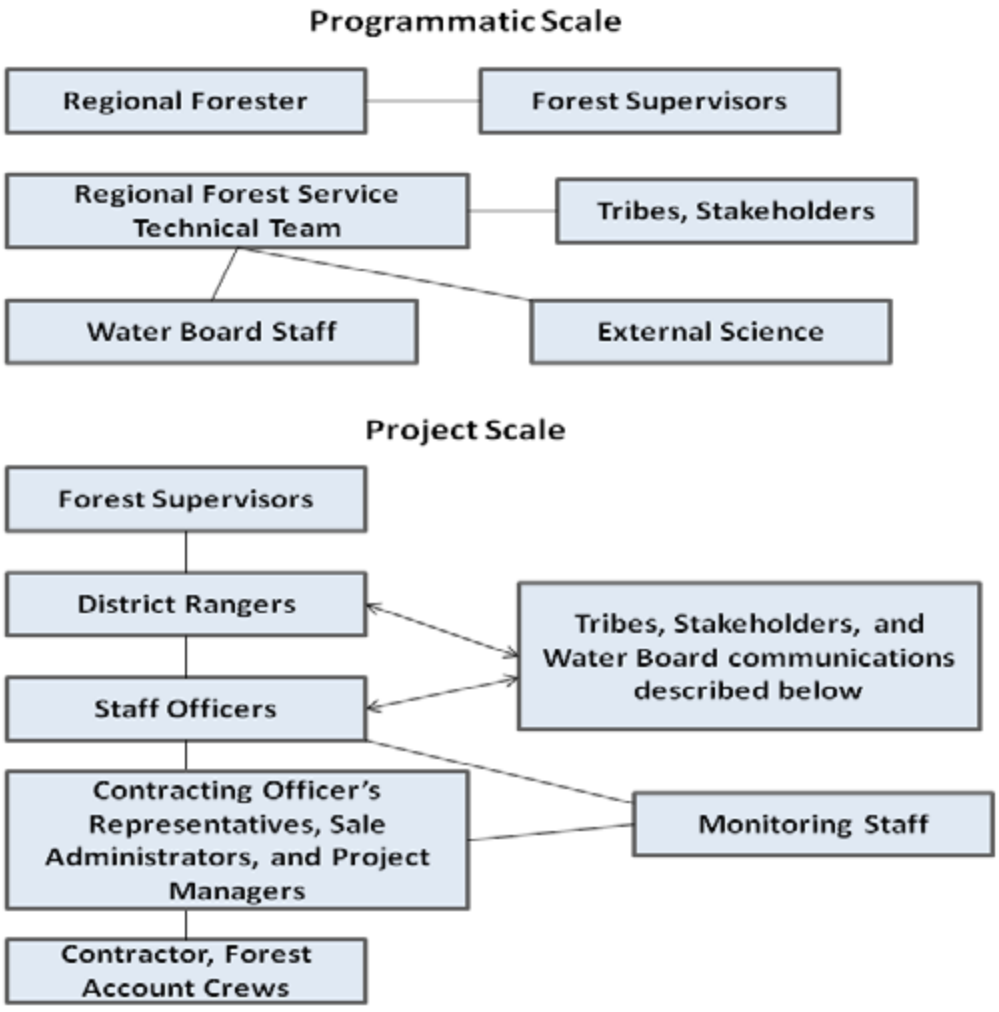
14.21 - Roles and responsibilities

Forest Service roles and responsibilities under this AMS are described below. The Forest Service will conduct the monitoring program and reporting, and seek non-regulatory review and input from State and Regional Water Board staff in interpretation of results, and recommendations for adapting either management actions or the monitoring approach. The process for Forest Service and Water Board staff collaboration will be described in the revised State management agency agreement. The Forest Service monitoring and reporting program will occur at both the project and programmatic scale. Project-scale monitoring refers to project-specific implementation monitoring. Project implementation information is used by Forest Service staff to make immediate adjustments to Forest Service management as needed during project implementation to protect soil and water resources. Programmatic monitoring refers to larger scale monitoring that is not tied to a particular project, but data is collected strategically at a larger scale to determine whether BMPs are successful at the Regional, Forest, or watershed scale in protecting soil and water resources The illustration below shows the Forest Service organization related to these two scales of monitoring and reporting.

Stakeholders and tribes will provide review and perspective or input to design of AMS, monitoring strategies, monitoring reports, and management recommendations. Stakeholders and tribes can also submit data and observations related to their own project or watershed-scale monitoring, according to the process described in Section VIII of this chapter. Stakeholders and tribal input will be solicited and received at staff level, but can also be submitted to executive level.

Exhibit 3 illustrates the two-way lines of communication between different levels of Forest Service staff for both the programmatic scale project scale feedback loop of information. The text following the figure further describes the lines of communication.

14.21 Exhibit 01
Lines of communication feedback loop within Forest Service organization



14.21 Exhibit 01--Continued
Lines of communication feedback loop within Forest Service organization

1. Programmatic Scale:

a. Regional Forester--Provide direction to Forest Supervisors on funding, expectations, and requirements regarding implementation of the Water Quality Management Handbook and adaptive management system.

b. Regional Forest Service Technical Team--This team will consist of a variety of Region 5 and forest hydrology, soils, and fisheries staff. The specific make-up of this team will be determined as part of implementation of this program.

(1) Coordinate ongoing collaboration between Forest Service and Water Board staff at State level.

(2) Coordinate ongoing communication between Forest Service and stakeholders including tribal representatives and non-government organizations.

(3) Coordinate with Forest Service research and external researchers to identify key research questions related to Forest Service BMPs and management activities related to soil and water resources.

(4) Conduct synthesis of monitoring information collected and reported at the Forest level, to develop annual regional reporting of Forest Service monitoring results.

(5) Coordinate annual training and workshop on monitoring techniques and results. This will include a field trip component to look at actual projects and BMPs, both successes and deficiencies. Water board staff, tribal representatives, and other stakeholders will be invited to participate in the training and workshops.

(6) Coordinate periodic comprehensive review and reporting of monitoring, assessment, and research results to inform and recommend modifications to either technical guidance documents (BMP manuals), or the AMS monitoring and research program. For comprehensive reporting, include integration of analysis and information developed outside the State Water Quality Management Handbook that provides additional information regarding the condition of Forest Service watersheds and streams, and potential effects of forest management activities. This would include efforts available through external research and other related regional or national agency efforts (for example, CalEPA Wetlands Inventory and Assessment program and Forest Service Watershed Condition Assessment Program). This effort will be conducted the year prior to the cyclical 5.year waiver renewal process, and presented as a 5.year status and trends report of BMP performance, watershed/water-quality

Exhibit 01--Continued
Lines of communication feedback loop within Forest Service organization

health, and monitoring program performance. This would also include recommendations for management change.

2. Project Scale:

a. Forest Supervisors and District Rangers:

(1) Provide internal resources to support agencies' roles and responsibilities under the Water Quality Management Handbook and management system as directed by Regional Forester.

(2) Implement direct actions and decisions based on recommendations provided in monitoring reports produced by forest staff and/or by the Regional Forest Service Technical Team.

b. Forest and District Watershed Specialists and Staff Officers:

(1) Watershed specialists can include any resource staff with qualifications and training to be able to conduct monitoring, analysis, and provide recommendations. This can include hydrologists, soil scientists, fisheries biologists, ecologists, and foresters.

(2) Implement Forest-level monitoring as described in the Water Quality Management Handbook. Use monitoring data collected during the project to immediately inform and adapt project implementation to correct and mitigate deficiencies, and prevent harm to soil and water resources and beneficial uses. This information is communicated directly to Forest Service staff directly responsible for project implementation to include contracting officer representatives, sale administrators, and project managers.

(3) Report monitoring data and analysis results to the Regional Forest Service Technical Team. Use annual reporting to share lessons learned, and recommend to line officers modifications to project-specific design features or BMPs, and administrative processes at the forest level to improve planning, contracting, and implementation of forest-management activities to improve the effectiveness of BMPs and restoration efforts.

(4) Report monitoring data and analysis results as required or requested, to affected Regional Water Board staff.

c. Contracting officer's representative, sale administrator, and project--Through either contracting (if project implemented through contracts) or supervisory authority (if implemented by Forest Service staff), direct contractors and/or forest staff to implement any needed corrective actions as a result of project-scale monitoring.

The Forest Service Technical Team and Forest staff will actively coordinate with Water Board staff and other stakeholders and tribes as part of implementation of the Water Quality Management Handbook. This will occur at both the project and programmatic scale. The purpose of this coordination is to provide timely reporting of monitoring results and management responses to monitoring results, as well as to consider and integrate input received from Water Board staff and stakeholders and tribes relative to adjustments to the adaptive management program including monitoring strategies, monitoring reports, and management recommendations.

14.22 - Identify risk and uncertainty

An important step in planning an adaptive management process is to identify current risk and uncertainty as they relate to ecological processes and current management practices. This should include an evaluation of past administrative processes used in the program. As part of the development of this Water Quality Management Handbook and the Forest Service existing adaptive management of this program, evaluation of BMPs and the BMPEP has occurred. Changes to both the BMP handbook and the BMPEP manual have been made as a result. However, we recognize that more will need to done, so the following describes how to move forward from where we are now. Because there are already-established monitoring programs in place that the Forest Service and State Water Board would like to continue using, additional evaluation of risk and uncertainties will take place as part of the ACT phase of the proposed program. The following actions are recommended for this step:

1. Synthesize existing research to identify risk and uncertainties related to the current condition of resources, and the effects of forest management on, soil, water, and aquatic resources.

2. Continue to investigate the performance of the Forest Service Region 5 BMP and BMPEP program and identify its strengths and weaknesses and need for change. Implement an independent evaluation of the BMPEP to assess the reliability and statistical robustness of results obtained using the current program.

3. Investigate the performance of the current Stream Condition Inventory (SCI) program, and identify its strengths and weaknesses. Conduct synthesis and BMPEP reliability evaluation in consultation with stakeholders and tribes, and collaboration with research professionals from outside institutions. Frame the discussion of risks and uncertainties in a statewide context, as well as Forest-specific context. Because of the differences in current resource conditions, past and proposed application of management

practices and specific resource concerns, important risks and uncertainties relevant to each Forest (or ecoregions within a Forest) will likely differ. Monitoring should focus on areas that present the highest risk and/or the highest level of uncertainty (based on current science).

14.23 - Conceptual model and key monitoring questions

The conceptual model shown in Exhibit XX illustrates the information needed to determine whether we are achieving the goals and objectives described in this Water Quality Management Handbook. From this conceptual model, the following describes the key questions for evaluation by the monitoring program described in section XX, to provide the information needed to determine whether we are meeting the Water Quality Management Handbook general objectives:

1. Are Forest Service practices adequate for protecting water quality at the project scale (BMPEP effectiveness monitoring and retrospective BMPEP) monitoring?

2. Are Basin Plan water-quality objectives being met on NFS lands (in channel monitoring)?

3. Are Forest Service practices adequate for protecting beneficial uses (in channel monitoring and "nested" BMPEP monitoring—note that results can help determine the need for new BMPs as well as effectiveness of existing BMPs)?

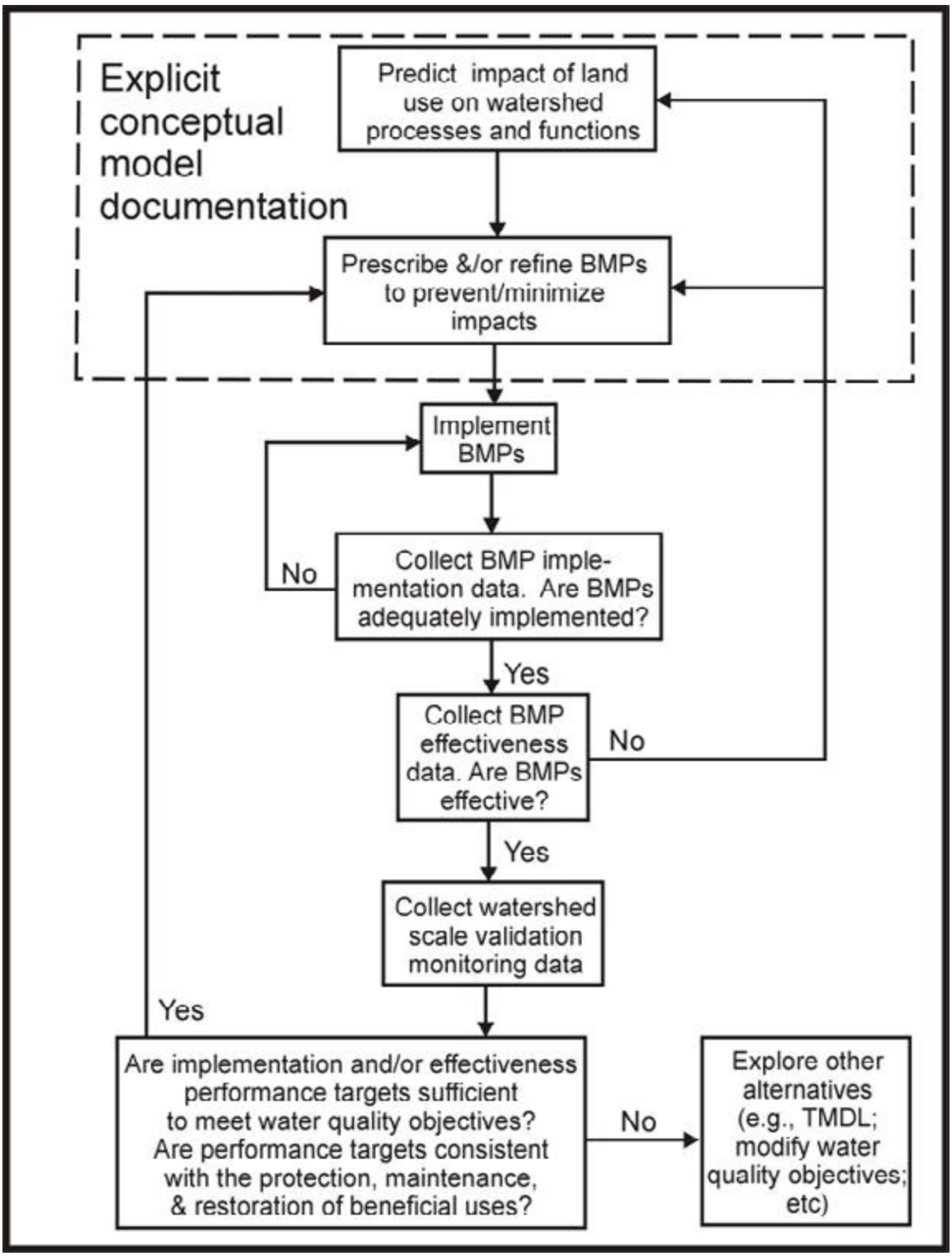
4. Are water-quality conditions trending upward or downward on NFS lands (in channel monitoring)?

5. Does the Forest Service follow its management practices (BMP implementation checklists, BMPEP implementation monitoring)?

6. Are key areas with high recreational use protected from bacterial contamination (rangeland in-channel fecal indicator bacteria (FIB) monitoring)?

A description of the methods used to evaluate attainment of specific monitoring objectives and targets is presented in section XX of this handbook.

14.23 Exhibit 01.
Conceptual model for identifying key monitoring questions



14.3 - DO—Implement the BMPs and Water Quality Management Handbook

This work will involve implementing the BMPs and other prescribed water-quality protection practices during all project planning and implementation activities, including the restoration of legacy sites as described in chapter 5 of the Water Quality Management Handbook. Methods used will be the current practices and procedures as prescribed in current BMPs, Forest Plan Standards and Guidelines, and other relevant documents (see list of on-line references at the end of chapter 2).

14.4 - CHECK—Implementation, effectiveness, and validation monitoring strategy

A comprehensive and regionally consistent water-quality monitoring program is needed to guide water-quality protection programs on national forests in Region 5 of the Forest Service. The monitoring program is described in chapter 6 of this handbook. The program described in chapter 6 is intended to meet the needs of the Region as well as the State and Regional Water Water Resources Control Boards and the Regional Water Quality Control Boards for water-quality information. The program includes procedures for evaluating if the practices for protecting water quality were implemented as prescribed, often described as implementation or compliance monitoring. The program also assesses whether current practices are effective and whether the performance targets are adequate for accomplishing the intended water-quality goal. The program will also include regular evaluation of the performance of the monitoring program itself.

The adaptive management component of the Water Quality Management Handbook program involves the regular analysis, synthesis, and reporting of the data collected through the monitoring program. This will include the following three tiers of reporting, with management recommendations.

1. Development of annual forest monitoring reports presenting and summarizing results from BMP monitoring (BMPEP and Implementation Checklists). Use annual reporting to share lessons learned, and recommend to line officers modifications to project-specific design features and BMPs, and administrative processes at the forest level to improve planning, contracting, and implementation of forest management activities.

2. Development of annual Regional report that presents a synthesis of monitoring information collected and reported at the Forest level. In addition to raw results, provide some analysis of trends in successes and deficiencies, including identification of causes. Also identify short-term corrections, if needed, to BMP monitoring protocols or analysis tools.

3. Development of periodic reports, which presents a comprehensive review of monitoring, assessment, and research results to inform and recommend modifications to either technical guidance documents (for example, BMP manuals), or the AMS

monitoring and research program. For comprehensive reporting, include integration of analysis and information developed outside the State Water Quality Management Handbook, which provides additional information regarding condition of Forest Service watersheds and streams, and potential effects of forest management activities. This would include efforts available through external research and other related regional/national agency efforts (for example, CalEPA Wetlands Inventory and Assessment program, Forest Service Watershed Condition Assessment Program). This effort will be conducted the year prior to the cyclical 5.year waiver renewal process, and presented as a 5.year status and trends report of BMP performance, watershed and water-quality health, and monitoring program performance. The report will also include recommendations for management change.

Evaluation of Monitoring Program

As part of the discussion included in each annual forest monitoring report, identification of problems encountered in implementing the monitoring program will be included. This will include problems encountered with using existing data collection and analysis protocols, accuracy of results, and sufficiency in training and funding received. Results presented will include identification of any caveats or uncertainties related to the accuracy of the results presented. Forest input will be synthesized in Forest Service Region 5 reports.

In addition, identification of observed deficiencies or difficulties in implementing the monitoring program, will be a key component of the annual BMPEP training and workshop, organized by the Regional Forest Service Hydrologist. The workshop will also identify recommendations for improvements in the monitoring approach. Results from the workshop will be included in Forest Service statewide Regional reporting.

Independent peer review of protocols and analysis may be solicited from the science community, including the Forest Service Pacific Southwest Research Station, as recommended by the Regional Forest Service Technical Team. Testing and piloting efforts of revised techniques and protocols may also be recommended by the Regional Forest Service Technical Team.

Further discussion regarding how monitoring data will be used and reported to initiate a management response is described below.

14.5 - ACT—Short-term corrective actions, reporting, and recommendations or decisions for programmatic change

Adaptive management as used in this plan means adjusting preventive and restorative methods to improve water-quality protection based on monitoring results. The general approach is to:

1. Identify problems through systematic monitoring and research synthesis. Include input provided by Water Board staff, stakeholders and tribes.

2. Describe measurement and data variability, and any uncertainties associated with monitoring.

3. Identify current risks and uncertainties through synthesis of existing monitoring and research.

4. Identify appropriate corrective actions.

5. Verify implementation of corrective actions.

6. Document implementation of corrective actions; and

7. Report discrepancies and corrective actions in annual reports to State and Regional Boards.

14.51 - Response procedures for monitoring program components

1. Annual BMP implementation checklist discrepancies. Discrepancies are instances when BMPs implemented on the ground do not match what was stated in project planning, contract, or permitting documents. District and forest hydrologists will:

a. Check with project administrator to verify discrepancies.

b. Identify corrective actions in cooperation with project administrator.

c. Conduct follow-up inspections to verify corrective actions.

d. Document corrective actions in project file.

e. Describe discrepancies and corrective actions in annual reports.

2. Annual random BMPEP monitoring implementation failures. District and forest hydrologists will:

a. Discuss failure with project administrator.

b. Identify corrective actions.

c. Conduct follow-up inspections to verify corrective actions.

d. Document corrective actions in project file.

e. Describe discrepancies and corrective actions in annual reports.

3. Annual random BMPEP effectiveness failures. District and forest hydrologists will:

   a. Evaluate hydrologic conditions at the time of failure.

   b. Conduct field visit to determine causes of failure.

   c. Identify corrective actions.

   d. Verify implementation of corrective actions during the following year.

   e. Recommend measures to improve BMP effectiveness to the regional hydrologist.

   f. Document findings in project file and in annual report.

4. Retrospective BMPEP effectiveness failures. District and forest hydrologists will:

   a. Evaluate hydrologic conditions most likely to have contributed to failure.

   b. Determine whether the BMPs selected were appropriate for the specific local application based on local conditions (soils, hydrology, etc.)? Was the BMP selected appropriate for the nature and scale of the anticipated resource impact? Were there pre-existing conditions or cumulative effects involved, and were these adequately addressed as part of BMP selection. Conduct field visit to determine causes of failure.

   c. Identify corrective actions.

   d. Verify implementation of corrective actions during the following year, and document benefits and failures of corrective actions.

   e. Recommend measures to improve BMP effectiveness to the regional hydrologist.

   f. Document findings in project file and in annual report.

5. In-channel monitoring (SCI):

   a. Annual results will be reviewed by the forest hydrologist to identify any current conditions or trends that indicate potential cumulative watershed effects, including identification of pre-existing legacy issues and suspected causes and sources of effects.

   b. Forest watershed staff will identify preventive or restoration actions needed to improve channel conditions, and observations or monitoring results of benefits and failures of corrective actions.

c. Results of monitoring and a description of corrective actions will be included in annual reports.

6. Field observations independent of systematic monitoring programs

a. All Forest Service staff will report observations of existing or potential water-quality impairments immediately to the local line officer and forest hydrologist.

b. Line officers will determine appropriate corrective actions.

c. Forest hydrologists will report violations of basin plans to regional board staff.

d. All water-quality impairments requiring corrective actions will be documented in annual reports.

7. Storm patrols

a. Forest Service staff assigned to storm patrol duties will be qualified to use the necessary tools to make emergency repairs to road drainage facilities and other BMP failures that can be safely addressed with hand tools.

b. Road patrol teams will document locations of problems with GPS units and provide information on problem locations to the district or forest hydrologist.

c. District and forest hydrologists will work with engineering staff to prevent future recurrences.

8. Rangeland FIB monitoring for high-use recreational sites:

a. Forest Service range management staff will investigate all monitoring results for either FIB or other indicators that indicate excedance of basin plan objectives.

b. If terms and conditions of the grazing permit are not being met, the Forest Service will take immediate corrective actions as described in chapter 2.

14.52 - Reporting

Annual reports will include information on the funding used to support monitoring on each national forest each year.

Project Implementation Monitoring:

Implementation monitoring results are formally reported to Water Boards within 90 days of project completion. These are reported through implementation checklists for all projects

implemented through a NEPA decision. These monitoring requirements are described in the Water Board permit documents. Informal reporting of project implementation monitoring is ongoing throughout the project on an as-needed basis between monitoring staff and contracting officers' representatives/sale administrators/project leaders and regulatory staff. Implementation checklists are developed by Forest Service staff specific to each project, and they are to be reviewed and approved by Water Board staff if requested, prior to project initiation.

BMPEP and Watershed Monitoring:

Each national forest will submit an annual draft monitoring report to the State Water Board and the appropriate Regional Boards and make it available to the public. The Forest Service Regional Office will submit a draft annual summary of monitoring results to the State Water Board, appropriate Regional Boards, and make it available to the public for all forests in the Pacific Southwest Region, and will compile a draft report containing a more detailed analysis and synthesis of monitoring results every 3 years.

After submission of draft annual reports, the Forest Service and Water Board staffs will be invited to meet each year, both at the forest level and the regional level (for example, the Joint Forest Service / Water Board Science team), to review annual findings and finalize any recommendations for immediate change in the final report. Recommendations will include both those related to management activities as well as the monitoring program. It is expected that the scale of recommended change would be fairly limited during the annual reporting cycle, and primarily address change at the Forest level.

The 3.year report will consist of a much more in-depth and detailed analysis and synthesis of findings to identify trends and causes for repeated BMP implementation and effectiveness deficiencies, and trends in stream channel conditions. Upon meeting with Water Board staff, this final 3.year report is when a more in-depth analysis of results would be used to develop a larger scope of recommendations related to changes in management direction or the monitoring program would occur. Any new findings from available relevant research would also be integrated into this 3.year synthesis report.

Draft reports will be made available for stakeholders and tribes to review, to also provide comment and input in preparation of the final report, for both the annual and periodic comprehensive reports. Reports will be posted online.

The finalized annual report, as well as the periodic comprehensive report, will then be submitted to the executive staff for both the Forest Service and the Water Board for the consideration of management decisions as described in below.

Field Reviews:

Annually complete a field review to visit and discuss implementation and effectiveness monitoring results. Forest Service and Water Board staffs should organize this event and

locations should change each year. Stakeholders and tribes should be invited and may be asked to help select the sites for field visits. Results of BMPEP evaluations should be discussed at these events. Areas of non-compliance or ineffective BMPs should be included on the field visits.

Executive Management Decisions

A synthesis of findings and management recommendations from annual reports and the comprehensive reports will be presented to appropriate executive staff within the Forest Service. Based on this synthesis, executive staff will initiate actions and appropriate decision documents following their respective agency processes to implement changes to either individual Forest practices (including the BMP and BMPEP program), or the State Water Quality Management Handbook, or the State management agency agreement. These actions and decisions will be broadly communicated to Water Board staff, tribal leaders, and stakeholders. Executive management decisions should be made early enough so that actions undertaken or being considered can be reported for State Water Board consideration during an upcoming waiver-renewal process. This should be done at least a few months before the CEQA process for waiver renewal is to begin. More time may be needed if decisions made are controversial.

Decisions and the rationale for the decisions will be described and documented in a decision briefing. The decision briefing will be made available to all interested parties and is intended to inform Water Board staff, tribal governments, and stakeholders, regarding the factors that drive management decisions.

One possible decision the Forest Service would implement if consistent failure to meet basin-plan objectives was discovered, is to voluntarily request termination of waiver coverage and file a report of waste discharge for the project or stop the project. Consistent failure for a type of activity on an individual forest would result in the forest disenrolling the activity from the waiver and either seeking alternate permit coverage through ROWD or ending the activity.

Sources of information used to determine failure would include all of our own monitoring programs and information from external observers, including Regional Boards. Based on this information, the Forest Service would make a determination as to whether we actually had a consistent failure for an individual project or an activity that resulted in violation of Basin Plan standards.

Stakeholder and Tribal ReviewConsultation

The role of a stakeholder and tribal review panel advisory group is described in section 13 of this handbook.

Information System

A web-based system for providing and receiving information related to water-quality management on NFS lands is described in section 13. Monitoring results will be entered into appropriate USFS electronic data bases (BMPEP, NRM AQS).

15 - WATERSHED PRIORITIZATION FOR RESTORATION

The Forest Service Watershed Improvement Program (WIP) is a nationwide Forest Service program of assessment and restoration on a watershed scale. The WIP is complimentary to the BMPs described in section 12. The BMPs provide protection from current and new activities, while the WIP addresses adverse effects of past land uses. Both programs are integral components of this Water Quality Management Handbook. The term "restoration" as used here conforms to the definition provided by FSM 2020:

"The process of assisting the recovery of resilience and adaptive capacity of ecosystems that have been degraded, damaged, or destroyed. Restoration focuses on establishing the composition, structure, pattern, hydrologic function and ecological processes necessary to make terrestrial and aquatic ecosystems sustainable, resilient, and healthy under current and future conditions."

Restoration has also been defined as "an intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity and sustainability." (Society for Ecological Restoration)

Adverse impacts resulting from past land uses are often termed "legacy" problems. This term is used here to distinguish between impacts that can be prevented by application of BMPs to current projects and impacts related to past land uses that require additional action to control.

The Forest Service approach to watershed improvement and restoration follows the principle of conservation biology to "protect the best, restore the rest." This approach is likely to be strongly supported in the future by the Forest Service national headquarters. This philosophical approach means that the Forest Service focuses on watersheds with critical aquatic habitat needed to support threatened and endangered species. These watersheds are generally, although not always, in relatively good geomorphic, hydrologic, and biologic condition. Restoration efforts in these watersheds are likely to be more cost-effective than restoration of badly damaged watersheds. This approach differs from the Total Maximum Daily Load approach used by USEPA and the Water Boards to restore impaired watersheds. However, critical aquatic refugia and impaired watersheds are not completely mutually exclusive, and opportunities exist to restore watersheds that act as critical aquatic refugia and are listed as impaired water bodies.

In accordance with the WIP, each national forest identifies the priority watersheds for restoration, and the essential projects that will bring about improvement in watershed condition. The intent of the program is to focus watershed restoration activities in priority watersheds and progress through the priority watersheds in a stepwise manner, eventually providing assessment and restoration for all watersheds. As described in more detail below, priority watersheds receive heightened water-quality protection under Forest Service guidance and are integral for maintaining sanctuary habitats for threatened and endangered species and unique plant and animal communities.

Watershed restoration projects are not limited to priority watersheds. However, national forests are expected to concentrate their available resources for watershed improvement in priority watersheds.

The primary components of the WIP are:

1. Priority Watershed Selection
2. Watershed Condition Assessments
3. Watershed Improvement Needs Inventories
4. Essential Project Identification
5. Watershed Restoration Plans
6. Annual Watershed Improvement Accomplishments Reporting

15.1 - Priority Watershed Selection

The Forest Service has adopted a “priority watershed” approach in its watershed restoration program. In 2001, each forest in the Pacific Southwest Region identified priority watersheds where watershed improvement work would be focused. In 2001, priority watersheds were defined at the 5th-field hydrologic unit code (HUC) scale (40,000 to 250,000 acres). Priority watersheds under the current Watershed Condition Framework Implementation Guide (2010) are defined at the 6th-field HUC scale (10,000 to 40,000 acres).

In 2001, priorities were defined based on (1) existing watershed conditions, (2) values, and (3) opportunities. Existing watershed conditions at the 5th-field scale served as the primary criterion in priority setting. Values were typically tangible assets of importance to people and included: sources of domestic water, rare ecosystems, unique recreation areas, threatened and endangered species, rural communities, and soil productivity. Opportunity was defined by factors that enhance the likelihood that the desired outcome is achievable and could include: available infrastructure, ownership patterns, policy direction, partnerships, and sufficient financial and political support. In other words,

Condition + Values + Opportunity = Priority.

Based on the Watershed Condition Framework Implementation Guide, national forests will identify an appropriate number of watersheds for improvement that correspond to a reasonable and achievable program of work over the next 5 years (the “planning cycle”) within current budget levels. These watersheds will be the new “priority watersheds.” The number of priority watersheds will vary by forest but it is expected to range from 1 to 5, given current funding levels.

Each forest will identify priority watersheds using an interdisciplinary process that includes representatives from soil, water, range, wildlife and fish, roads and trails, vegetation, planning, fuels, and others as appropriate. In cases, where one or more forests share watersheds, the affected Forests/Regions will need to work together to assure that the selection of priority watersheds is coordinated.

Information provided by the State and Regional Boards and other partners (local, State, tribal, other Federal agencies or interest groups) will be considered in the priority watershed identification process. The public will be given opportunities to provide suggestions for selecting priority watersheds during the development of forest plans.

While the task of identifying priority watersheds is largely left to the discretion of the national forests, three factors, along with local issues, needs, and opportunities must be considered:

1. A rapid assessment of resource value
2. A rapid assessment of the estimated cost effectiveness, and
3. National and Regional watershed condition policy, direction, and guidance.

15.2 - Watershed Condition Assessment

The Forest Service has recently developed a new watershed condition assessment tool. The "Implementation Guide for Assessing and Tracking Changes to Watershed Condition" was completed in 2010. The assessment strategy includes the following 12 indicators:

1. Water Quality Condition
2. Water Quantity Condition
3. Stream and Habitat Condition
4. Aquatic Biota Condition
5. Riparian Vegetation Condition
6. Road and Trail Condition
7. Soil Condition
8. Fire Effects and Regime Condition
9. Forest Cover Condition
10. Rangeland, Grasslands, and Open Area Condition

11. Terrestrial Non-native Invasive Species Condition

12. Forest Health Condition

The assessment tool is implemented at the 6th-field HUC scale. This scale is equivalent to 10,000- to 40,000-acre subwatersheds.

15.3 - Watershed Improvement Needs Inventories

The Forest Service Watershed Improvement Program includes as a component a forest-level inventory of watershed improvement needs (WIN). This is an ongoing process that is integrated with the forest program of work and subject to available funding. The degree of progress in these inventories varies considerably by forest, depending on available resources and capabilities. Significant progress is being made in inventories of road-related watershed improvement needs following procedures outlined by Napper (2008).

The existing WIN inventories are in a combination of forms including hardcopy files of field inventory forms, local spreadsheet and/or GIS data, and in a national database (Watershed Improvement Tracking database or WIT). Few forests in the Region have yet transitioned to the WIT database, but national training in the database is currently being provided.

15.4 - Essential Project Identification

Identification of “essential projects” is introduced as a new component of the Watershed Improvement Program in the draft Implementation Guide. Essential projects are being defined as projects that “prevent or remedy a problem that impairs the physical, chemical or biologic function of the watershed and, when implemented, sustain or move a watershed to a better condition class.”

Essential projects may be individual projects or a group of projects which cumulatively require work or action to maintain or improve watershed condition class. A watershed may have only one essential project (for example, head cut stabilization) or a suite of essential projects (for example, decommission 5 roads, upgrade 15 culverts, change a grazing system, remove 3 check dams, remove hazardous fuels from 30 acres of riparian area, and restore native riparian vegetation). In most cases, integrated suites of projects would need to be implemented.

Essential projects will address all resources and may be funded from many budget accounts. While emphasizing on-the-ground work, essential projects can also include planning aspects. National forest personnel, as part of an interdisciplinary team, identify essential projects which the appropriate line officer agrees to, as needed, to sustain or improve watershed condition.

Work or actions that are not necessary to improve physical, chemical, or biological conditions at a watershed scale are considered “non-essential.” The determination of whether a project or group of projects is considered essential vs. non-essential will be made at a local level. Examples

of non-essential projects include eradication of non-native fish, vegetation manipulation that does not improve or reduce risk to watershed condition, or replacement of a culvert in a stream where the crossing is stable and aquatic passage is not a concern.

A description of techniques for site-specific watershed improvement projects is beyond the scope of this Water Quality Management Handbook. The Forest Service has successfully completed many road decommissioning, stormproofing, meadow restoration, abandoned mine reclamation and other projects in the past several decades. Methods for these types of projects are described in NEPA project documents.

15.5 - Watershed Restoration Plans

For each of the priority watersheds, national forests will identify the specific projects necessary to improve watershed condition class and develop a Watershed Action Plan. The action plan will be based on a detailed assessment of each priority watershed. The assessment should document specific problems affecting ecological conditions; identify appropriate projects that address these problems; propose an implementation schedule, project sequencing, potential partners, and funding sources.

Acceptable watershed assessment methods must be used to analyze watershed condition and make general recommendations for any needed improvement. Examples of accepted methods include: Ecosystem Analysis at the Watershed Scale (EWAS), Hydrologic Condition Analysis (HCA), Total Maximum Daily Load assessments (TMDLs), Watershed Improvement Needs (WIN) inventories and large-scale NEPA. National forests may use other accepted methods, provided their assessment method has sufficient information about watershed function and processes to determine specific problems, current and desired watershed condition, and provides information that can be used to identify restoration objectives.

The watershed condition assessment should result in development of a Watershed Action Plan (also known as a restoration plan or strategy) that synthesizes problems, actions and timelines. These plans provide details on maintenance and restoration objectives for the watershed. Potential partners and funding sources may also be listed. The goal of these assessments is to identify essential projects.

15.6 - Annual Watershed Improvements Accomplishments Reporting

Each national forest annually reports its accomplishments for watershed improvements to the Regional Office. Accomplishments are reported in acres improved or linear feet of channel restored. Accomplishments are compared to annual targets assigned by the Regional Office to the national forests to assess performance and allocate funding. The Forest Service is shifting nationally to targets based on improvements in overall watershed condition. This change was implemented in Fiscal Year 2011.

Implementation and effectiveness of restoration projects will be monitored as described in NEPA documents. In addition, programmatic monitoring of road decommissioning and stormproofing projects will be conducted under the Legacy Roads program by the Rocky Mountain Forest and Range Experiment Station.

15.7 - Project Level Restoration

The Forest Service has current authority and direction to assess restoration needs and conduct restoration of legacy problems within the boundaries of timber sales (FSH 2409.19, FSM 2522.22), although restoration is limited by available funds generated by the sale of forest products or external grant funding.

Ecological restoration has recently been identified as a responsibility for all Forest Service resource management programs (FSM 2020.3). The watershed-scale restoration approach described above provides an effective approach for addressing legacy problems. However, not all watersheds will have watershed restoration plans in effect immediately. Therefore, most projects conducted in watersheds without established watershed restoration plans will restore legacy problems within project boundaries. Projects that cover large areas, such as hazard tree removals, routine road maintenance, and range allotments, will not include restoration of legacy sites.

16 - MONITORING

A monitoring program is a critical component of the Water Quality Management Handbook. The monitoring program assesses Forest Service success in protecting and improving water quality, identifies program elements that can be made more effective through adaptive management (section 14), and evaluates trends in water-quality conditions resulting from natural and anthropogenic factors. Results of the monitoring program will be used to inform and modify Forest Service project management as described in detail in section 14.

16.1 - Objectives

The objectives of the monitoring program are:

1. Early detection of actual or potential water-quality problems associated with current management activities.

2. Documentation and correction of known deficiencies in BMP implementation.

3. Assessment of long-term (3 to 5 years) effectiveness of water-quality protection measures.

4. Evaluation of linkages between resource management activities, including BMP implementation and watershed restoration programs, and cumulative watershed effects.

5. Calibration of thresholds of concern for cumulative watershed effects analyses.

6. Evaluation of water-quality trends affecting beneficial uses in receiving waters downstream of forest management activities, including waters listed as impaired under section 303(d).

7. Assessments of water quality in reference streams for comparison with listed and potentially listed impaired waters.

16.2 - Program Management

1. The monitoring program will be a regional program coordinated by the Regional Office and conducted by the national forest staffs.

2. Regional monitoring targets (numbers of evaluations) will be based on available funds and determined by the Regional Office. Annual targets for all monitoring activities at the national forest level will be set by the Regional Office. Targets will be changed as necessary to reflect changes in water-quality protection priorities, funding, and staffing.

3. Funding to support monitoring will be allocated based on assigned targets.

4. Watershed staff will be used to conduct monitoring to the extent possible, but monitoring may also be conducted by other Forest Service personnel trained in water-quality monitoring.

5. The Forest Service Regional Office will prepare a Quality Assurance Project Plan for the monitoring program within one year of adoption of this Water Quality Management Handbook.

6. Relevant data provided by other agencies and organizations that meets Quality Assurance Project Plan criteria will be used as part of the monitoring program.

16.3 - Monitoring Protocols

This plan will rely on existing well-documented monitoring methods. Hillslope monitoring for current management activities will use the Best Management Practice Evaluation Program (BMPEP, U.S. Forest Service, Pacific Southwest Region 2002) protocols. In-channel monitoring will follow Stream Condition Inventory (SCI, U.S. Forest Service, Pacific Southwest Region 2005) protocols.

The monitoring program will follow the incentive-based approach adopted by the North Coast Regional Board waiver approved on June 10, 2010. Under this incentive-based approach, each national forest will establish a network of baseline in-channel and hillslope monitoring sites at the watershed (5th-field HUC) scale (described below). This network fulfills most monitoring

requirements and eliminates the need for project-level monitoring within the monitored watersheds, with the exception of the BMP checklists described below. Projects in watersheds that do not have baseline monitoring sites will be required to conduct project-level monitoring (described below).

Both baseline and project-level monitoring offer some advantages for understanding the effectiveness of Forest Service BMPs and watershed improvement projects in protecting water quality. Baseline monitoring is useful for evaluating cumulative effects, as well as conditions and trends. Project-level monitoring allows linking the results of BMP monitoring to in-channel monitoring results. In practice, most national forests are likely to use a combination of baseline and project-level monitoring based on the relative costs of the two programs under the incentive-based approach.

16.31 - Monitoring common to all projects and activities

1. Hillslope monitoring of current management activities and corrective actions:

   a. All projects with potential to adversely affect water quality will have BMP implementation monitoring using a “checklist” approach. BMP implementation checklists will document whether, and when, the site-specific BMPs specified in NEPA analyses were implemented. These checklists will be the primary systematic means for early detection of potential water-quality problems, and will be completed early enough to allow corrective actions to be taken, if needed, prior to any significant rainfall or snowmelt throughout the duration of the project. Checklists will be completed several times during the life of most projects, including prior to ground-disturbing activities, prior to winter periods, and at the completion of the project. Forest Service watershed staff will develop the checklists based on BMPs identified in NEPA documents. Forest Service project staff (timber, range, recreation, engineering, etc.) will complete the checklists and forest hydrologists will coordinate and review the checklists to ensure that any deficiencies are corrected effectively.

   b. The BMPEP, with random site selection, will continue to be the primary means of assessing the effectiveness of water-quality protection for current projects on NFS lands at the hillslope scale. Random effectiveness monitoring for BMPEP protocols that have consistently scored 95 percent or higher for 5 consecutive years at the Regional level will be reduced to allow staff resources to be used for retrospective BMP evaluations and in-channel monitoring.

   c. National forests will conduct road patrols to the extent allowed by weather, safety, and road conditions during and after major storms to detect and correct road drainage problems that could affect water quality. Road patrols will be conducted along NFTS roads before and after major storms to prevent and repair damage to roads that may

adversely affect water quality. Each national forest will develop a road patrol plan. Road patrol plans will describe conditions under which road patrols are appropriate, safety precautions, and monitoring, corrective actions,, and reporting procedures. Corrective actions may include debris removal from culverts, repair of water bars, and cleaning of inboard ditches. Reports will be prepared for each storm or series of storms that involves a road-patrol response. Reports will be posted to the Forest Service water-quality web site described in section 13.

d. Forests will conduct G-Y-R Trail Condition Monitoring as described in Revised OHV Trail Monitoring Form (GYR Form) and Training Guide, USDA-Forest Service, Pacific SW Region, July 30, 2004, to identify trails and watercourse crossings in need of maintenance and to prioritize maintenance activities.

e. Forests will evaluate all watercourse crossings rated "red" during the G-Y-R Trail Condition Monitoring in consultation with a qualified watershed specialist.

f. Forests will schedule G-Y-R Trail Condition Monitoring so high-risk and high-maintenance trails are monitored annually; schedule the monitoring of stable trails less frequently, but not less than every 3 years.

g. Forests will monitor a 2 percent sample of trails each year using the Trail Assessment and Condition Survey (TRACS) protocol.

h. Forests will monitor the effectiveness of the OHV BMPs using the established Pacific Southwest Region BMP effectiveness monitoring program.

i. During routine inspections of OHV trails and while conducting photo point monitoring, use a standardized form to document and report newly created unauthorized OHV use, and trail segments with potential water-quality impacts.

2. Retrospective hillslope monitoring of past management activities:

a. Follow-up BMPEP monitoring for sites that were evaluated and rated as "not implemented" or "not effective" the previous year will be conducted to determine if corrective actions have been taken.

b. Sample pools will be developed annually for BMPs evaluated in the previous 3 to 5 years that were rated as effective, and sites will be selected randomly from this pool for retrospective BMPEP effectiveness evaluations.

c. Retrospective BMPEP evaluations will follow the standard BMPEP protocols. If protocols change between the time of the original evaluation and the retrospective evaluation, the current protocol will be used.

d. Results of retrospective monitoring will be compared to original BMPEP effectiveness scores to determine if BMPs remained effective over a period of 3 to 5 years.

e. The recurrence interval for the highest rainfall (based on design storm criteria) during the period between the original and retrospective evaluations will be estimated for the stream nearest the site of the evaluation. Recurrence interval estimates will be compared to long-term effectiveness in national forest and regional BMPEP reports.

16.32 - Baseline In-Channel Monitoring

The monitoring program will follow the incentive-based approach adopted by the North Coast Regional Board waiver approved on June 10, 2010. Under this incentive-based approach, each national forest will establish a network of baseline in-channel monitoring sites at the watershed (5th-field HUC) scale (described below). This network fulfills in-channel monitoring requirements and eliminates the need for project-level in-channel monitoring within the baseline watersheds. Projects in watersheds that do not have baseline monitoring sites and that are at or above thresholds of concern for cumulative watershed effects will be required to conduct project-level monitoring (described below).

Both baseline and project-level monitoring offer some advantages for understanding the effectiveness of Forest Service BMPs and watershed improvement projects in protecting water quality. Baseline monitoring is useful for evaluating cumulative effects, as well as conditions and trends. Project-level monitoring allows linking the results of BMP monitoring to in-channel monitoring results. In practice, most national forests are likely to use a combination of baseline and project-level monitoring based on the relative costs of the two programs under the incentive-based approach.

The purpose of in-channel monitoring is to determine whether Forest Service BMPs and restoration activities collectively are effective in protecting and improving water quality at the watershed scale. Effectiveness will be assessed by monitoring trends in channel characteristics that affect beneficial uses and by comparing measures of central tendency for channel characteristics of streams downstream of actively managed areas with those in pristine or nearly pristine reference watersheds. Reference watersheds will be defined using the State Board Surface Water Ambient Monitoring Program (SWAMP) criteria (Ode 2009). Actively managed watersheds are those that do not meet criteria for reference watersheds, and may include watersheds with 303(d)-listed waters.

Representative in-channel monitoring sites will be selected for 5th-field hydrologic units (watersheds), which are generally between 20 and 200 square miles in area. Each watershed in the baseline monitoring network will have one site representative of reference conditions and one site representative of actively managed conditions. Relating downstream channel changes to upstream activities is problematic in large watersheds (MacDonald and Coe 2006), so monitoring

sites will be located on relatively small headwaters streams (6th- and 7th-field hydrologic units). Monitoring sites will be selected to have similar valley segment and stream reach characteristics (Bisson and others 2006).

1. Fixed long-term locations for SCI surveys will be selected by national forest aquatic specialists and the Regional Office in cooperation with the State and Regional Board staffs. These locations will remain in the monitoring pool unless removed by consensus of the national forest, Regional Office, and Regional and State Boards.

2. SCI surveys will be conducted annually, with the goal of monitoring each 5th-field watershed at least once every 5 years and as soon as possible following major (RI greater than 10 year) floods. Roughly 20 percent of the watersheds will be surveyed each year, on average. Survey locations will be rotated among all 5th-field watersheds within each 4th-field sub-basin. For repeat surveys, the recurrence interval of the highest peak flow between consecutive surveys will be estimated and reported.

3. For watersheds 303(d) listed for pollutants other than sediment, additional parameters will be monitored to assess progress in reducing loads. Examples include stream temperature, nutrients, and bacteria. Monitoring frequency and protocols for this additional monitoring will be determined on a case-by-case basis.

16.33 - Rangeland water-quality monitoring

1. Streams will be monitored for fecal indicator bacteria (FIB) in selected representative high-use recreation sites that are within or downstream of range allotments. In addition, the USFS will conduct annual and long-term monitoring of key riparian areas within range allotments. Fecal indicator bacteria (FIB) monitoring in high-use recreation areas in or downstream of active range allotments will be conducted in the following manner:

a. The USFS and the Regional Water Board staff will collaborate to identify and prioritize designated high-use water-contact recreation sites that are within or immediately downstream of active grazing allotments with recently developed BMPs.

b. A minimum of one such site will be monitored annually.

c. Suitable sites may be substituted from year to year as agreed upon by the National Forests and Regional Water Board.

d. At each FIB monitoring site, USFS will collect samples for fecal indicator bacteria analyses within the high-use recreation area water during the grazing season at intervals sufficient to determine compliance with basin plan objectives. Standard sampling methods and commercial labs will be used.

e. If Basin Plan Objectives are exceeded, USFS will collect additional samples upstream and downstream of the high-use recreation area to isolate influences of humans, livestock, and other possible sources.

f. The results will be reported at least annually to the Regional Water Board.

g. In addition, FIB monitoring will be conducted on one "best" USFS grazing allotment in the state to verify the "best-case" performance of the USFS BMPs and their implementation.

h. The FIB monitoring results will be compared with results of USFS annual vegetative monitoring of range allotments to see if there is a good correlation that would allow extrapolation of vegetative monitoring to estimate FIB concentrations within allotments that are not monitored for FIB.

2. The following monitoring activities will be conducted as described in BMP 8.2:

a. Assessments of rangeland condition and trend shall be performed once every five years on selected allotments in key areas to track the ecological trend of upland and meadow vegetation. Assessments will include monitoring of rooted frequency, riparian greenline width, and streambank stability.

b. Allotment inspections shall be performed to ensure stocking rates, season of use, allotment boundaries, and range improvement terms are within the terms and conditions of grazing permits.

c. Utilization monitoring shall be performed at a minimum at the end of the grazing season to ensure compliance with forage utilization limits and other requirements included in the terms and conditions of the permit.

d. BMPEP shall be performed annually for randomly selected allotments to assess implementation and effectiveness of BMPs identified in Water Quality Management for Forest System Lands in California, Best Management Practices (USFS, Pacific Southwest Region, 2000 or as updated and amended). This monitoring will assess whether site-specific BMPs have been developed and implemented, as well as vegetation and riparian condition.

16.34 - Project-Level Monitoring for Projects in Watersheds without Baseline Monitoring that are at or above thresholds of concern for cumulative watershed effects

1. Hillslope monitoring of current management activities and corrective actions:

a. Projects will have non-random BMPEP effectiveness monitoring for all high-risk activities. High-risk activities include road construction or reconstruction, stream crossings, grazing, and all ground-disturbing activities within designated riparian buffers, including riparian reserves, riparian conservation areas, riparian habitat conservation areas, and streamside management zones.

b. Follow-up BMPEP monitoring for sites that were evaluated and rated as "not implemented" or "not effective" the previous year will be conducted to determine if corrective actions have been taken.

2. Project-level in-channel monitoring

a. Project-level in-channel monitoring will be conducted for any project within a watershed at or above its Threshold of Concern as determined from an analysis of cumulative watershed effects.

b. SCI surveys will be made at the nearest suitable reach downstream of the project area before any ground-disturbing activities and after project completion.

c. For repeat surveys, the recurrence interval of the highest peak flow between consecutive surveys will be estimated and reported.

d. SCI survey results will be compared to BMPEP results to evaluate relations between BMP effectiveness and stream-channel responses.

16.4 - Reporting

All monitoring results, including project-level monitoring, will be reported annually by each national forest to the appropriate Regional Board(s). A summary of results for all national forests in the Pacific Southwest Region will be provided to the State Board annually. Detailed reports summarizing results, including hydrologic conditions, will be prepared and provided to the State Board at intervals of 3 to 5 years. Corrective actions required to address water-quality problems detected by monitoring are described in Chapter 4 of this Handbook.

17 - TOTAL MAXIMUM DAILY LOAD IMPLEMENTATION

Although the quality of waters on NFS lands is generally good, many water bodies that originate on or flow through national forests have been listed as impaired on the State's 303(d) list. These listings include water bodies containing pollutants that are linked to forest management activities, such as sediment and stream temperature, and other pollutants that are not related to forest land uses, for example, mercury contamination resulting from historic gold mining.

The Forest Service is committed to working with the State to improve the condition of all impaired waters on the National Forest System. Effective management to restore impaired water

bodies involves minimizing adverse effects of current activities, repairing damage caused by past activities, and monitoring loads of the listed pollutant(s) to determine compliance with load allocations.

17.1 - Minimizing Adverse Effects of Current Activities

The Forest Service will evaluate potential adverse water-quality effects of all proposed projects in watersheds with total maximum daily loads (TMDL) through NEPA. No alternatives that have potentially significant long-term adverse effects on water quality will be selected in NEPA decisions.

BMPs will be implemented for all activities in watersheds with TMDLs. The BMPs described in section 12 are designed to minimize adverse effects to water quality under all circumstances. As described in sections 13 and 14, BMPs are intended to be dynamic. The Forest Service will work with the SWRCB and Regional Boards to continually adjust BMPs to improve their effectiveness when monitoring results indicate that their effectiveness, when implemented, is less than 90 percent.

Additional protective measures may be needed for some impaired waters. For example, watersheds with listings for nutrients, sediment, and water temperature can be further impaired by wildfires and road-related erosion. The Forest Service will prioritize treatments to reduce hazardous fuels and improve road drainage in these watersheds.

17.2 - Repairing Damage from Past Activities

Effective restoration of impaired waters will depend on cooperation between Regional Boards to prioritize among TMDLs statewide. The Forest Service will work with the State and Regional Boards to prioritize watersheds with impaired water bodies for restoration using the procedures described in section 15. Resources for restoration will be based on this statewide prioritization. For some pollutants, new and innovative restoration techniques may be required. For example, common Forest Service restoration projects such as road decommissioning and meadow restoration will do little to reduce concentrations of interstitial mercury in alluvial gravels. In this and similar situations, cooperation between the State and Regional Boards and the Forest Service will be needed to ensure that appropriate methods are applied for water-quality improvement.

17.3 - Monitoring

BMPEP monitoring targets will be adjusted so that more intensive monitoring is conducted in watersheds with TMDL s. This shift will require that less monitoring will be conducted in watersheds without TMDLs.

The standard Forest Service in-channel monitoring program described in section 16 focuses primarily on those aspects of water quality that are most likely to be affected by forestry activities, including sediment and water temperature. The Forest Service water-quality

monitoring program will be augmented in impaired waters when necessary to document changes in loads of pollutants other than sediment and temperature. Examples include mercury or fecal coliform concentrations in streams.

18 - NEEDED FUTURE ACTIONS

This Water Quality Management Handbook is not intended to remain static. Continual improvements and adjustments are needed to realize the desired level of water-quality protection. Additional work is needed to adjust and improve administrative practices; review, revise, and add BMPs to the handbook; develop additional guidelines for restoration; and refine the monitoring program. All of these adjustments to the handbook will conform to the procedures described in section 14, Adaptive Management.

18.1 - Administrative Practices

The Forest Service Regional Office will develop new standard Regional C clauses that can be used to include site-specific BMPs in timber sale contracts.

The changes to the BMPs in this Water Quality Management Handbook will require revised and additional BMPEP evaluation forms and changes to the electronic database used to store BMPEP results. The BMPEP forms in need of revision include E08 through E20 and G24. Additional forms will be needed to evaluate the new OHV BMPs (4.7.1 though 4.7.9. The data entry forms for the revised road BMPs will need to be revised and new forms will to be created in the data base for all new BMPs.

Another needed future action is the entry of in-channel monitoring results, watershed improvement inventories, and watershed improvement accomplishments into centralized Forest Service geospatial data bases. These efforts are currently underway.

Development of a web site for distributing information related to water quality on national forests in California will be a high priority for 2012. Options for using a web site to report water-quality problems on NFS lands will be explored during web site development.

Training will be critical for appropriate implementation and monitoring of new and revised BMPs. The Forest Service Regional Office will coordinate annual training sessions at national forests around the region during 2012. State and Regional Water Board staff will be invited to these training sessions.

18.2 - BMPs

The highest priority for BMP revisions in 2011 will be fire and fuels BMPs. A need for a BMP for fire operations during fire suppression has been identified.A BMP specific to fuels treatments in riparian zones is also needed. Based on BMPEP monitoring results, BMPs for recreation will also be a high priority for review and revision.

18.3- Restoration

The 2011 reassessment of watershed conditions for all 6th-field subwatersheds on NFS lands provides a baseline for evaluating overall changes in watershed condition. As additional results become available, they will provide a means of evaluating the overall effectiveness of the Forest Service watershed improvement program. Results will be used in conjunction with monitoring results from other programs, such as the State Board SWAMP and WRAMP programs, the USFS-BLM AREMP program, and the Forest Service monitoring of legacy road projects.

18.4 - Monitoring

The Forest Service Regional Office will prepare a Quality Assurance Project Plan for the monitoring program. In 2012, each national forest will determine its baseline monitoring network for in-channel monitoring. Each forest will also develop sample pools for retrospective BMPEP evaluations.

Best Management Practices for Water Quality
Bureau of Land Management California
September 2022

Summary

Water quality goals and objectives are established in Bureau of Land Management (BLM) Resource Management Plans (RMPs); and are required through all stages of project implementation. These goals are intended to meet or exceed applicable legal requirements including the Clean Water Act and California Porter-Cologne Water Quality Control Act. During site-specific project planning, conformance with RMPs is required. The project planning process is where Best Management Practices (BMPs) are evaluated for applicability and developed for the project.

This document is being produced by and for the BLM to aid in compliance with the federal Clean Water Act and Porter-Cologne Act. The State's Non-Point Source (NPS) Policy (2004) guides and describes the use of management practices to address NPS pollution. The State Water Boards hope to leverage this document in potential water quality focused permitting. Through these permits, BLM and the State will streamline the water quality permitting process and assure water quality standards are met for many projects on BLM land. Monitoring to ensure compliance will be part of the Federal Non-point Source permits.

BLM California has a long history of working with the State and other partners to improve water quality. However, documentation of these efforts was not standardized to allow efficient application, evaluation, or reporting across the state or to the State Water Boards. This BLM California BMP guidance was developed so that the agency can demonstrate compliance with the non-point source pollution requirements of the State of California. These Best Management Practices (BMPs) were produced as part of a program to enhance agency performance, consistency, and accountability in managing water quality consistent with the Federal Clean Water Act (CWA) and Porter-Cologne Act.

This document incorporates Best Management Practices for the US Department of Interior, Bureau of Land Management (BLM) Field and District Offices in California.
In summary, the BLM California BMP Program is a key piece of the agency's non-point source pollution control program for achieving and documenting water resource protection, demonstrating commitment to land stewardship and protection of water quality.

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Introduction

High-quality water is one of the most important natural resources on BLM lands. BLM lands are managed using a multiple-use approach with the goal of sustaining healthy terrestrial and aquatic ecosystems while addressing the need for resources, commodities, and services for the American people.

The pattern, magnitude, intensity, and location of land use and management activities influence water quality. When the surrounding terrestrial ecosystems are healthy and functioning properly, clean water benefits. Some land uses may protect or restore water quality, while others may degrade or pose risks to clean water. Excess sediment (turbidity and bedload), nutrients, temperature, pesticides, mine products, that have resulting effects on water chemistry and aquatic habitats, are the most significant water quality issues resulting from land uses and management activities on BLM lands in California. When projects and authorized activities are implemented using Best Management Practices (BMPs) that are designed to protect water quality, Waters of the State and the species, recreation, and communities that depend on them benefit.

Bureau of Land Management Resource Management Plans require compliance with the Clean Water Act. The Clean Water Act (33 U.S.C 1251 et seq.) requires the use of BMPs to reduce nonpoint source pollution to the maximum extent practicable. The BMPs are the primary controls for achieving water quality standards pertaining to nonpoint source pollution. Water quality standards are designed to protect designated beneficial uses for water such as salmonid spawning and rearing, resident fish and aquatic life, domestic water supplies, and water-contact and non-contact recreation. BMPs also serve to increase and improve BLM's responsiveness, transparency, and accountability in its collaboration for water quality management with the Regional Water Boards and local communities.

The BLM is responsible for implementing Best Management Practices on the lands it administers to meet the intent of the Clean Water Act and achieve compliance with the State of California's Porter-Cologne Water Quality Act and applicable Basin Plans (set by the Regional Water Quality Control Boards in California). A standardized set of BMPs is needed as an effective tool for the agency to accomplish the following:

- Minimize impacts to water quality through adaptive management. Detect and quickly diagnose any unanticipated changes that improve or impair water quality.
- Demonstrate compliance or a trend toward compliance with CWA permit requirements for 303(d) listed waterbodies and State of California TMDL management program.
- Improve communication about BLM water resource management strategies and accomplishments with regulators, our partners, and other stakeholders in water resources management and conservation.
- Improve National Environmental Policy Act analyses and compliance with other Federal laws such as the Endangered Species Act.
- Consistency of implementation across all field offices.

BLM California has a long history of working with the State and other partners to improve water quality. This document incorporates BMPs for the US Department of Interior, Bureau of Land Management (BLM) Field Offices in California and provides for the broad range of

activities that occur on BLM lands. Standardization will improve consistency, ensure that BLM resource professionals use best available science to develop site-specific BMPs, and, ultimately, continue to improve water quality on and downstream of BLM lands. The BLM California BMP Program is a key piece of the agency's non-point source pollution control program for achieving and documenting water resource protection, demonstrating commitment to land stewardship and protection of water quality.

Authority

I. Federal Authorities

The BLM must comply with Federal laws, Presidential and Secretarial executive orders, and Department of Interior directives, while implementing programs and operations. Federal laws and executive orders applicable to water-quality management include the following:

1. The Federal Land Policy and Management Act of 1976 (P.L. 94-579) (as amended) requires that public lands will be managed in a manner to protect water quality (Section 102(a)(8)). In addition, Section 202(a)(8) states that BLM land use plans shall provide for compliance with applicable pollution control laws.

2. Wild and Scenic Rivers Act of 1968 (16 U.S. C. 1271.1287; PL 90-452) requires that the BLM manage for no degradation and enhancement of water quality in designated rivers on public lands.

3. National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321, 4331.4335, 4341.4346, 4346a-b, 4347) (as amended). This law declares a national policy that encourages a "productive and enjoyable harmony between humans and their environment." All Federal agencies are required to use a systematic interdisciplinary approach to planning and decision-making. In addition, Federal agencies are to prepare detailed statements assessing the environmental impact of and alternatives to major Federal actions significantly affecting the environment.

4. Environmental Quality Improvement Act of 1970 (42 U.S.C. 4371.4374). This act establishes a national policy for the environment, which provides for the enhancement of environmental quality.

5. Federal Water Pollution Control Act of 1972, as amended (33 U.S.C. 1251, 1254, 1323, 1324, 1329, 1342, 1344). This series of laws establishes goals, policies, and procedures for maintaining and improving the Nation's waters. It addresses both point and nonpoint sources of pollution and establishes or requires programs for controlling both sources of pollution. Section 208 requires area-wide waste-treatment management plans and water-quality management plans for nonpoint sources of pollution. The act established specific roles for Federal, State, and local authorities in the regulation, enforcement, planning, control, and management of water pollution. Section 313 requires Federal agencies to comply with water-quality regulations of state and local governments. Section 319 addresses nonpoint source pollution and requires development of water-quality management plans. BMPs must be identified to control identified nonpoint sources and to reduce the level of pollution from such sources. Proper installation, operation, and maintenance of State approved BMPs may meet a

land manager's obligation for compliance with applicable water quality standards. If subsequent evaluation indicates that approved and properly installed BMPs are not achieving water quality standards, better ways to protect water quality will need to be developed.

6. The Coastal Zones Management Act of 1972 (16 USC sections 1451 et seq.) established a national framework for effective management, protection, development, and beneficial use of the coastal zone. Recognizing that the CZMA did not specifically mention water quality, in 1990 Congress amended CZMA section 306(d)(16) (16 USC section 1455[d][16]) and added section 6217 (16 USC section 1455b) to focus on NPS pollution problems and the protection of coastal waters.

7. Public Rangeland Improvement Act of 1978 (43 U.S.C. 1901-1908). This law provides for on-the-ground range rehabilitation, maintenance and the construction of range improvements including cooperative agreements with range users.

8. Executive Order 12088 of October 13, 1978. This order requires Federal agencies to comply with pollution control standards to be consistent with requirements that apply to a private person. Compliance will be in line with authorities and responsibilities of other Federal agencies, State, interstate, and local authorities as specified and granted in each of the various environmental laws.

II. Water-quality regulation of activities on BLM lands is the result of both Federal and State laws.

The BLM must comply with California laws and the implementation by California of several federal laws, while implementing programs and operations. California Laws and amendments to Federal Laws applicable to water-quality management include the following:

1. Congress, in amending the Federal Water Pollution Control Act (Clean Water Act) in 1972, waived sovereign immunity for Federal agencies, and included in the law a requirement that Federal agencies comply with all state and local laws pertaining to water quality to the same extent as nonfederal entities. Clean Water Act Section 208 provided authority and funding for states to develop water quality management plans and to designate water quality management agencies with primary responsibility for implementing those plans. Water quality management plans as well as Basin Plans were developed in California (40 CFR, Part 130, Section 130.6). In 1987, the Federal Water Quality Act was approved, adding Section 319 to provide funding for implementing nonpoint source management plans. Section 401 of the Clean Water Act gives the State Water Board the authority to review any proposed federally permitted or federally licensed activity that may impact water quality and to certify, condition, or deny the activity if it does not comply with State water quality standards.

2. In California, the Porter-Cologne Water Quality Control Act (1969, as amended) provides separate and broader substantive authority, including issuing state water discharge requirements. The Porter-Cologne Act; Water Code Division 7 and Related Sections (Statutes 2018) was amended to require that all Water Board waivers of waste discharge requirements include monitoring as a condition. California Water Code section 13269. Subdivision (a)(2) includes monitoring requirements (http://leginfo.legislature.ca.gov/faces/codes.xhtml).

3. Under the Coastal Zones Management Act of 1972 (16 USC sections 1451 et seq.) California prepared the California Coastal Management Program that was approved by the National Oceanic and Atmospheric Administration (NOAA). The bulk of California's coast is within

the jurisdiction of the California Coastal Commission pursuant to the Coastal Act of 1976 (Public Resources Code [PRC] sections 30000 et seq.).The State Coastal Conservancy is a third partner agency in the California Coastal Management Program. Coastal Zone Act Reauthorization Amendments (CZARA) section 6217 requires state coastal zone management agencies, in coordination with state water quality agencies, to develop and implement management measures to restore and protect coastal waters from adverse impacts of NPS pollution.

4. The State Legislature enacted the California Coastal Act (PRC section 30000 et seq.) to provide for the conservation and planned development of the State's coastline. The CCA defines the "coastal zone" as the area of the State which extends three miles seaward and generally about 1,000 yards inland. In environmentally sensitive habitat areas where there can be considerable impact on the coastline from inland development, the coastal zone extends to a maximum of 5 miles inland from mean high tide line. The CCC approves coastal development permits (CDPs), energy projects, and federal (federally approved, conducted, or funded) projects consistent with Coastal Act policies. The CCA mandates all coastal development affecting a wetland to obtain a permit from the California Coastal Commission.

5. A key policy of California's water quality program is the State's Antidegradation Policy. This policy, formally known as the Statement of Policy with Respect to Maintaining High Quality Waters in California (State Water Board Resolution No. 68-16), restricts degradation of surface and ground waters. This policy protects water bodies where existing quality is higher than necessary for the protection of beneficial uses. Under the Antidegradation Policy, any actions that can adversely affect water quality in all surface and ground waters must be consistent with maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial use of the water, and not result in water quality less than that prescribed in water quality plans and policies. Furthermore, any actions that can adversely affect surface waters are also subject to the Federal Antidegradation Policy (40 Code of Federal Regulations section 131.12) developed under the Clean Water Act.

6. The National Marine Fisheries Service, USFWS, and the California Department of Fish and Wildlife began listing distinct populations of fish, amphibians, and reptiles as threatened or endangered pursuant to the Federal or State Endangered Species Acts, a process that is continuing. BLM lands harbor parts of the remaining habitat and refuge for some of these populations, across all districts. These species all require clean water, and connectivity of habitat in some circumstances.

Project Planning and Implementation: BLM California BMP Process

Water quality goals and objectives are established in BLM resource management plans and are required to be analyzed during planning and used during implementation of projects. These goals are intended to meet or exceed applicable legal requirements including the Clean Water Act and California's Porter-Cologne Act and to assist in complying with Basin Plans. The project planning process is where BMPs are evaluated for applicability and developed for the project. These BMPs should then be put into contracts or given to crew implementing projects on the ground. A project may be initiated by BLM or may be proposed by an outside party that wants to occupy or use BLM lands for a specific purpose, such as for a commercial recreation development, large event, or a utility facility.

During project development, the BLM will select BMPs based upon site-specific conditions, technical feasibility, resource availability, and the water quality of those waterbodies potentially

impacted; to achieve water quality goals and objectives. When a project is initiated, the BLM develops the appropriate environmental analysis as required by the National Environmental Policy Act (NEPA) to inform the decision on the project or activity. For implementation actions, an interdisciplinary team will develop the appropriate BMPs to include with the proposed action and relevant alternatives which will be evaluated during NEPA. These site-specific BMPs are developed to account for many factors: the proposed activity, water quality objectives, soils, topography, geology, vegetation, climate, and other site-specific factors. The site-specific BMPs and other permit requirements are described and disclosed in the NEPA analysis document or project file.

The site-specific BMPs s need to be translated into contract provisions, right-of-way stipulations, special use authorization requirements, project plan specifications, and other similar documents. This will ensure that the operator or person responsible for applying the BMPs is required to do so. The BLM will monitor the application of BMPs after completion of the project to evaluate effectiveness. Effectiveness monitoring occurs after a designated period of wet weather has passed. Effectiveness monitoring will evaluate whether selected BMPs reduced erosion, reduced non-point source pollution, or protected beneficial uses. Specific monitoring requirements would be developed on a project-specific basis and depend on the potential level of impacts expected and the types and number of BMPs implemented, and the locations within lands managed by BLM California. Post-project implementation monitoring of selected BMPs will answer the question “Did we do what we said we were going to do?”.

The BMPs that relate to instream activities may also be included to satisfy other permitting requirements, such as US Army Corps of Engineers’ 404 permits, Regional Board 401 certifications, or Endangered Species Act consultations as contained in biological assessments. The BMPs in the following tables are not necessarily specific permit requirements, but rather demonstrate the process by which the BLM would control nonpoint source pollution from activities in streams, at watercourse crossings, in aquatic habitats, in riparian reserves, and in other areas vulnerable to erosion.

For other management activities, including minerals exploration and development, or linear transmission projects, the mechanism to achieve California Water Quality Standards would be guided by RMP management direction, regulations, or project-level design features. BMPs contained in this document may be used as project level design features. For example, management of locatable minerals is governed by regulations found in 43 CFR 3809. The BMPs for locatable minerals include language from 43 CFR 3809 that requires operators to prevent unnecessary and undue degradation from mining operations, as defined in 43 CFR 3809.5 and 43 CFR 3809.415.

Best Management Practices

The following lists of BMPs are not intended to be all-inclusive nor replace site-specific project planning, which may require the use of different or additional BMP practices to achieve the goals of clean water. The intent of each section and each appropriate BMP will need to be used in the development of site specific BMPs. This section describes the BMPs intended for use on BLM lands as part of the strategy for water quality management.

A variety of activities contribute to soil disturbance and potential erosion and are directly associated with aquatic habitats. Table 1 provides general provisions to protect water from contamination, leaks or fuels, fertilizer, solvents or detergents, other hazardous materials, dust suppressants, sanitary facilities, pack animals or temporary stock facilities, diversions, and water drafting. Specific guidance for spill prevention is covered (see Table 2). Restoration activities in aquatic ecosystems are covered (see Table 3). Culverts are considered part of road maintenance and repair and can also be used during timber operations. Culverts can block connectivity of habitat for sensitive or rare species, and care is required to prevent damage to riparian and aquatic habitats and water quality (see Table 4). At times barriers to passage may need to be maintained or established to protect aquatic species from invasive species. Risks to water quality from other activities may be managed by using the appropriate Best Management Practices listed in the Tables 5-12.

These BMPS are focused on the operations and many differing activities in or near wetlands, streams, lakes, springs, seeps, or riparian reserves. BMPS to prevent erosion on steep slopes or during routine road activities are also included. Specific BMPs for operations in or near aquatic ecosystems are covered under sections that identify activities. In the tables below the objectives are to be achieved through project specific BMPs which can either use directly or be derived from the BMPs described below if intent is met. Applicability of the BMPs will examined at the project level.

Operations in or near Aquatic Ecosystems

Objectives: Minimize sediment and other pollutants delivery into aquatic ecosystems and all watercourses from culvert work, stream crossings, projects along lakes and streams, water drafting for dust abatement or fire, roads during road construction or reconstruction, routine maintenance, and other permitted activities. Prevent water pollution from entering watercourses and protect water quality in streams, and other aquatic habitats to protect beneficial uses and to comply with Basin Plans.

Explanation: This first section about Aquatic Ecosystems is intended to contain BMPs associated with all activities that may affect watercourses. Best management practices that are specific to an activity are in separate tables. Aquatic ecosystems include rivers and streams, lakes and ponds, seeps, springs, meadows, wetlands, and even shallow groundwater. Water in these habitats and their associated riparian reserves are valuable to aquatic and semi aquatic species, recreation users, local communities, ranchers, and farmers.

Riparian communities are found immediately around any water resource. Riparian communities are areas of critical importance, as they are at the intersection of terrestrial and aquatic ecosystems and provide a wide range of ecosystem services. Riparian vegetation provides bank stability and shade to maintain cool water temperatures in perennial streams during summer months (Beschta et al. 1987). Riparian reserves also provide terrestrial insects for fish, amphibian, and birds food. Riparian corridors are important for terrestrial and aquatic wildlife (especially birds), help to mitigate flooding and recharge aquifers, provide stormwater filtering, and help to regulate temperature in streams. They also serve an important role in nutrient cycling in the broader context, as they are extremely productive environments with a high density and

diversity of plants and animals. In addition, in arid environments, they tend to be areas with high concentrations of rare species and cultural resources.

There are two types of management zones administered in riparian communities: Riparian Reserves and Aquatic Management Zones (AMZs) (Appendix A). Aquatic Management Zones (AMZs) and Riparian Reserves are designed to protect water quality (see p.48 for Definitions). Riparian Reserves can act as a filter to prevent sediment from entering waterbodies. The widths of the Riparian Reserves vary depending on the aquatic resource they surround (i.e., small wetland on flat round versus large lake), varying from 100 feet to 300 feet slope distance from the stream channel on both sides. Typically, Riparian Reserves are intended to maintain and restore riparian functions, maintain water quality, and stream dynamics, and contribute toward the conservation of invertebrates, fish, amphibian, reptile, mammal, or bird species and conservation of BLM sensitive species. Throughout freshwater systems, stream temperature has effects on aquatic species. Throughout the western US, temperature is of concern for native fish, amphibian, and invertebrate species. Riparian trees and large woody debris providing shade within the stream are key regulators of stream temperature. Riparian Reserve management activities that restore the natural fire regime, reduce high fuel levels, or promote native riparian species may disturb the ground, but can be done following BMPs to reduce potential impacts to waterbodies.

References to 100-year floods in the BMPs are based on the need to protect impoundments, roads and stream crossings from extreme rain, atmospheric rivers, or rain on snow events. Fires can also exacerbate risk to stream crossings and roads. Estimates of one-hundred-year recurrence interval peak discharges methods to determine proper sizing of culverts are outlined in Cafferata et al. 2017) . Evaluating stream crossings in post-fire environments to evaluate which are at risk is important to protect water quality. Methodologies for designing rock-armored crossings, including how to size rock riprap to withstand overtopping 100-year flood flows can be found in Cafferata et al (2017). Since most BLM Field Offices do not have a hydrologist, nor are stream gauges present on many streams or rivers, using a program like Streamstats (https://streamstats.usgs.gov/ss/) can be used to generate estimates of flows including 100-year peak flows. While this method can be tailored to the watershed above a stream crossing or settling basin, or proposed artificial impoundment, it is an estimate based on data through 2006. Engineers should evaluate the designs for culverts or other stream crossings and incorporate BMPs to reduce potential impacts to water quality.

The Aquatic Management Zones (AMZs) are designated as an area adjacent to ephemeral, intermittent, and perennial channels and around water bodies, wetlands, springs, seeps, meadows, and other Waters of the State. Hand treatment and protection of soils are important. Exceptions for restoration activities (Table 3) can be made on a case-by-case basis. Factors considered in AMZ development include stream class, channel aspect and stability, and slope. AMZs are designed as a filter for the maintenance and improvement of water quality.

Table 1. Best Management Practices for Operations in or near Aquatic Ecosystems.

BMP Number	Best Management Practices for Operations in or near Aquatic Ecosystems
AQ 01	For BLM-permitted activities, no hazardous materials storage with 0.25 mile of centerline of

BMP Number	Best Management Practices for Operations in or near Aquatic Ecosystems
	designated Wild and Scenic Rivers, within Riparian Reserves, within AMZ and near permanent water sources.
AQ 02	For short term projects (up to 2 weeks), small amounts of fuel (up to 20 gallons) for staging activities associated with restoration activities may be stored outside the riparian reserve. If fuel over 20 gallons is left at staging area, ensure proper signage is present and provide secondary containment to prevent accidental movement of fuel over the surface to a stream or water body. Fuel and service equipment used for instream, AMZ, or riparian work (including chainsaws and other hand power tools) only in designated areas more than 300 feet from stream or another aquatic habitat. On a case-by-case basis, fueling outside of the AMZ but inside the Riparian Reserve could occur (i.e., when a road is present so that during the dry season that location might be the safest place to refuel). A Spill kit must be present when fueling within 300 ft of a stream.
AQ 03	Fuels, chemicals, or fertilizer shall not be stored on the active floodplain or riparian reserves of any waterbody. All hazardous materials and petroleum products will be stored in durable containers located at least 500 feet from streams, springs, and wetlands. Spill kits will be present. Secondary containment would be required to prevent fuel or other materials from moving down slopes into streams.
AQ 04	Conduct equipment maintenance outside riparian reserves, wetlands, or stream to avoid contamination of water. Locate equipment washing sites in areas with no potential for runoff into wetlands, Riparian Reserve, floodplains, and Waters of the State. Do not use solvents or detergents to clean equipment on site.
AQ 05	Use non-oil-based dust suppressants such as water, within riparian reserves to prevent contamination of surface and groundwater water quality.
AQ 06	Locate contractor or permitted activities outside riparian reserves to protect water quality. Require self-contained sanitary facilities. Locate all new high recreational use sites outside riparian reserves to protect water quality and provide self-contained sanitary facilities.
AQ 07	Plan, locate, design, construct, operate, inspect, and maintain sanitary facilities to minimize water contamination. Sanitation facilities should not be placed within the 100- year floodplain or riparian reserve of a watercourse.
AQ 08	Require self-contained sanitary facilities when long-term camping (greater than 14 days) is involved with permit or contract implementation.
AQ 09	Provide self-contained sanitary facilities when there is high recreational use (campgrounds or dispersed camp areas, temporary camp for an OHV recreational activity, temporary camp due to horse roundup) inside riparian reserves.
AQ 10	Locate pack animal and riding facilities outside riparian reserves to protect water quality.

BMP Number	Best Management Practices for Operations in or near Aquatic Ecosystems
AQ 11	Water Sources: when locating proposed water developments for livestock or other uses, evaluate feasibility of use; and techniques for protecting original water source. Springs used for water source should retain enough water for riparian vegetation and water for rare plant species. Water sources designed for permanent installation, such as piped diversions to off-site trough, are preferred over temporary, short-term-use developments especially when wildlife friendly fences are built to protect the original source.
AQ 12	Basins shall not be constructed at culvert inlets for the purpose of developing a waterhole for drafting, as these can exacerbate plugging of the culvert.
AQ 13	Water sources: excavation of lakeshore, streambed, or bank materials for approaches for permanent water intakes are subject to State or federal restrictions on streambed alteration and ground-disturbing activities that can contribute sediment to a watercourse or aquatic habitat. Therefore, without the appropriate permits, these excavations should not occur. In addition, the following restrictions may apply: Permitted excavations should not occur during wet season. The wet season will vary dependent on location risk and timing of storms. Generally, from October 15-May 15 is when storms can come and runoff from snow occurs, but this can vary dependent on location. Monsoonal rains in the desert may bring heavy rains in summer. Prior to excavation, federally listed threatened and endangered species, BLM sensitive species (including State-listed), management indicator species, and aquatic organisms of interest shall be considered and appropriate mitigations shall be implemented based on federal, state or local permitting agency requirements. Other restrictions such as spawning season may be applicable.
AQ 14	Water sources: avoid use of road fills for permanent water impoundment dams unless specifically designed for that purpose. Impoundments over 9.2-acre-feet or 10 feet in depth will require a dam safety assessment by a registered engineer. Upgrade existing road fill impoundments to pass 100-year flood events. Apply for all required permits to protect water quality.
AQ 15	Water sources: access approaches for water developments are located as close to perpendicular as possible to prevent spring or stream bank damage. The intake within the source water shall be placed parallel to the flow of water and screened, with opening size consistent with the protection of aquatic species of interest. Access approaches are stabilized with appropriate materials, depending on expected life and use frequency of the developed water source. Use a drafting pad for water source placed above the bank full elevation of the channel with little or no excavation and/or fill placement to create drafting pad. Protections to reduce erosion from rain or snowmelt should spread flows off pad and not directly into watercourse. Site should be rehabilitated when pad is no longer needed to minimize erosion.
AQ 16	When diverting water from streams for water sources, in stream flows shall be maintained that ensure continuous surface flow in downstream reaches and keep habitat in downstream reaches in good condition. The channel must not be dewatered to the point of isolating pools and dewatering riffles or to hinder any life stage of fish. Sensitive plants habitat must be maintained.
AQ 17	Water sources, if gravity-fed storage tanks or troughs are employed, shall utilize the following: Water storage tanks shall be fitted with properly sized pipes designed to bring minimal flows to the tank. Outflow pipes shall be sized to fully contain the tank overflow and cleanly return to the downstream areas of the spring or streams. It should be designed to withstand trampling.

BMP Number	Best Management Practices for Operations in or near Aquatic Ecosystems
	Water storage tank return pipes at the water outfall area shall be armored to prevent erosion of watercourse banks or wetlands.
AQ 18	Water sources: File Initial Statement of Water Diversion and Use with State Water Resource Control Board as required. Claim riparian use and record point of diversion (POD) location, water source name, place of use location, purpose of use, diversion works description, quantity of water diverted per month in gallons using on-line reporting.
AQ 19	Drafting Operations: for dust control or water tanker: if an existing off-site storage or more permanent water source such as a reservoir or manmade pond is not available, then the following locations shall be considered for drafting water: Use sites where approaches are hydrologically disconnected from streams. Flowing side channels rather than the main thread of the channel can be used for drafting if access is easier. Areas with existing deeper pools if access is close by.
AQ 20	Temporary dams created to divert flows (e.g., around a culvert or bridge being replaced) shall be removed when operations are complete or before winter weather, whichever comes first. Flow should be put into a large temporary pipe and sent down stream as this is often necessary even for small streams. Downstream temporary dams should be placed to catch sediment coming from site Removal of all temporary dams shall be done so that accumulated sediment is not discharged into the stream flow.
AQ 21	Drafting Operations: limit water withdrawals from fish or amphibian bearing streams to 20 percent of the flow. Limit water withdrawals within or upstream from ESA-listed or other rare species habitat to 10 percent of stream flow or less at the point of withdrawal. The channel must not be dewatered to the point of isolating pools and dewatering riffles for life stages of fish or amphibians. For all other streams, ponds or shallow lakes withdraw no more than 40 percent.
AQ 22	Drafting Operations: Trucks directly drafting from the channel shall utilize the following practices: No more than one truck at the same location or stream reach and time shall occur. No truck will enter the area below the high-water elevation and will stay on an existing road when feasible. Road approaches and drafting pads shall be treated to prevent sediment production and delivery to a watercourse or waterhole. This will include armoring as necessary from the end of the approach nearest a stream for a minimum of 50 feet, or to the nearest drainage structure (for example, waterbars or rolling dip) or point where road drainage does not drain toward the stream. Intakes for trucks, shall be placed parallel to the flow of water.
AQ 23	Drafting Operations: When drafting from the channel utilize the following practices: Do not place pump intakes on the substrate or edges of the stream channel. When placing intakes instream, place on hard surfaces (e.g., shovel and rocks) to minimize turbidity. Where overflow runoff from water trucks or storage tanks may enter the stream, effective erosion control devices shall be installed (for example, gravel berms or waterbars).

BMP Number	Best Management Practices for Operations in or near Aquatic Ecosystems
	Areas subject to high flood events shall be armored to prevent erosion and sediment delivery to water courses. At the end of drafting operations, intake screens shall be removed, and drafting pipes plugged, capped, or otherwise blocked or removed from the active channel to terminate water drafting during the off season. Use a temporary liner to create intake site. After completion of use, remove liner and restore channel to natural condition. Screen intakes with opening size consistent with the protection of aquatic species
AQ 24	Drafting Operations: Trucks directly drafting from the channel shall utilize the following practices: All water-drafting vehicles shall be checked daily and shall be repaired as necessary to prevent leaks of petroleum products and aquatic invasive species from entering AMZs. Water-drafting vehicles shall contain petroleum-absorbent pads, which are placed under vehicles or portable pumps before drafting. Water-drafting vehicles shall contain petroleum spill kits. Dispose of absorbent pads according to the Hazardous Response Plan.
AQ 25	Minimize the frequency and number of passes for heavy equipment through low water crossings. Restrict heavy equipment watercourse crossings to designated locations only. Time operations near streams or riparian reserves to driest time of year to reduce soil compaction and erosion from banks and sedimentation in streams.
AQ 26	Revegetate disturbed areas to prevent soil erosion and stream sedimentation in the fall prior to the wet season or when vegetation has the greatest chance of successful transplant or germination. Otherwise treat disturbed areas by covering with straw or other methods to protect soil.
AQ 27	When invasive species cannot be effectively eliminated by hand pulling, selective herbicide use within riparian reserves must follow all guidelines in Herbicide PEIS. Restrict herbicide use to only those that are designed for use within 100 feet of Waters of the State and have been shown to have no effects on aquatic species.

The Objective of Table 2 is to prevent water pollution from entering streams and protect water quality in streams with fish and rare aquatic species, and other beneficial uses.

Explanation: During road and restoration activities, timber projects, construction and maintenance of OHV trail routes, special uses, wild horse, or burro gathers, fuels work, and vegetation management disturbances to soil, there is the potential for mechanized equipment to leak fluids into water bodies or riparian reserve, undermining water quality. These best management practices are important for minimizing this risk. Large, mechanized equipment used for road work, hazard tree removal, or even restoration work must be checked for leaking fluids to minimize risk to streams or shallow groundwater. Shallow groundwater moves into springs, seeps, meadows, and streams and the many uses of this water makes it important to protect.

Table 2. Best management practices for spill prevention and abatement

BMP Number	Best Management Practices for Spill Prevention and Abatement
SP 01	Have absorbent containment materials present at work sites and places where fueling or use of other hazardous materials may take place. Take immediate action to stop and contain leaks or spills of chemicals and other petroleum products. Notify the California Department of Fish and Wildlife Office of Spill Prevention and Response, through the office's Hazardous Materials specialist, and the State Water Board of any spill that enters the Waters of the State.
SP 02	Spill Prevention, Control, and Countermeasure Plan (SPCCP): All operators shall develop a modified SPCCP prior to initiating project work if there is a potential risk of chemical or petroleum spills near waterbodies. The SPCCP will include the appropriate containers and design of the material transfer locations.
SP 03	Spill Containment Kit (SCK): All operators shall have a SCK as described in the SPCCP on-site during any operation with potential for run-off to adjacent waterbodies. The SCK will be appropriate in size and type for the oil or hazardous material carried by the operator.
SP 04	Operators shall be responsible for the clean-up, removal, and proper disposal of contaminated materials from the site.
SP 05	Prevent spills of hazardous materials by requiring: Spill Prevention, Control, and Countermeasure Plan (SPCCP) when applicable (1,320 gallons cumulative capacity for storage of oil and/or hazardous material, potential impact to Waters of the U.S., or causing unnecessary or undue degradation, as required by federal law), and secondary containment of all hazardous materials in 55-gallon drum capacity and greater. Material to absorb a spill of fuel or other hazardous liquids if working near riparian reserves or streams is required.
SP 06	Inspect and clean heavy equipment as necessary prior to moving on to the project site, to remove oil and grease, noxious weeds, and excessive soil. Inspect hydraulic fluid and fuel lines on heavy-mechanized equipment for proper working condition daily before entering riparian reserves or streams or other waterbodies. Equipment refueling will follow (Table 1) to prevent toxic materials from entering waterways. Refuel small equipment (e.g., chainsaws and water pumps) at least 300 feet from waterbodies (In certain situations, fueling within 300 feet of a stream or riparian reserve would be acceptable (i.e., when a road or other feature makes fueling at that location the safest and most logical place to refuel or as far as possible from the waterbody where local site conditions do not allow a setback) to prevent direct delivery of contaminants into a waterbody. Refuel small equipment from no more than 5-gallon containers. Use absorbent material or a containment system to prevent spills when re-fueling small equipment within the stream margins or near the edge of waterbodies. If large amounts of fuel or other hazardous liquids are stored use secondary containment requirements for fuel storage areas such as a catchment basin or soil berms.
SP 07	In the event of a spill or release, take all reasonable and safe actions to contain the material. Specific actions are dependent on the nature of the material spilled. Notify the State's Water Board or other environmental regulator when fuel is spilled with the potential to impact surface or ground water.

BMP Number	Best Management Practices for Spill Prevention and Abatement
SP 08	Use spill containment booms or as required. Have access to booms and other absorbent containment materials. Immediately remove waste or spilled hazardous materials (including but not limited to diesel, oil, hydraulic fluid) and contaminated soils and dispose of it/them in accordance with the applicable regulatory standard. Notify the California Department of Fish and Wildlife Office of Spill Prevention and Response of any spill over the material reportable quantities, and any spill not totally cleaned up after 24 hours. Store equipment containing reportable quantities of toxic fluids outside of Riparian Reserve

The Objective of Table 3 is to minimize erosion, soil compaction, and sediment delivery from restoration activities.

Explanation: Restoration actions for meadows, streams, rivers, fens, seeps, and springs can provide enormous benefits in term of preserving meadows, reducing erosion, returning habitat structure and function, and restoring species habitat for a wide range of species dependent on these habitats throughout California from the dry desert to the wet coastal areas. During construction activities, the potential for erosion and subsequent sedimentation of streams, lakes or wetlands can occur. In addition, care must be taken to avoid spills (see Table 2Table 2. Best management practices for spill prevention and abatement). Many meadow or stream restorations can conserve seed bearing soils and natural vegetation for planting after construction is finished to reduce erosion. The risks to water quality from restoration activities can be managed by using the appropriate techniques from Table 1 adapted as needed to protect water quality.

Table 3. Best management practices for restoration activities

BMP Number	Best Management Practices for Restoration Activities
RST 01	Confine work in the stream channels to the in-water work period. The instream work period is defined as the period when low base flows occur. June 15 through September 30 could be considered a base flow period where no summer or monsoonal rains occur. Construct new stream crossings when streams are dry or when stream flow is at its lowest. These times may vary if sensitive aquatic species are present or in differing parts of the state. This may be extended if no precipitation is forecast over the following three days and mulch and erosion control materials are stockpiled onsite to be deployed in the event of rainfall occurring.
RST 02	In meadows and other aquatic habitat (e.g., meadow streams), do not drive heavy equipment in flowing channels and floodplains when wet. Do not drive heavy equipment in the AMZ in wet conditions when such use could result in soil compaction and displacement. Prohibit heavy equipment from entering flowing water, unless at a preapproved crossing. Avoid and minimize heavy equipment passage at crossings where water is flowing.

BMP Number	Best Management Practices for Restoration Activities
RST 03	In well-armored channels that are resistant to damage (e.g., bedrock, small boulder, and cobble-dominated), consider conducting the majority of heavy- equipment work from within the channel, during low streamflow, to minimize damage to sensitive riparian reserves.
RST 04	Design access routes for individual work sites to reduce exposure of bare soil and to minimize compaction and soil disturbance to wet meadows and floodplains.
RST 05	Limit the number and length of equipment access points through Riparian Reserves. Locate equipment storage areas outside of riparian reserves, including machinery used in stream channels for more than one day, following Table 2.
RST 06	Limit the amount of stream bank excavation to the minimum necessary to ensure stability of enhancement structures. Provide isolation from flowing water during excavation. Excavated material should be removed and placed where it cannot reenter the stream during precipitation or flood events. If materials will remain on site, they should have permanent stabilization measures applied (such as regrading to match surrounding and revegetation).
RST 07	Rehabilitate headcuts and gullies. Use large wood in preference to rock weirs if available. Enter these areas during the driest time to minimize soil compaction and diversion of flows.
	Use waterbars, barricades, seeding, and mulching to stabilize bare soil areas along project access routes prior to the wet season. Since access routes can become compacted to the point that vegetative recovery is difficult consider loosening the topsoil layer on slopes less than 1 percent prior to seeding or mulching.
RST 08	Prior to the wet season, stabilize disturbed areas where soil will support seed growth, with the potential for sediment delivery to wetlands and streams. Apply native seed and certified weed-free mulch or erosion control matting in steep or highly erodible areas, or within riparian reserves. Adjust techniques if amphibians present due to entanglement in matting.
RST 09	Implement measures to control turbidity. Measures may include installation of turbidity control structures (e.g., isolation, diversion, and silt curtains) immediately downstream of instream restoration work areas. Remove these structures following completion of turbidity-generating activities. Ensure that sediment trapped does not discharge into watercourse and dispose of in location where sediment will not move after precipitation into the waterbody .
RST 10	When replacing culverts, consider using larger culverts and embedding (see definition p.48) the culvert to 30 percent bedload. Use bridges on high-gradient stream channels.
RST 11	When mowing of meadow edges or pockets of dry areas of meadows is required to reduce encroachment by upland species, enter during the driest time of year.
RST 12	Use low-PSI equipment for work in meadow environments For meadow restoration enter with heavy equipment during the driest period.

The objective of Table 4 is to minimize water, aquatic, and riparian resource disturbances and related sediment production when constructing, reconstructing, or maintaining temporary and permanent water crossings. Designing and constructing crossings to pass the 100-yr flood and debris flow will minimize damage to roads from atmospheric rivers and other sources of flash floods that can cause undersized culverts to fail and roads to wash out. Sizing culverts correctly when replacing them allows them to pass debris flows after fires without clogging and risking the road washing out.

Explanation: Stream crossings present the highest risk to water quality associated with roads. Management activities often occur in areas that require surface waters to be crossed. Depending on the activity type and duration, crossings may be needed permanently or temporarily. Permanent crossings are designed to meet applicable standards while also protecting water, aquatic, and riparian resources. The risk from construction, reconstruction or maintenance of stream crossings can be managed by using the appropriate techniques from the following list (and Table 1, Table 2). The intent and the standards specified for the following BMPs need to be met, exactly how they will be implemented can be adapted as needed to local site conditions.

Examples of crossings include culverts, bridges, arched pipes, low water crossings, fords, vented fords, and permeable fills. Crossing materials and construction will vary, based on the type of access required and volume of use expected. Optimally, crossings should be designed and installed to provide passage for the flow of water plus anticipated sediment and debris, provide for desired aquatic organism passage, and minimize disturbance to the surface and shallow groundwater resources. Sizing of culvert is based on a weighed balance between providing for larger storm events, and cost feasibility, while still meeting other resource objectives.

Permits are generally required for instream work associated with perennial or intermittent stream crossing construction and maintenance projects. There are specific requirements for such projects under the Clean Water Act and implementing regulations. State and local entities may also provide guidance and regulations. Additional guidance on stream crossing can be found in Cafferata et al 2017.

Table 4. Best management practices for Stream Crossings

BMP Number	Best Management Practices for Stream Crossings for roads
SC 1	Conduct all nonemergency in-water work during the instream work window to avoid effects on listed or rare aquatic species. In water work should be done when flows are at their lowest. If water is flowing at the time of removal, divert and/or isolate flows from the active work area. Avoid sediment and turbidity entering streams during in-water work to the extent practicable. Remove stream crossing culverts and entire in-channel fill material during the instream work period and/or when the there is no water flowing through the channel. The instream work period is defined as the period when low base flows occur. June 15 through September 30 could be considered a base flow period where no summer or monsoonal rains occur. It is preferable to time the work when ephemeral or desert streams are dry These times may vary if sensitive aquatic species are present or in differing parts of the state. This may be extended if no precipitation is forecast over the following three days and mulch and erosion control materials are stockpiled onsite to be deployed in the event of rainfall occurring.
SC 2	Design the stream crossings to pass the 100-year flood flow plus associated sediment and debris; armor to withstand designed flows and to provide desired passage of fish and other aquatic organisms.

BMP Number	Best Management Practices for Stream Crossings for roads
SC 3	When it is necessary to divert or dewater stream flow during crossing installation ensure that: All crossings whether structures are being placed or removed shall be protected from siltation, all stages of life for fish or amphibians must be protected. Suitable measures are used to divert or partition channelized flow around the site or to dewater the site as needed. Aquatic organisms are removed from the construction area before dewatering and prevent organisms from returning to the site during construction. Clean flows are returned to channel or water body downstream of the activity. Direct pass-through flow or overflow from in-channel and any connected off-channel water developments go back into the stream downstream of the site. Flows are restored to their natural stream course as soon as possible after construction or prior to seasonal closures. Downstream collection basins, retention facilities, or filtering systems are installed as needed to capture and retain turbid water. Collected sediment is removed as needed to maintain their design capacity during the life of the project.
SC 4	Reduce hydrologic connection between road surface drainage or ditchline and stream crossings. Locate and design crossings to minimize disturbance to the waterbody. All crossings should be minimized and should not have multiple crossings within 1/4 mile of another. Use structures appropriate to the site conditions and traffic levels: Favor bridges, bottomless arches, or buried pipe-arches for those streams with identifiable floodplains and elevated road prisms, instead of pipe culverts. Place bridge and arch footings below the scour depth for the 100-year flood flow plus the appropriate factor of safety as determined by road engineers. Favor armored fords for those streams where vehicle traffic is either seasonal or temporary. For perennial streams, use vented fords, so that the crossing can pass low flows.
SC 5	Minimize fill volumes at permanent stream crossings by restricting width and height of fill to amounts needed for safe travel and adequate cover for culverts. For deep fills (generally greater than 15 feet deep), incorporate additional design criteria (e.g., rock blankets, buttressing, bioengineering techniques) to reduce the susceptibility of fill failures. A rolling dip, or simple diversion prevention dip) will eliminate stream diversion potential. For very small stream crossings and for cross drains, a waterbar may suffice.
SC 6	Prevent culvert plugging and failure in areas of active debris movement with measures such as beveled culvert inlets, flared inlets, wingwalls, over-sized culverts, trash racks, or slotted risers. Larger culverts or arched culverts will pass debris better and accommodate bed movement. Trash racks can be high maintenance; it is more effective to size the crossing for 100-year floods and debris from watershed.
SC 7	To reduce the risk of loss of the road crossing structure and fill causing excessive sedimentation, use bridges or low-water fords when crossing debris-flow susceptible streams. Avoid using culverts when crossing debris-flow susceptible streams when practicable.
SC 8	Locate stream-crossing culverts on well defined, unobstructed, and straight reaches of stream. Locate these crossings as close to perpendicular to the streamflow as stream allows. When structure cannot be aligned perpendicular, provide inlet and outlet structures that protect fill, and minimize bank erosion. Choose crossings that have well-defined stream channels with erosion-resistant bed and banks.

BMP Number	Best Management Practices for Stream Crossings for roads
SC 9	Install culverts at the natural stream grade, unless a lessor gradient is required for fish, amphibian, or reptile passage. Stream crossings with ESA-listed fish must meet ARBO II (USDOC NMFS and USDI FWS 2013 or other ESA documentation) fish passage design criteria. unless barriers to passage are required to protect from invasive species. Aquatic Organism Passage Projects include culvert and bridge replacements or removals. Head cut and grade stabilization may need to be done to ensure fish amphibian, reptile, and other species passage. Improperly designed/installed culverts could impede movements of federal or state listed amphibian or reptile species. http://www.conservewildlifenj.org/downloads/cwnj_281.pdf
SC 10	Design stream crossings to prevent diversion of water from streams into downgrade road ditches or down road surfaces if the crossing is blocked by debris or overtopped during storm events. This protection could include hardening crossings, armoring fills, dipping grades, diversion prevention dips, oversizing culverts, hardening inlets, and outlets, and lowering the fill height. Place instream grade control structures above or below the crossing structure, if necessary, to prevent stream head cutting, culvert undermining and downstream sedimentation. Sizing the structure to fit the watershed 100-year floods tends to prevent these issues.
SC 11	Utilize stream diversion and isolation techniques when installing stream crossings. Evaluate the physical characteristics of the site, volume of water flowing through the project area and the risk of erosion and sedimentation when selecting the proper techniques.
SC 12	Limit activities and access points of mechanized equipment to streambank areas or temporary platforms when installing or removing structures. Keep equipment activity in the stream channel to an absolute minimum.
SC 13	Minimize streambank and riparian area excavation during construction of crossings: Install temporary culverts and washed rock with sufficient size to avoid erosion on top of a low-water ford to reduce vehicle contact with water during active haul. Remove culverts promptly after use or before high flows unless culvert built to the 100-year flood capacity. Stabilize adjacent areas disturbed during construction using surface cover (mulch), retaining structures, and or other stabilization methods. Stabilization of the approaches usually require 50 or more feet of rock materials to prevent tracking of sediment into the watercourse. See Weaver 2015 (p.213 Guidelines for erosion and sediment control application) or similar guidance. Keep excavated materials out of channels, floodplains, wetlands, and lakes. Excavated material should be removed and placed where it cannot reenter waterbodies during precipitation or flood events. Banks of the stream, water body, or in riparian reserves are not appropriate. Install silt fences or other sediment- and debris-retention barriers between the water body and construction material stockpiles and wastes. Use only clean, suitable materials that are free of toxins and invasive species for fill. Size competent rock fills to avoid or minimize erosion. Fill must be free of organic materials and preference should be to use locally sources fill.
SC 14	Install stream crossing structures before heavy equipment moves beyond the crossing area.
SC 15	Use no-fill structures (e.g., portable mats, temporary bridges, or improved hardened crossings) for temporary stream crossings. Harden low-water ford approaches with durable materials that can withstand erosive forces. These low water fords are not appropriate in high energy systems nor where moderate traffic occurs. For small first and second order streams this may be appropriate. When not practicable,

BMP Number	Best Management Practices for Stream Crossings for roads
	design temporary stream crossings with the least amount of fill and construct with coarse material to facilitate removal upon completion. Provide cross drainage on approaches. Limit temporary ford crossings to the instream work period (see SC 01 for definition.
SC 16	Restrict access to temporary unimproved low-water stream crossings. Improve crossings where traffic indicates frequent use. Use bridges where traffic is heavy to protect the streams.
SC 17	When installing temporary culverts, use washed rock of a size to withstand erosion as a backfill material. Rock must be large enough to withstand normal flows. Use geotextile fabric as necessary where washed rock will spread with traffic and cannot be practicably retrieved. Remove culverts promptly after use and prior to the wet season or when storms are expected.
SC 18	Temporary fill crossings must be removed after use and prior to the wet season. Removal shall be done so that accumulated sediment is not discharged into the stream flow. Follow practices under the Closure/Decommissioning section for removing stream crossing drainage structures and reestablishing the natural drainage.
SC 19	When removing temporary crossings, restore the waterbody profile and substrate.
SC 20	When removing silt fences and other non-biodegradable sediment controls care must be taken not to release sediment into water courses. Banks of the stream, water body, or in riparian reserves are not appropriate. Place sediment where it cannot wash back into waterbody after rain.

Road Construction and Reconstruction

Objective: Minimize erosion and sediment delivery from roads during road construction or reconstruction, new temporary road construction or reconstruction of historic roads, and other related activities.

Explanation: During road construction and reconstruction activities, vegetation and ground cover are removed, often exposing both the surface and subsurface soil to erosion. Temporary and long-term erosion-control measures are necessary to reduce erosion and maintain overall slope stability. These erosion-control measures may include vegetative and structural techniques to ensure the area's long-term stability. Runoff from staging areas can create rills or gullies, and carry sediment, nutrients, and other pollutants to nearby surface waters.

Culverts can block connectivity of habitat for sensitive or rare species. In these cases, ensuring that the culverts are large enough to carry the bedload and 100-year floods reduces the risk that the culvert will erode the downstream and create a barrier (see Table 4). Care is required to minimize damage to riparian and aquatic habitats and water quality (see Table 4). Construction and reconstruction of a water crossing usually requires heavy equipment to be in and near streams, lakes, and other aquatic habitats to install or remove culverts, fords and bridges and their associated fills, abutments, piles, and cribbing. In addition, heavy equipment has potential for contamination of surface water from vehicle fluids (see Table 2).

Disturbance near a waterbody can increase the potential for accelerated erosion and sedimentation from destabilization of streambanks or shorelines, vegetation, and ground cover removal, and soil

exposure or compaction. The risk from road construction and reconstruction can be managed by using the appropriate techniques from the following list (as well as Table 1, Table 2 , Table 4, Table 7a and Table 7b). The intent and the standards of the BMPs must be met and during implementation can be adapted as needed to local site conditions. Road building becomes more difficult and expensive as slopes become steeper. Roads built on steep slopes are also more likely to have erosion and stability problems (Weaver et al. 2015).

An Erosion Control Plan should be prepared for construction of new roads or when a section needs to be reconstructed, or with disturbance in locations with high sensitivity, or large-scale disturbances that have a probability to affect water resources that could be controlled by measures described in an erosion control plan. Site specific BMPs and design criteria developed for steep or sensitive sites will be included in these Erosion Control Plans. Locations of sites where potential ground-disturbing actions associated with the project (e.g., stream diversion; exposed cut slopes; stripped and stockpiled topsoil; water source development or use), will be marked on maps. Equipment access routes, storage or fuels and stockpiled materials, and service areas should be included. Methods for stabilization for stream crossings during storms should be included. The selection of erosion and sedimentation control measures shall be based on assessments of site conditions and how storm events may contribute to erosion.

Storm Proofing roads under construction or roads in general prior to precipitation can protect Waters of the State and the species that depend upon them. Storm-proofing road systems can have an immediate benefit to the streams and aquatic habitat as well as protect the road surface and reduce annual road maintenance costs. If storm-proofing treatments are implemented correctly, future storm runoff can cleanse the streams of accumulated coarse and fine sediment rather than deposit fine sediments in areas where it impairs aquatic habitat. Road Stormproofing, road closures and wet season haul routes are covered under sections in Table 6.

Table 5. Best management practices for road construction and reconstruction activities.

BMP Number	Best Management Practices for Road Construction and Reconstruction
R 01	Implement an approved Best Management Practices checklist, operating or erosion control plan that covers all disturbed areas, including borrow areas and stockpiles used during road management activities. Follow operations for wet weather (below) . The need for an Erosion Control Plan will be set by the scope and complexity of the project and its potential to cause erosion and deposition in streams.
R 02	Maintain erosion-control measures to function effectively throughout the project area during road construction and reconstruction, and in accordance with the approved Best Management Practices and erosion control plan.

R 03	When new roads or reconfigurations of old roads are necessary, locate roads and landings to reduce total transportation system mileage. Relocate roads and landings outside of AMZs and Riparian Reserves wherever possible. Renovate or improve existing roads or landings when it would cause less adverse environmental impact. Where roads traverse land in another ownership, investigate options for using those roads before constructing new roads. Locate temporary (see definitions p. 48) and permanent roads and landings on stable locations, e.g., ridge tops, stable benches, or flats, and gentle-to-moderate side slopes to minimize erosion impacts. Minimize road construction on steep slopes (> 50 percent).
R 04	Confine new roads to the construction limits of the permanent roadway to reduce the amount of area disturbed and do not design for deposition in wetlands, Riparian Reserve, floodplains, and Waters of the State.
R 05	Avoid road or landing locations in Riparian Reserves. If no other feasible options exist, prevent and minimize discharges of sediment to surface waters (see Table 1, Table 2, Table 4 for additional BMPs). Do not put landings in AMZs.
R 06	Avoid locating landings in areas that contribute to runoff and erosion. Use methods to minimize erosion. Hydrologic connectivity between landings and waterbodies should be kept to an absolute minimum or completely reduced. Install temporary drainage, erosion, and sediment control structures to route runoff from the road to a stabilized area (i.e., vegetated area, sediment basin or riprap lined ditch), and away from watercourses. In unstable areas, stabilize slopes with straw wattles or rock. When on steep or unstable slopes (follow methods Table 7a and Table 7b) in order to avoid erosion from road surfaces. Storm proof (see section below in Table 5) or close roads under construction or reconstruction prior to the onset of the wet season.
R 07	Design (prior to building) temporary roads to either avoid or access sensitive areas at specific locations. Decommission temporary roads upon completion of use. Storm proof before the wet season if project is not completed. Subsoil (i.e., rip) temporary roads where needed to lessen detrimental soil conditions, minimize surface runoff, improve soil structure, and water movement through the roadbed. See also Table 6 Road Closure and Decommissioning.
R 08	Design roads to the minimum width needed for the intended use as referenced in BLM Manual 9113 – 1 – Roads Design Handbook (USDI BLM 2011). Where in-sloped roads are proposed, design inboard ditches to reduce hydrologic connectivity and maintenance requirements.
R 09	Design road cut and fill slopes with stable angles, to reduce erosion and prevent slope failure. Locate and designate waste areas before operations begin.
R 10	Design and construct sub-surface drainage (e.g., trench drains using geo-textile fabrics and drainpipes) in landslide-prone areas and saturated soils. Minimize or eliminate new road construction in these areas.
R 11	To protect Waters of the State from sedimentation and other pollutants from roadways: Locate roads and landings away from wetlands, Riparian Reserve, floodplains, and other Waters of the State. Minimize roads within AMZ, use only for stream crossings. See Stream Crossings below. Locate temporary and permanent road construction or improvement to minimize the number of stream crossings. Do not fill wetlands, do not design roads through meadows. If a wetland or meadow must be crossed use a bridge design that does not block floodplain flows. If a road must go through a Riparian Preserve, use bridges or spans, and elevate road over drainages to minimize disruption of floodplain flows in Riparian Preserves. Stay out of AMZ to protect water quality.

R 12	Excavated material should be removed and placed where it cannot reenter the stream or water bodies during precipitation or flood events. Do not place such materials on slopes with a high risk of mass failure, in areas subject to overland flow or seasonally saturated areas, or within 100 feet (outside of AMZ) of perennial streams or wetlands, Riparian Reserve, floodplains, and unstable areas to minimize risk of sediment delivery to Waters of the State. Apply surface erosion control prior to the wet season. Deposit and stabilize excess and unsuitable materials only in designated site where there are no potential for sediment to discharge to a watercourse. Provide adequate surface drainage and erosion protection at disposal sites. Construct road fills to prevent fill failure using inorganic material, compaction, buttressing, sub-surface drainage, rock facing, or other effective means.
R 13	Use controlled blasting techniques to minimize loss of material on steep slopes or into wetlands, Riparian Reserve, floodplains, and Waters of the State. Restrict blasting after intense storms when soils are saturated.
R 14	Schedule operations when rain, runoff, wet soils, snowmelt, or frost melt are less likely. Follow seasonal restrictions, as outlined in an approved Best Management Practices checklist, operating or erosion control plan. Stabilize project area during normal operating season when the National Weather Service predicts a 30 percent or greater chance of precipitation, such as localized thunderstorm or approaching frontal system. Complete all necessary stabilization measures prior to predicted precipitation that could result in surface runoff. Close roads during wet weather conditions when ground conditions could result in excessive rutting (greater than 2 inches), soil compaction (except on the road prism or other surface to be compacted), or runoff of sediments directly to streams
R 15	Use temporary sediment control measures (e.g., check dams, silt fencing, bark bags, filter strips, and mulch) to slow runoff and contain sediment from road construction areas. Remove any accumulated sediment and the control measures when work or haul is complete. When long-term structural sediment control measures are incorporated into the approved Best Management Practices checklist, operating or erosion control plan, remove any accumulated sediment to retain capacity of the control measure.
R 16	Do not permit sidecasting within or close to streams or wetlands. Prevent stockpiled excavated materials from entering water ways or within 100 feet (outside of AMZ) of perennial or intermittent streams.
R 17	Fully suspend logs, pipes, posts, and other transported materials when crossing waterbodies, or streams and their riparian reserve.
R 18	Construct new stream crossings when streams are dry or when stream flow is at its lowest. Install sediment controls to reduce sedimentation. See Table 4.
R 19	On slopes greater than 40 percent, the organic layer of the soil shall be removed prior to fill placement, according to project specifications. Soil can then be reused where needed to establish vegetation.

R 20	Stabilize all disturbed areas with mulch, erosion fabric, vegetation, rock, large organic materials, engineered structures, or other stabilization measures according to the approved Best Management Practices checklist, operating or Erosion Control Plan, and project specifications and drawings for permanent controls (e.g., crib walls, gabions, or riprap placement).
R 21	Waste organic material, such as uprooted stumps, cull logs, accumulations of limbs and branches, and unmerchantable trees, shall not be buried in logging road or landing fills. Dispose of waste organic material according to project specifications, in locations designated for waste disposal. Assure compliance with the project approved Best Management Practices checklist, operating or erosion control plan.
R 22	Monitor contractor's plans and operations to assure contractor does not open more ground than can be substantially completed before expected wet seasons shutdowns unless erosion-control measures are implemented.
R 23	Scatter construction-generated slash on other disturbed areas to help control erosion. Windrow slash at the outlet of water bars on outsloped roads Do not use slash in -inboard ditches Windrow slash at the base of fill slopes to reduce sedimentation. Ensure that windrows are placed along the contour and that there is ground contact between slash and disturbed slope.
R 24	Dewater live streams where crossed by construction of new roads with appropriate diversion devices use Table 4. Accommodate drainage with adequate temporary crossings (Table 4) during construction. Disconnect road runoff to the stream channel by outsloping the road approach. If outsloping is not possible, use runoff control, erosion control and sediment containment measures. These may include using additional cross drain culverts, ditch lining, and catchment basins. Prevent or reduce ditch flow conveyance to the stream through cross drain placement above the stream crossing (see section below on Surface Drainage).
Surface Drainage including Cross drains Road Activities	
R 25	Effectively drain the road surface by using crowning, insloping or outsloping, grade reversals (rolling dips), and waterbars or a combination of these methods. Avoid concentrated discharge onto fill slopes unless the fill slopes are stable, and erosion proofed.
R 26	Outslope temporary and permanent low volume roads to provide surface drainage on road gradients up to 6 percent unless there is a traffic hazard from the road shape.
R 27	Consider using broad-based drainage dips or leadoff ditches in lieu of cross drains for low volume roads. Locate these overland drainage measures where they will not drain into wetlands, floodplains, and Waters of the State.
R 28	Avoid use of outside road berms unless designed to protect road fills from runoff. If road berms are used, breach to accommodate drainage where fill slopes are stable. Use armoring or slash placed at outside berm breeches to prevent erosion
R 29	Construct variable road grades and alignments (e.g., roll the grade and grade breaks) which limit water concentration, velocity, flow distance, and associated stream power.
R 30	Install underdrain structures when roads cross or expose springs, seeps, or wet areas rather than allowing intercepted water to flow down gradient in ditch lines.

R 31	Design roads crossing low-lying areas so that water does not pond on the upslope side of the road. Provide cross drains at short intervals to ensure free drainage.
R 32	Divert road and landings used for vehicle storage runoff water away from headwalls, slide areas, high landslide hazard locations, or steep erodible fill slopes.
R 33	Limit the construction of temporary in-channel water drafting sites for dust abatement.
R 34	Locate cross drains or relief culverts, to prevent or minimize runoff and sediment conveyance to Waters of the State. Implement sediment reduction techniques such as brush filters, sediment fences, and check dams to prevent or minimize sediment conveyance. Locate cross drains to route ditch flow onto vegetated and undisturbed slopes. If on unstable slopes use rocks and other means to reduce erosion and stabilize water flow off road.
R 35	Space cross drain culverts at intervals sufficient to prevent water volume concentration and accelerated ditch erosion. At a minimum, space cross drains at intervals referred to in the BLM Road Design Handbook 9113-1 (USDI BLM 2011), Illustration 11 –'Spacing for Drainage Lateral.' Increase cross drain frequency through erodible soils, or steeper grades. Use guidelines in Table 7b to stabilize soils below drainage structures in steeper areas.
R 36	Choose cross drain culvert diameter and type according to predicted ditch flow, debris and bedload passage expected from the ditch. Minimum diameter is 18". When species needs for passage are present, sizes should be larger (e.g., for desert tortoise or other wildlife, the minimum size is 36").
R 37	Locate surface runoff drainage measures (e.g., cross drain culverts, rolling dips, and water bars) where water flow will be released on convex slopes or other stable and non-erodible areas that will absorb road drainage and prevent sediment flows from reaching wetlands, floodplains, and Waters of the State. Where possible locate surface runoff drainage structures above road segments with steeper downhill grade. Locate cross drains at least 50 feet from the nearest stream crossing and allow for a sufficient non-compacted soil and vegetative filter.
R 38	Armor surface drainage structures (e.g., broad-based dips, and leadoff ditches) to maintain functionality in areas of erodible and low-strength soils.
R 39	Discharge cross drain culverts at ground level on non-erodible material. Install downspout structures or energy dissipaters at cross drain outlets or drivable dips where alternatives to discharging water onto loose material, erodible soils, fills, or steep slopes are not available.
R 40	Cut protruding 'shotgun' culverts at the fill surface or existing ground. Install downspout or energy dissipaters to prevent erosion.
R 41	Skew cross drain culverts 45–60 degrees from the ditch line and provide pipe gradient slightly greater than ditch gradient to reduce erosion at cross drain inlet.
R 42	Provide for unobstructed flow at culvert inlets and within ditch lines during and upon completion of road construction prior to the wet season.

Road Maintenance and Operations

Objective: To ensure water quality protection by providing adequate and appropriate maintenance and by controlling road use and operations, and to minimize or reduce the hydrologic connectivity of the road system.

Explanation: Appropriate maintenance and control of road use and operations can protect water quality, aquatic and riparian resources, and capital investments. Maintenance needs and operational controls are informed by periodic inventory and assessment that determine road condition and the potential impacts the road has on water quality.

Properly designed and maintained road surfaces and drainage systems can reduce adverse effects to water resources by facilitating natural hydrologic function. Roads and drainage systems normally deteriorate because of traffic, weather, and effects of maintenance. In addition, roads occasionally become saturated by new groundwater springs and seeps after a wildfire or unusually wet periods. Many such conditions can be corrected by timely maintenance. However, while routine maintenance may be needed to ensure the road performs as designed, it can also be a source of soil disturbance and therefore, sediment production. In particular, the grading of inside ditches and road surfaces can significantly increase sediment production rates. Less aggressive maintenance may be desired to minimize disturbance of stable sites.

Operational objectives and activities are also defined by the travel management objectives and depend upon the amount of maintenance a road is expected to receive. Road operations also include permit, contract, and agreement administration, control of seasonal use, sustaining roads in closed status and revising maintenance levels and seasonal closures, as needed. Road closures and restrictions are necessary because many BLM roads are designed for dry season use or very localized use. Most local roads are not surfaced, while others have some surfacing or spot stabilization. Roads without stabilized surfaces or adequate base can be damaged by use during wet periods or by loads heavier than the road was designed to convey.

Detrimental soil compaction generally results from use of heavy equipment during road activities. In the process of compaction, pore spaces between soil particles become compressed. Higher soil moisture makes soils more prone to compaction because water is squeezed out of pore spaces and spaces between soil particles compress during compaction. The soil then becomes denser; less water and air can infiltrate down though the soil profile in the reduced pore space. Compaction also limits root penetration and thus may curb plant access to soil nutrients and induce slower plant growth. The compacted surfaces of roads also contribute to soil erosion by forcing water to run overland rather than naturally infiltrate at the point of raindrop impact. In turn, erosion will often lead to sedimentation, as displaced sediment is transported and deposited into nearby streams. Recontouring slopes to a more natural shape and replacing unstable road fill can help keep the soil on the slopes and protect roads and water quality.

Optimally, a specialist works to determine if approved maintenance tasks are completed with minimal resource impacts. Adjustments to future maintenance plans and methods are considered when previous methods do not provide the needed protection to water quality.

Storm Proofing roads prior to precipitation can protect Waters of the State and the species that depend upon them. Storm-proofing road systems can have an immediate benefit to the streams and aquatic habitat as well as protect the road surface and reduce annual road maintenance costs. If storm-proofing treatments are implemented correctly, future storm runoff can cleanse the streams of accumulated coarse and fine sediment rather than deposit fine sediments in areas where it impairs aquatic habitat.

Risk from road maintenance activities can be managed by using the appropriate techniques from the following table as well as those in Table 1, Table 2, Table 7a, Table 7b, and Table 4. The intent and the standards specified for these BMPs need to be met, exactly how they will be implemented can be adapted as needed to local site conditions.

Table 6. Best Management Practices for Road Maintenance

BMP Number	Best Management Practices for Road Maintenance
RM 1	Maintain road surfaces to dissipate intercepted water in a uniform manner along the road and prior to the wet season, provide effective road surface drainage maintenance. Where feasible and consistent with protecting public safety, utilize outsloping and rolling the grade (rolling dips) as the primary drainage technique. Remove accumulated sediment and blockages at cross-drain inlets and outlets. Grade natural surface and aggregate roads where the surface is uneven from surface erosion or vehicle rutting. Restore crowning with drains, outsloping with rolling dips or insloping with drains for the road type for effective runoff. Remove or provide outlets through berms on the road shoulder.
RM 2	Clean ditches and drainage structure inlets only as often as needed to keep them functioning. Prevent unnecessary or excessive vegetation disturbance and removal on features such as swales, ditches, shoulders, and cut and fill slopes. Clear ditch lines in sections where there is lowered capacity or obstruction by dry gravel, sediment wedges, small failures, or fluvial sediment deposition. Retain ground cover in ditch lines, except where sediment deposition or obstructions require maintenance.
RM 3	Ensure roads are dry. Conduct maintenance operations during the least critical periods for water and aquatic resources (e.g., when streams are dry; during low-water conditions; in compliance with spawning and breeding season restrictions).
RM 4	Maintain water flow conveyance, sediment filtering and ditch line integrity by limiting ditch line disturbance and groundcover destruction when using heavy equipment to clean in -board ditches within 200 feet of road stream crossings. Remove spoil piles to designated disposal site away from water course.
RM 5	When grading roads or cleaning drainage structure inlets and ditches, avoid undercutting of cut-slopes. Retain low-growing vegetation on cut-and-fill slopes.
RM 6	Adjust surface drainage structures to minimize hydrologic connectivity by discharging road runoff to areas of high infiltration and high surface roughness, armoring drainage facility outlet as energy dissipater and to prevent gully initiation.

BMP Number	Best Management Practices for Road Maintenance
RM 7	Minimize diversion potential by installing diversion prevention dips that can accommodate overtopping runoff. Install such that water is directed back into the channel if overtopping occurs or to a retention swale if topping is likely to occur. Armor diversion prevention dips when the expected volume of fill loss is significant. Place diversion prevention dips downslope of crossing, rather than directly over the crossing fill, and in a location that minimizes fill loss in the event of overtopping.
RM 8	Remove and dispose of slide material when it is obstructing road surface and ditch line drainage. Place material on stable ground outside of wetlands, Riparian Reserve, floodplains, and Waters of the State. Seed with native seed and use weed-free mulch.
RM 9	Maintain road surface drainage by removing berms, unless specifically designated otherwise.
RM 10	Do not side cast loose ditch or surface material where it can enter wetlands, Riparian Reserve, floodplains, and Waters of the State.
RM 11	Inspect and maintain culvert inlets and outlets, drainage structures and ditches before and during the wet season to diminish the likelihood of plugged culverts, the possibility of washouts, and that fish or wildlife passage is being maintained.
RM 12	Seed and mulch cleaned ditch lines and bare soils that drain directly to wetlands, floodplains, and Waters of the State, with native species and weed-free mulch.
RM 13	Accompany grading of hydrologically connected road surfaces and inside ditches with erosion and sediment control installation as needed to prevent sediment transport to a water body.
RM 14	Encourage field personnel of all disciplines to observe road deterioration or damage commensurate with travel to field activities, and report to engineering or roads crew.
RM 15	Regularly inspect roads during all operations. Identify diversion potential on roads and prioritize for treatment.
RM 16	Keep unimproved dirt roads closed to public use, but open for administrative use, in hydrologically functional condition; and prioritize for treatment when rutting, poor drainage, or hydrologic connectivity issues develop.
RM 17	Evaluate road management objectives when an inspection indicates road design is not meeting current transportation and/or resource needs. Road management objectives are supported by RMPs or travel management plans.
RM 18	When roads are used for commercial use (e.g., timber sales, mineral sales, energy development, etc.), enforce pre-project maintenance, maintenance during project use, and post-project maintenance. Require commercial operators to leave roads storm proofed and with all drainage structures functioning and clear, slopes stabilized, no rutting, and no hydrologic connectivity when project is complete.
RM 19	During roadside brushing, remove vegetation by cutting rather than uprooting

BMP Number	Best Management Practices for Road Maintenance
RM 20	Apply native seed and certified weed-free mulch to cut and fill slopes, ditch lines, and waste disposal sites with the potential for sediment delivery to wetlands, Riparian Reserve, floodplains, and Waters of the State. Apply seed upon completion of construction and as early as possible to increase germination and growth. Temporary erosion control materials should be maintained in place until seeding has taken and the soil is stabilized by the root growth. Reseed if necessary, to accomplish erosion control. Select seed species that are fast-growing, have adequate provide ample ground cover and soil-binding properties. Apply mulch that will stay in place and at site-specific rates to prevent erosion.
RM 21	Place sediment-trapping materials or structures such as straw bales, wildlife friendly netting, or sediment basins at the base of newly constructed fill or side slopes where sediment could be transported to Waters of the State. Keep materials away from culvert inlets or outlets. https://documents.coastal.ca.gov/assets/water-quality/permits/Wildlife-Friendly_Netting_in_Erosion_&_Sediment_Control-Factsheet_r5_Sept_2016.pdf
RM 22	Use biotechnical stabilization and soil bioengineering techniques to control bank erosion (e.g., commercially produced matting and blankets, live plants or cuttings, dead plant material, rock, and other inert structures).
RM 23	Apply water or approved road surface stabilizers/dust control additives to reduce surfacing material loss and buildup of fine sediment that can enter wetlands, floodplains, and Waters of the State. Prevent entry of road surface stabilizers/dust control additives into Waters of the State during application. For dust abatement, limit applications of lignin sulfonate to a maximum rate of 0.5 gal/yd2 of road surface, assuming a 50:50 (lignin sulfonate to water) solution.
RM 24	Limit road and landing construction, reconstruction, or renovation activities to the dry season. Keep erosion control measures concurrent with ground disturbance to allow immediate storm proofing.
RM 25	Limit disturbance to vegetation and modification of streambanks when locating road approaches to instream water source developments. Surface these approaches with durable material. Employ erosion and runoff control measures.
RM 26	Do not locate placement of road fill in the proximity of a public water supply intake (404(f) exemption criteria xi) in Waters of the State.
RM 27	Decommission and restore temporary roads to natural conditions upon completion of use.
RM 28	Monitor access and evaluate fire or disease damaged trees that may fall on road surface throughout wet season when roads are dry but before public access can be allowed.
Road Stormproofing	
RM 29	Stormproof open roads receiving infrequent maintenance to reduce road erosion and reduce the risk of washouts by concentrated water flows. Stormproof temporary roads if retained over wet season. Specific methods on Stormproofing such as removing hazard trees, improving and monitoring drainage structures, monitoring and minimizing erosion from cut banks, stabilizing soils, shaping roads to allow drainage, and other methods help in keeping the road structures in working order prior to heavy rains or snow. When the National Weather Service predicts a 30 percent or greater chance of precipitation, such as localized thunderstorm or approaching frontal system storm proofing should be postponed.

BMP Number	Best Management Practices for Road Maintenance
RM 30	Increase Road Surface Drainage when storm proofing by implementing a variety of surface drainage techniques including construction of rolling dips and /or waterbars, and berm removal. Ditches, fill slopes and cut banks can be storm proofed by frequently draining them with rolling dips or waterbars and/or ditch relief culverts. Ensure that these features do not discharge to streams or onto active (or potentially active) landslide areas. Monitor outflow from rolling dips, waterbars, and ditch relief culverts during the rainy season to ensure functioning properly. Watch for gully development along the outside edge of the road throughout the rainy season. If gullies do develop then dewater them to best extent possible.
RM 31	Stormproof Cut banks and Fill slopes. Monitor cut banks for slumping, rock falls, or other landsliding. Excavated soil should be placed in locations where it will not enter a stream. Excavated soils should be placed where it will not cause further slope failures or landslides. Unstable soils may be too saturated to excavate during the rainy season so treatments may have to wait until dryer time of year or when soils are dry. .
RM 32	Repair damaged culvert inlets and downspouts to maintain drainage design capacity. To the extent possible, ensure drainage features are fully capable of preventing pollutant discharges to surface waters before the start of the local wet season (such as October 15 to May 1) or before the start of runoff-inducing precipitation events.
RM 33	Ensure that culvert inlet, outlet, and bottom are open and in sound condition. Ensure that culverted stream crossings have no diversion potential (endure dips and other protections are functional. Ensure that culverted stream crossing inlets have low plug potential
RM 34	Blade and shape roads to conserve existing aggregate surface material retain or restore the original cross section, remove berms and other irregularities that impede effective runoff or cause erosion, and ensure that surface runoff is directed into vegetated, stable areas.
RM 35	When suspending storm proofing operations and cover or otherwise temporarily stabilize all exposed soil using methods such as weighted straw wattles to prevent for sediment-laden runoff to enter a wetland, floodplain, or Waters of the State. Resume operations when conditions allow soils to dry to be met.
Road Closure and Decommissioning	
RM 36	Effectively maintain closed roads to eliminate all motorized vehicle use. Maintain physical closure devices, if present, to be safe and effective. Prevent use of vehicular traffic by utilizing methods such as gates, guard rails, earth/log barricades, to reduce or eliminate erosion and sedimentation hat would result from traffic on roads. For roads where physical closure methods are not feasible, install signing to inform of road closure and eliminate road on official maps.

BMP Number	Best Management Practices for Road Maintenance
RM 37	Place excavated material from removed stream crossings on stable ground outside of wetlands, Riparian Reserve, floodplains, and Waters of the State. In some cases, the material could be used for recontouring old road cuts or be spread across roadbed and treated to prevent erosion.
RM 38	Reestablish stream crossings to the natural stream gradient. Excavate sideslopes back to the natural bank profile. Reestablish natural channel width and floodplain.
RM 40	Following culvert removal and prior to the wet season, apply erosion control and sediment trapping measures (e.g., seeding, mulching, straw bales, jute netting, and native vegetative cuttings) where sediment can be delivered into wetlands, Riparian Reserve, floodplains, and Waters of the State.
RM 41	Pull back unstable road fill and end-haul or contour to the natural slopes
RM 42	Implement tillage measures, including ripping or subsoiling to an effective depth for compacted areas including the roadbed, landings, construction areas, and spoils sites.
RM 43	Inspect closed roads to ensure that vegetation stabilization measures are operating as planned, drainage structures are operational, and noxious weeds are not providing erosion control. Conduct vegetation treatments and drainage structure maintenance as needed.
RM 44	Convert, as appropriate, existing drainage structures such as ditches and cross drain culverts to a long-term maintenance free drainage configuration.
RM 45	Suspend ground-disturbing activity in areas where a potential occurs for movement of sediment from the road to wetlands, floodplains, and Waters of the State, if NWS forecasted rain is greater than 30 percent. Temporarily stabilize exposed soils during work suspension. Upon completion of ground-disturbing activities, immediately stabilize slopes and soils. Measures could include but not limited to erosion control blankets and mats, soil binders, wattles, seed and straw, soil tackifiers, or placement of slash.
Wet Season and Haul Road Use	
RM 46	On active haul roads, during the wet season, use durable rock surfacing and sufficient rock depth to resist rutting or development of sediment on road surfaces that drain directly to wetlands, floodplains, and Waters of the State.(see Weaver 2015 for more information)
RM 47	Implement structural road treatments prior to wet season hauling or other wet season road use. Such as: increasing the frequency of cross drains; installing sediment barriers or catch basins; applying gravel lifts or asphalt road surfacing at stream crossing approaches; and armoring ditch lines.
RM 48	Remove snow on surfaced roads in a manner that will protect the road and adjacent resources. Minimize disturbance to soils. Retain a minimum layer (4”) of compacted snow on the road surface. Provide drainage through the snowbank at periodic intervals to allow snowmelt to drain off the road surface.
RM 49	Avoid removing snow from unsurfaced roads where runoff drains to Waters of the State.
RM 50	Maintain road surface to protect road surfaces from rutting and erosion under active haul where runoff drains to wetlands, Riparian Reserve, floodplains, and Waters of the State.
RM 51	To reduce sediment tracking from natural surface roads during active haul, provide a gravel approach before entrance onto hard surfaced roads.

Potential Erosion Hazards for Road or Trails

Vulnerability to soil erosion varies across the state. The variability in vulnerability shows that road drainage design and frequency of drainage structures requires the evaluation of site-specific conditions (Weaver et al. 2015). While soil scientists or geologists can evaluate soil erodibility (based on slope and type of soil that dominates an area), BLM does not always have this expertise even at the District level.

The ratings in the Web Soil Survey indicate the hazard of soil loss from unsurfaced roads and trails. The ratings are based on soil erosion factor K, slope, and content of rock fragments. The erosion hazard is described as "slight," "moderate," or "severe." A rating of "slight" indicates that little or no erosion is likely; "moderate" indicates that some erosion is likely, and that simple erosion-control measures are needed; and "severe" indicates that significant erosion is expected, and that costly erosion-control measures are needed. The data from the website are aggregated data. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Water bar spacing for unsurfaced or natural surfaced road is based on road gradient and soil erosion vulnerability. The Web Soil Survey provides a reasonable basis for the erosion hazard rating to use in the Table 7a. Available online at https://websoilsurvey.nrcs.usda.gov/ , the soil survey can be used to evaluate where the risk is low (slight), moderate or severe. Definitions for extreme include decomposed granitic soil, sandy soils, adjacent earthflows, and deep-seated landslide features. Due to the difficulty of maintaining roads in steep areas with these features, a roads engineer may be needed to evaluate the road. For unpaved rural roads, Table 7a gives water bar spacing based on erosion hazard rating and road gradient (from Weaver et al. 2015). Soil surveys and erosion hazards should be examined before any road maintenance should start.

The ratings listed in Table 7b indicates the soil cover needed to prevent erosion coming off slopes above and below roads, trails, or roads under construction. The hazard of soil loss from denuded slopes is highest in areas where slope is steep, or soil is highly erodible. The ratings are based on soil erodibility, slope, and content of rock fragments. A rating of "slight" indicates that some erosion-control measures are needed on the slopes above and below the road; "moderate" indicates that the areas above and below will need more ground cover; and "severe" and “very severe” indicates that significant erosion is expected and that these areas will need significantly more ground cover. For larger or more complex issues like stream crossings or road construction, analysis should be done by a civil engineer and a geologist. Often soil ground cover is living cover in moist areas. In the desert and arid areas, vertical mulch or rocks are often needed to protect soils. Ground cover can vary tremendously dependent on location.

Table 7a. Water bar spacing (feet) by gradient and erosion class

Estimated Erosion Hazard	Road Gradient (%)		
	<10%	11-25%	>25%
Extreme	100	75	50
High	150	100	75
Moderate	200	150	100
Low	300	200	150

† The erosion classes include the following rock types:

Extreme: Decomposed **g**ranitic soil, sandy soils, adjacent earthflows, and deep-seated landslide features
High: Sandstone, andesite porphyry, glacial or alluvial deposits, soft matrix conglomerate, volcanic ash, and pyroclastics
Moderate: Basalt, andesite, quartzite, hard matrix conglomerate, and rhyolite
Low: Metasediments, metavolcanics, and hard shale

Table 7b. Soil ground cover needed to protect soils

NRCS Erosion Hazard Rating*	Minimum Percent Effective Ground Cover – Year 1	Minimum Percent Effective Ground Cover – Year 2
Very Severe	60%	75%
Severe	45%	60%
Moderate	30%	40%
Slight	20%	30%

* Rating obtained from Natural Resources Conservation Services http://websoilsurvey.nrcs.usda.gov/

Vegetation (including timber) Management Activities

Objective: Minimize erosion and sediment delivery from haul roads, skid roads, end lining, and other vegetation management and timber activities.

Explanation: During timber and hazard tree removal operations heavy trucks are often needed to haul timber off site, and small access roads, landings and skid trails are either opened or constructed. In the process vegetation and ground cover are removed, often exposing both the surface and subsurface soil to erosion.

Detrimental soil compaction in forests and woodlands generally results from use of heavy equipment during road and landing construction and from forestry activities such as ground-based yarding. In the process of compaction, pore spaces between soil particles become compressed. Higher soil moisture makes soils more prone to compaction because water is squeezed out of pore spaces and spaces between soil particles compress during compaction. The soil then becomes denser; less water and air can infiltrate down though the soil profile in the reduced pore space. Compaction also limits root penetration and thus may curb plant access to soil nutrients and induce slower plant growth. The compacted surfaces of roads also contribute to soil erosion by forcing water to run overland rather

than naturally infiltrate at the point of raindrop impact. In turn, erosion will often lead to sedimentation, as displaced sediment is transported and deposited into nearby streams.

Temporary and long-term erosion-control measures are necessary to reduce erosion and maintain overall slope stability. These erosion-control measures may include vegetative and structural techniques to ensure the area's long-term stability. Activities such as culvert replacements may require instream work and some disturbance of the banks. The risk from vegetation and timber activities can be managed by using the appropriate techniques from the following list (and Table 1, Table 2, Table 4, Table 7a and Table 7b).

Table 8. Best Management Practices for vegetation (and timber) management activities

BMP Number	Best Management Practices for Vegetation (and Timber) Management Activities
TM 01	Design skid trail and cable yarding corridor stream crossings or other stream crossings to limit the number of such crossings, using narrow widths, and using the most perpendicular orientation to the stream feasible. Space corridors and skid trails as far apart as is practicable for example: Set yarding corridors at 12–15-foot maximum widths, and In Riparian reserves use preexisting skid trails and roads to minimize soil disturbance in these areas. Use existing or previous stream crossings to minimize disturbance to the AMZ. No new skid trails, logging roads or landings shall be planned for construction within 150 feet of streams with salmonids or listed species present or downstream of the site, within 150 feet of perennial Waters of the State on slopes greater than 30%, or within other Waters of the State with few exceptions. If the Waters of the State are dry at the time of the work limit the construction in the AMZ and in Riparian Reserves. If the crossing will not negatively influence the beneficial uses of the Waters of the State and if the State permit allow for the crossings.
TM 02	Consider the location and planned use of logging roads and landings and whether such logging roads and landings will be abandoned or deactivated and blocked to restrict public use.
TM 03	Trees felled for skid trails and yarding corridors in the Riparian Reserve would be directed toward the stream and left on site unless silvicultural prescriptions in the riparian reserve permit removal. If removal is the intent, then fell tree away from the streams. Keep logs suspended, to minimize damage to soils within the Riparian Reserve.
TM 04	In cable yarding, fully suspend logs over flowing streams, non-flowing streams with highly erodible bed and banks or steep slopes, and Waters of the State.
TM 05	Limit designated skid trails to ≤ 15 percent of the harvest unit area to reduce displacement or compaction to acceptable limits.
TM 06	Limit width of skid roads to single width of what is operationally necessary for the approved equipment. Where multiple machines are used, provide a minimum-sized pullout for passing.
TM 07	Ensure leading end of logs is suspended when ground based skidding.

BMP Number	Best Management Practices for Vegetation (and Timber) Management Activities
TM 08	Restrict non-road, in unit, ground-based equipment used for harvesting operations to periods of low soil moisture; generally, from May 15 to Oct 15. Low soil moisture varies by texture and is based on site specific considerations. Vehicles, tractors, and other equipment that operate off paved roads, under moist or wet conditions must not create ruts exceeding two inches in depth and 25 feet in length. No ruts exceeding three inches in depth are allowed. Where project skid trails remain wet in isolated depressions that are less than 50 feet in length (i.e., no more than two such instances within 1000 feet), woody debris, weed-free straw, or landing mats may be brought in to fill and/or span these depressions for operability.
TM 09	Incorporate existing cable yarding corridors, skid trails and landings as a priority over creating new trails where feasible, into a designated trail network for ground-based harvesting equipment, consider proper spacing, skid trail direction and location relative to terrain and stream channel features.
TM 10	Limit non-specialized skidders or tracked equipment to slopes less than 35 percent, except when using previously constructed trails or accessing isolated ground-based harvest areas requiring short trails over steeper pitches. Also, limit the use of this equipment when surface displacement creates trenches, depressions, excessive removal of organic horizons, or when disturbance would channel water and sediment as overland flow.
TM 11	Limit the use of specialized ground-based mechanized equipment (those machines specifically designed to operate on slopes greater than 35 percent) to slopes less than 50 percent, except when using previously constructed trails or accessing isolated ground-based harvesting areas requiring short trails over steeper pitches. Also, limit the use of this equipment when surface displacement creates trenches, depressions, excessive removal of organic horizons, or when disturbance would channel water and sediment as overland flow.
TM 12	Designate skid trails and other surface disturbances in locations that channel water from the trail surface away from waterbodies, floodplains, and wetlands, or unstable areas adjacent to them.
TM 13	Directionally fall trees to lead for skidding and skyline yarding to minimize ground disturbance when moving logs to skid trails and skyline corridors.
TM 14	Apply erosion control measures to skid trails, cable yarding corridors, and other disturbed areas with potential for erosion and subsequent sediment delivery to waterbodies, floodplains, or wetlands. These practices may include seeding, mulching, water barring, tillage, and woody debris placement. Use guidelines from the road closure and decommissioning section. Waterbar spacing guidelines are found in Table 7a, and percent groundcover that should be maintained is in Table 7b. Hydrologically disconnect the roads and trails from Waters of the State.
TM 15	Subsoiling should occur in proximity to roads, watercourses, and in highly compactable soils. Subsoil (i.e., rip) skid trails, landings, or temporary roads where needed to lessen detrimental soil conditions, minimize surface runoff, improve soil structure, and water movement through the roadbed. See also road closure and decommissioning section.
TM 16	Block skid trails to prevent public motorized vehicle and other unauthorized use at the end of seasonal use.

BMP Number	Best Management Practices for Vegetation (and Timber) Management Activities
TM 17	Allow harvesting operations (cutting and transporting logs) when ground is frozen or adequate snow cover exists to prevent soil compaction and displacement and any visible disturbance of soils.
TM 18	Maintain the minimum percent of effective ground cover needed to control surface erosion, as shown in Table 7b following forest management operations. Ground cover may be provided by vegetation, slash, duff, medium to large gravels, cobbles, or biological crusts.
TM 19	Consider the use of helicopter or aerial logging systems to prevent water quality impacts from road construction or ground-based timber yarding, where other BMPs would be more costly or have limited effectiveness.
TM 20	Limit skid trails in riparian reserves to protect soils and limit soil disturbance to 20 percent of the area. Use mulching, water barring, tillage, and woody debris placement to repair the damage in this area.
TM 21	By selective harvest maintain and restore the species composition and structural diversity of plant communities in riparian reserves and Waters of the State. Leave sufficient trees to maintain 40 to 60 percent shade within 100 feet of Waters of the State. These trees provide summer cooling and nutrient filtering.
TM 22	Trees left in riparian reserves limit surface erosion and bank erosion. Felled trees left in stream can add to distributions of coarse woody debris sufficient to sustain physical complexity.

Fire and Fuels Management Activities

Objective: Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources that may result from wildland fire or fuels management activities.

Explanation: To minimize erosion and sediment delivery from bulldozer lines, loss of groundcover, fire line construction, plugging of culvert and drainage structures on roads and trails, mastication, and hazard tree removal best management practices are available. Common wildland fire management operations include using prescribed fire, managing wildfire using a wide range of strategies from monitoring to aggressive control and suppression, and rehabilitating fire and suppression damage. Firefighter and public safety are always the first priority in wildland fire activities. Implementation of BMPs to protect soil, water quality, and riparian resources, though important, must not compromise public or firefighter safety in wildland fire situations.

Prescribed fire is often a useful tool to reduce fuels and improve watershed condition by consuming vegetation, dead woody debris, humus, and duff. A prescribed fire may burn at a range of intensities, leaving a mosaic of burn severities within the fire perimeter. Activities associated with fuel reductions can affect watersheds. Actions to control and contain the prescribed fire, such as fire line construction can also adversely affect watershed condition by creating a ground disturbance.

During fuels and wildland fire management, heavy vehicles are often needed to create fire lines, prepare roads for fire crew access, clearing and grubbing safety zones, repair roads damaged during fires, remove hazard trees, and to change the nature of shrubby vegetation fuels. Small access roads and landings are either opened or constructed.

During wildland fire management, retrieving water and applying it to the fire, performing back-fire operations, and applying aerial or ground-based fire retardant occur during wildfire suppression. Certain fire-retardant formulations are toxic to aquatic fauna, including fish.

Vegetation and ground cover may be removed by wildfire depending on soil burn severity. In high and moderate burn severity removal of vegetation exposes both the surface and subsurface soil to erosion. In the absence of invasive species such as cheat grass, riparian reserves and uplands may be able to recover naturally, if soils are not disturbed by fire lines. BMPs for rehabilitating fire lines, fire camps, staging areas, and burned areas are necessary to ensure protection of soil, water quality, and riparian resources. Temporary and long-term erosion-control measures are necessary to reduce erosion and maintain overall slope stability where fuels and fire activities have disturbed soils. These erosion-control measures may include vegetative and structural techniques to ensure the area's long-term stability.

Trail and road drainage facilities may become inadequate after wildfires due to increased surface runoff, loss of vegetative cover, and stream bulking. New springs and seeps occasionally saturate trails after the occurrence of a wildfire. Timely maintenance and application of BMPs can correct these conditions to minimize erosion off trails (see recreation below) or roads. Many of these BMPs can be included as minimal impact suppression techniques (MIST). These techniques can be used for wildfire suppression and related activities in wilderness or other sensitive areas such as streams with sensitive aquatic species present.

The BMPs designated by FM are for fuels management, F for wildland fire and FS for Suppression repair, and FE Emergency Stabilization. Many of the BMPs were taken from interagency policies found at https://www.nifc.gov/policies/pol_ref_redbook.html. The Post Fire Emergency Stabilization and Rehabilitation Plan is written after fires on BLM lands to request funding to work on roads, uplands, stream crossings and other locations. After a year or two additional funds under Burned Area Rehabilitation may be obtained after a plan is written. Other links may be more up to date, but these are both publicly available
https://www.nps.gov/archeology/npsGuide/fire/docs/18%20Interagency%20BAER%20Handbook.pdf
https://www.fws.gov/fire/postwildfire/Files/Interagency%20BAR%20Guidebook.pdf

Table 9. Best management practices for fire and fuels management

BMP Number	Best Management Practices for Fire and Fuels Management
Fuels Management	
FM 01	Keep broadcast burns and jackpot burns out of Riparian Reserve, unless prescribed for restoration purposes (e.g., sudden oak death sanitation, improve species composition, invasive weed control, and invigorate deciduous trees, reduce fuel loading).

BMP Number	Best Management Practices for Fire and Fuels Management
FM 02	When operating in meadows use mowing or hand cutting of vegetation to maintain a fire perimeter. When burning in meadows the burn plan should have objectives to limit burn intensity or residence to limit soil heating.
FM 03	Reduce fuel loads by whole tree yarding, and piling material, as necessary, prior to under burning in dry forest types where fuel loads are elevated.
FM 04	To protect soils, do not directly light fires within the AMZ. Hand thin theses areas to reduce fuels and pile and burn outside the AMZ. Do not burn piles within AMZ.
FM 05	Avoid direct ignition of large woody material that is touching the high-water mark of a waterbody or that may be affected by high flows, even if this large wood is outside the AMZ.
FM 06	Store and dispose of ignition devices/ materials (e.g., flares and plastic spheres) outside Riparian Reserve. Maintain and refuel equipment (e.g., drip torches and chainsaws) a minimum of 300 feet from waterbodies, floodplains, and wetlands (unless a road is nearby, and the equipment can be safely maintained and refueled without spilling) .Portable pumps can be refueled on-site within a spill containment system.
FM 07	Avoid creating piles greater than 16 feet in height or diameter. Pile smaller diameter materials and leave larger > 12" pieces within the unit.
FM 08	Prevent use of mechanized heavy machinery fuel reduction equipment within the Riparian Reserve unless prescribed for restoration. Low ground pressure equipment (13-PSI or less) can be used within AMZs and Riparian reserves. Limit mechanized heavy machinery fuel reduction equipment to slopes less than 35 percent. Restrict non-track mechanized equipment (e.g., feller bunchers and horizontal bar masticators) to slopes less than 35 percent.
FM 09	Use temporary stream crossings if necessary, to access the opposite side with any equipment or vehicles (including OHVs). Follow Temporary Stream Crossing practices under Roads section.
FM 10	Construct fire line to the minimum size and standard necessary to contain the prescribed fire and meet overall project objectives. Limit fire lines inside Riparian Reserve. Where hand constructed fire lines are necessary, angle the approach, where feasible, rather than have it perpendicular to the Riparian Reserves. Locate and construct fireline in a manner that minimizes erosion and runoff from directly entering waterbodies by considering site slope and soil conditions, and using and maintaining suitable water and erosion control measures. Consider alternatives to ground-disturbing fireline construction such as using wet lines, rock outcrops, or other suitable features for firelines. Locate fire lines to minimize soil disturbance near temporary and intermittent streams, areas directing water into waterbodies, wetlands, headwalls, or areas of instability.
Wildfire Management including Fire Suppression Repair	
F 11	Fall snags in the Riparian Reserve towards the stream channel when felling is necessary for safety or fire suppression activities.

BMP Number	Best Management Practices for Fire and Fuels Management
F 12	Water drafting sites for engines and tankers would be reviewed by the resource advisor and/or agency representative.
F 13	Within Riparian Reserves, consultation with wildlife biologist familiar with the species present in these habitats can guide where lines can go and not harm natural resources. Pre fire season planning is important to establish places for protection from ground disturbance during wildland fires unless the wildfire is deemed a threat to human safety or private property.
F 14	Avoid delivery of chemical retardant foam or additives to within 300 feet of waterbodies, and wetlands. When retardant is discharged into a waterbody, complete reporting of discharge as required by 2018-2023. California Master Cooperative Wildland Fire Management and Stafford Act Response Agreement (CFMA and as amended), or federal operating plan guidance.
F 15	Use water or other less toxic wildland fire chemical suppressants for direct attack or less toxic approved fire retardants in areas occupied by threatened, endangered, proposed, candidate or sensitive species (TEPCS) or their designated critical habitats. Apply aerial retardant adjacent to Riparian Reserves by making parallel passes.
F 16	Water drafting for aerial water bucket refills can be found in lakes and other open water bodies (see Table 1 for BMPs). Consultation with wildlife biologist familiar with the species present in these habitats can guide which are the most suitable, and which may have the required depths. Pre-fire season planning is important in arid areas and fire prone areas to establish places for water drafts during wildland fires.
F 17	Locate and maintain portable self-contained sanitation facilities at incident bases, camps (including spike/remote camps), helibases, staging areas, constructed helispots, and other centers for incident activities in accordance with State and local regulations.
F 18	Avoid locating incident bases, camps, helibases, staging areas, constructed helispots, and other centers for incident activities in Riparian Reserves. Locate Incident Command Post, air resource bases, staging areas, and other fire management support areas outside of riparian reserves and wetlands, and at a suitable distance from waterbodies to minimize the potential for adverse effects to water quality. Protect surface and subsurface water resources from nutrients, bacteria, and chemicals associated with solid waste and sewage disposal. Collect and properly dispose of trash and other solid waste. Use applicable practices of BMP Road-10 (Equipment Refueling and Servicing) when servicing, refueling, and cleaning vehicles and equipment. Install suitable measures to minimize and control concentrated water flow and sediment from support areas.
FS 19	To intercept water, trap sediment, place residual logs or branches on severely burned areas near trails and near stream crossings, where there is potential for sediment delivery into waterbodies, floodplains, and wetlands.
FS 20	Stabilize fireline in areas that pose a risk to water quality. Use erosion control techniques such as tilling, water barring, or debris placement on fire lines when there is potential for soil erosion and delivery to waterbodies, floodplains, and wetlands. Space the waterbars on trails, and as directed in CFMA or local operating plan guidance.

BMP Number	Best Management Practices for Fire and Fuels Management
FS 21	Block dozer lines and roads or landing intersections with an approved barricade or scattered slash to preclude public motorized vehicle use Stabilize firebreaks in a manner that minimizes exposed soil to the extent practicable.
Emergency Stabilization	
FE 22	Evaluate post-fire threats due to flooding, debris flows, and hazard trees, as well as impacts to vegetation and wildlife to prepare emergency stabilization and rehabilitation plan.
FE 23	Stabilize disturbed areas including safety zones, fireline, and base camps that have increased erosion potential or drainage patterns altered by fire suppression activities. Install suitable drainage features to promote dispersed runoff from sites. Mitigate soil compaction to improve infiltration and revegetation conditions. Use suitable species and establishment techniques to stabilize the site in compliance with local direction and requirements for vegetation ecology and prevention and control of invasive species
FE 24	In many cases there is enough perennial plants remaining on-site that, if protected from further disturbances would allow for natural site recovery. Riparian willows and graminoids recover quickly if allowed to grow over several years. Protection of willows and other riparian vegetation would be secured by temporary fencing of riparian areas, or deferment of grazing for at least two growing seasons. This treatment would allow those areas to recover from wildfires by preventing grazing of new and recovering vegetation.
FE 25	Seeding or planting native vegetation for short-term cover development and long-term recovery. Focus on sites highly susceptible to accelerated erosion, or where perennial plant species cannot reasonably be expected to provide soil and watershed protection, or areas with high densities of invasive annual species e.g., cheatgrass Bromus tectorum, or invasive annual grasses and noxious weeds may readily invade and become established. Temporarily close trails during post fire recovery where recovery is needed close to Waters of the State. When preparing seedbed ensure soil preparations are done prior to rainy season and that no erosion of soils will occur.
FE 26	Implement emergency fire stabilization or rehabilitation treatments to accomplish erosion control as quickly as possible and before the wet season if fire timing allows. Soil and water conservation practices may include, but are not restricted to: Mulching with straw, wood chips, or other suitable material. To avoid introducing noxious weeds when mulching, use certified weed-free straw mulch or rice straw. Placing straw wattles on the contour at adequate spacing between each row to capture eroded material without overflowing. Embed to the surface of the soil in slight trench to prevent under cutting. Depending on slope place more wattles especially in severe burn or moderate burn areas on steep road banks or above culverts. Placing and anchoring log erosion barriers similarly to straw wattles. Spreading available cut vegetation or slash on bare soils to intercept water, trap sediment, preventing precipitation from forming rills and carrying ash and fine sediment to streams and other water bodies.

BMP Number	Best Management Practices for Fire and Fuels Management
FE 27	Soil and water conservation practices for roads and trails include: Placing or clearing channel sediment retention or stabilization structures. Placing and maintaining trash racks for debris above road drainage structures. Preventing culvert and drainage structure plugging Replacing undersized or damaged culverts to increase peak flow capacity of stream crossing culverts to accommodate the 100-year design flood. Installing drainage structures, such as waterbars or drainage dips, on fire lines, fire roads, and other cleared areas according to guidelines in Table 7-b (Waterbar spacing by gradient and erosion class). Reducing road system hydrologic conductivity though proper grading, culvert spacing, and installing drivable dips. Repairing damaged road drainage facilities, such as flattened or ripped culvert ends, or burned-out plastic pipes, or cleaning ditch lines of materials that impede natural flow. Correcting stream diversions.

Recreation management

Objective: To avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources that may result from recreation activities. To avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources that may result from building new facilities or large staging areas.

Explanation: Construction of new facilities, and locations where large-scale disturbances have a probability of affecting water quality, require an Erosion Control Plan. The selection of erosion and sedimentation control measures shall be based on assessments of site conditions and how storm events may contribute to erosion. Developed recreation sites provide amenities for user comfort and can be in motorized or nonmotorized settings. Oftentimes these areas concentrate high volumes of use into relatively small areas and may be located on or near waterbodies, thereby increasing the potential for water quality degradation. Potential pollutants generated by use at developed recreation sites include, but are not limited to, human and animal waste; solid wastes (trash); petroleum products; and other hazardous substances. In addition, continuous or recurring use at one site can cause excessive soil compaction; damage to vegetation, wetlands, and riparian reserves; and erosion and sediment transport from the site.

Dispersed recreation use takes many forms, both motorized and nonmotorized, across a range of settings. Many dispersed uses and user-created undeveloped sites are located adjacent to or provide easy access to lakes and rivers and lack the design and amenities offered at developed sites to mitigate effects of use. As a result, the impacts of dispersed recreation use on soils, water quality, and riparian resources can be greater than impacts at developed sites. Nonpoint source pollution from

dispersed recreation use includes human and animal wastes, petroleum products, other hazardous substances, streambank disturbance, stream channel alteration, and sediment eroded from the site.

Almost all BLM trails serve nonmotorized users, including hikers, bicyclists, and equestrians, alone or in some combination with motorized uses. Trail construction, maintenance, and use by motorized vehicles and human or stock traffic can adversely affect water quality by increased sediment delivery and contamination from vehicle fluids and human and animal wastes to nearby waterbodies. Compaction of the trail surface limits water infiltration, which can lead to concentrated runoff on the trail surfaces. Concentrated runoff on trails lacking adequate drainage causes erosion of the trail surface and can transport sediment and other pollutants directly into waterbodies if not filtered or caught in sediment basins. Heavy tread, foot, or hoof traffic can loosen some trail surface materials, making them more susceptible to erosion.

Motor vehicles are an enjoyable, legitimate, and appropriate way for people to use BLM lands—in the right places and with proper management. Unrestricted cross-country travel by motor vehicles increases soil erosion and adversely affects water quality. The first vehicle driving across a piece of ground may harm the land, especially in sensitive areas. After many more vehicles have crossed the same path, however, the result may be a user-created route with lasting impacts to soil, water quality, and riparian resources. The proliferation of user-created routes and trails is a major challenge on many public lands in California. User-created routes, in general, are not located, designed, or maintained to avoid, minimize, or mitigate adverse effects to soil, water quality, or riparian resources. Motorized use is designated by allowed vehicle class and, if appropriate, by time of year, with the objective of minimizing damage to soil and watershed resources.

The risk from recreation activities can be managed by using the appropriate techniques from the following list (also see Table 1, Table 2, Table 4, Table 7a and Table 7b). The intent of these BMPs must be achieved, however implementation may vary with local site conditions. Maintaining erosion and sediment control measures to function effectively to prevent discharges of pollutants to surface waters throughout the project area during trail construction and reconstruction, and maintenance will help maintain clean water.

Table 10. Best management practices for recreation management

BMP Number	Best Management Practices for Recreation Management
REC 01	Motorized use of unpaved roads, staging areas, watercourse crossings will not be conducted on rain or water saturated soils conditions because of the likelihood of producing significant sediment discharge.
REC 02	Implement erosion control measures at high use recreation sites to stabilize exposed soils where water flows or sediment, may reach waterbodies.
REC 03	Restrict development of recreation facilities that are not water-dependent (e.g., boat ramps and docks) in the Riparian Reserve.
REC 04	Use self-contained sanitary facilities at all developed recreational facilities unless a sewage system and drain field is approved through the NEPA process.

BMP Number	Best Management Practices for Recreation Management
REC 05	When conducting recreation site maintenance, do not cut portions of logs or coarse woody debris that fall across the active stream channel unless such wood would cause potential flooding hazards with downstream road crossings. Keep adequate lengths of material on the banks to anchor it in place. If not possible to make the log stable, it may be removed.
REC 06	Construct boat ramps and approaches with hardened surfaces. Minimize riprap to a 4- foot width to protect concrete ramps. For constructed boat ramps on rivers and perennial streams write plan to avoid sedimentation in the river from construction and use. Docks must not be wider than 6', and not include any treated wood.
REC 07	Locate new OHV trails on stable locations (e.g., ridge tops, benches, and gentle-to- moderate side slopes). Minimize trail construction on steep slopes where runoff could channel to a waterbody. Close trails appropriately when rerouting trails. Ensure closed trails are blocked from OHV access.
REC 08	Design, construct, and maintain trail width, grades, curves, and switchbacks suitable to the terrain and designated use. Use and maintain surfacing materials suitable to the site and use, to withstand traffic and to minimize runoff and erosion.
REC 09	Suspend construction or maintenance of trails at the time of year when erosion and runoff into waterbodies would occur.
REC 10	Locate staging areas outside Riparian Reserves. Design or upgrade staging areas to prevent sediment/pollutant delivery to wetlands, floodplains, and waterbodies, (e.g., rocking or hardening and drainage through grading or shaping).
REC 11	Designate class of vehicle suitable for the trail location, width, trail surfaces, and waterbody crossings, to prevent erosion and potential sediment delivery.
REC 12	Designate season of use if the trail bed is prone to erosion, rutting, gullying, or compaction, due to high soil moisture, standing water or snowmelt.
REC 13	Design and space trail drainage structures to remove storm runoff from the trail surface before it concentrates enough to initiate rillling. Design trails to dissipate intercepted water by rolling dips. Where trails intersect road ditches, provide erosion resistant crossings. Divert water from the trail to keep from reaching wetlands, floodplains, and waterbodies.
REC 14	Design trails to be no wider than necessary to provide the recreation experience. Incorporate design elements that discourage off-route use (for example, taking shortcuts, cutting new lines). Avoid public motorized vehicle use in ponds and wetlands and navigating up or down wetted streams and side-channels. Use suitable barriers where feasible.
REC15	Use existing road crossings of streams and floodplains on low-volume roads and partially decommissioned roads that tie with the trail system, where safety permits.

BMP Number	Best Management Practices for Recreation Management
REC 16	Design improved stream crossings (culverts and bridges) for the 100-year flood event. Stream crossings with ESA- listed fish must meet ARBO II (NMFS 2013 and USFWS 2013) fish passage design criteria. Design stream crossings for other ESA and State listed and sensitive aquatic species. See Roads and Landings section for stream crossing BMPs.
REC 17	Use existing road crossings of streams and floodplains on low-volume roads and partially decommissioned roads that tie with the trail system, where safety permits.
REC 18	Minimize low-water stream crossings for constructed or existing trails. Cross streams on stable substrate (e.g., bedrock, cobble) in areas of low streambanks. Block alternate stream-crossing routes where OHV wheel slippage (acceleration / braking) would tear down banks or deliver sediment. Avoid long, steep OHV trail segments on approaches to watercourse crossings.
REC 19	Orient stream crossings perpendicular to the channel in straight and resilient stream reaches. Where trails cannot be effectively drained by rolling dips or using reverse grades, provide additional drainage structures. Where needed to prevent connectivity to a water body, incorporate sediment basins at OHV rolling dip outlets instead of lead off ditches. Sediment basins can be used to retrieve eroded material to maintain trail surface and mitigate trail incision. Clean sediment basins regularly. Sediment basins need to be cleaned before reaching a capacity at which sediment is no longer collected and is at risk of delivering to a waterbody. Dispose of materials by using to fill gullies or repair trail tread. Where sediment basins cannot be installed, provide energy dissipaters at OHV rolling dip outlets. Extend drainage outlets beyond the toe of fill or side-cast. Place stable materials below the outlets of cut-off water breaks to dissipate energy. Space cross drains more closely on approaches to stream crossings to reduce storm water volume and potential erosional energy. Install surface armoring on trail sections that are steep and or erodible. Favor native materials.
REC 20	If OHV use is permitted in desert dry washes, protect dry wash woodland vegetation, and ensure that excessive bank erosion and is not occurring in areas where listed or sensitive species are present or downstream.
REC 21	In OHV bridge structures, avoid chemically treated materials at water level contact points where leachate or solids may enter waterbodies.
REC 22	Use a temporary flow diversion bypass to minimize downstream turbidity, when constructing in perennial stream crossings (See Roads and Landings section for Stream Crossing BMPs).
REC 23	If trail width is too wide for the designated use (such as old roads converted to trails), consider tilling one side of the trail, covering with brush, and seeding or planting with native vegetation.
REC 24	Monitor trail condition to identify surface maintenance and drainage needs to prevent or minimize sediment delivery to waterbodies. Repair rills and gullies to keep sediment from reaching wetlands, floodplains, and waterbodies.

BMP Number	Best Management Practices for Recreation Management
REC 25	Hydrologically disconnect trails from waterbodies to the extent practicable. Construct and repair water bars, drain dips, and leadoff ditches. These features may need rock reinforcement to promote longevity. Self-maintaining drain dips or leadoff features are the preferred design.
REC 26	Harden trail approaches to stream crossings using materials such as geotextile fabric and rock aggregate. Harden fords with gravel or cobble of sufficient size and depth to prevent movement by traffic. Construct watercourse crossings to sustain bankfull dimensions of width, depth, and slope, and to maintain streambed and bank resiliency. Cross wet areas with naturally high-water tables with permeable fills, perched culverts, and/or culvert arrays to maintain hydrologic function. If possible, reroute trail away from seeps or wetlands. Bridge wetlands if trail reroute not possible and damage to wetland is occurring due to trails.
REC 27	Rehabilitate unauthorized and decommissioned trails, where needed, to protect sensitive areas and water quality.
REC 28	When constructing or maintaining trails within Riparian Reserve, do not cut any portion of logs or coarse woody debris that extend into the active stream channel unless they pose a flooding hazard. Use alternative passage options, such as earthen ramps, small notch steps, or slight trail realignments, to facilitate maintenance of intact logs. Cut and stabilize if necessary, for safe passage and safety.
REC 29	Position fill or waste material in a location that would avoid direct or indirect sediment discharge to streams or wetlands.
REC 30	Plant restored stream banks with native vegetation, and mulch. Use water-tolerant species where appropriate. Restrict access to and allow nearby vegetation to grow into closed trails.
REC 31	Prioritize upgrading and preparing roads for the wet season that access parking areas such as OHV parking areas and wet season use areas.
REC 32	Staging Areas: Consider the number and type of vehicles to determine parking or staging area size, type of surface and drainage. Take advantage of existing openings, sites away from waterbodies, and areas that are apt to be more easily restored. Prevent erosion to adjacent water; aquatic, and riparian resources. Avoid sensitive areas such as riparian reserves, wetlands, meadows, bogs, fens, inner gorges, overly steep slopes, and unstable landforms. Provide signage to designate parking, staging, and refueling areas, and to minimize impacts to sensitive areas. Use permeable pavements where possible and integrate vegetative islands to trap and filter runoff. Infiltrate as much of the runoff as possible using permeable surfaces and infiltration ditches or basins in areas where groundwater contamination risk is low. Pave parking areas that experience heavy use and those that are used during wet periods. Install curbs and gutters to direct and capture surface flow from these paved surfaces.

BMP Number	Best Management Practices for Recreation Management
REC 33	For staging areas, designate specific locations for fueling and have a berm or other protection to prevent water-quality impacts Install and maintain oil and grease separators in larger parking lots with high use and where drainage discharges directly to streams. Plan for necessary clean out and disposal of material collected in these vaults. Connect drainage system to existing stormwater conveyance systems where available and desirable.
REC 34	For staging areas, rehabilitate temporary parking or staging areas immediately following use. Effectively prevent access to the area once site restoration activities have been completed.
REC 35	. Site camps for permitted group overnight camping greater than 150 feet from surface water.

Rangeland and Wild Horses and Burros Best Management Practices

Objective: The purpose of this set of Best Management Practices (BMPs) is to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources that may result from rangeland management.

Explanation: Rangeland use includes grazing by cattle, sheep, goats, horses, and saddle stock used to manage the range and recreational stock. Throughout California rangelands rely on water sources for stock watering. In eastern California arid and semi-arid non-forested ecosystems are used for rangelands, and water supplies are rarer. Grazing is a means of managing vegetation to meet needs for commercial livestock operations, fuels management, invasive species management, wildlife habitat improvement, and reduction of competing vegetation in plantations. Rangelands should have properly functioning riparian reserves, wetlands streams and floodplains. Soils, vegetation, structure, and diversity are all important to maintain in proper functioning condition to support clean water. For water bodies, the primary objective is to maintain the existing quality and beneficial uses of water, protect them where they are threatened (and livestock grazing activities are a contributing factor), and restore them where they are currently degraded (and livestock grazing activities are a contributing factor).

The best management practices are tiered to these range standards:

1. Soils exhibit characteristics of infiltration, fertility, permeability rates, and other functional biological and physical characteristics that are appropriate to soil type, climate, desired plant community, and landform.
2. Precipitation is able to enter the soil surface at appropriate rates; the soil is adequately protected against accelerated erosion; and the soil fertility is maintained at appropriate levels.
3. There is minimal evidence of accelerated erosion (based on ecological site type) in the form of rills, gullies, pedestaling of plants or rocks, flow patterns, physical soil crusts/surface sealing, or compaction layers below the soil surface.
4. Riparian vegetation and soils interact to capture and pass sediment, sustain infiltration, maintain the water table, stabilize the channel, sustain high water quality, and promote biodiversity appropriate to soils, climate, and landform.

5. Naturally occurring vegetation cover will protect banks and dissipate energy during high flows.
6. A diversity of plant species with various developmental stages and rooting depths is present
7. Root masses are sufficient to stabilize streambanks and shorelines.
8. Adequate organic matter (litter and standing dead plant material) is present to protect the site and to replenish soil nutrients through decomposition.
9. Point bars are becoming vegetated over time.
10. There is adequate streambank stability, morphology, pool frequency, stream width/depth ratio, and minimal substrate sediments and bare ground.

BLM engages in planning for management of grazing allotments, and administering rangeland permits, including managing overall livestock numbers, distribution, and season of use. The BLM range program strives to reduce pollution and take action to remedy any pollution resulting from its actions that violate applicable California water quality standards (including the requirements identified in Regional Basin Plans), or Tribal water quality standards, or other applicable water quality requirements (e.g., requirements adopted by California Water Resource Control Board or Regional Water Quality Control Board, or the Environmental Protection Agency (EPA) pursuant to Section 303(d) of the Clean Water Act or the Coastal Zone Reauthorization Act). Where action related to grazing management is required, such action will be taken as soon as practicable, but not later than the start of the next grazing year (in accordance with 43 CFR 4180.1). Rangeland Improvement BMPs provide guidance for prevention of resource damage, construction and maintenance of structural and nonstructural improvements and improvement of deteriorated rangeland soil and water resources. BLM also manages wild horses and has horse gathers and work to improve and protect springs and other water sources for these herds.

The risk from activities associated with livestock grazing and wild horse herds can be managed by using the appropriate techniques from the following list (and Table 1, Table 2, Table 4, Table 7a and Table 7b) meet the intent of the BMP. Maintaining erosion and sediment control measures to function effectively to prevent discharges of pollutants to surface waters throughout the allotment area helps maintain clean water. Most allotment management plans allow for protections of water quality and riparian areas.

Table 11. Best management practices for livestock grazing, and Wild Horses and Burro management

BMP Number	Best Management Practices for Livestock Grazing and Wildhorse management
G 01	Fence water developments near springs and seeps when feasible, unless other methods are effective. Pipe overflow away from the developed source where feasible and in cooperation with permitees.
G 02	Protect and maintain the physical, biological, and chemical integrity of perennial, intermittent streams and Waters of the State using fencing, seasonal rotations, and other methods. When water quality is threatened by bank trampling or other disturbances fence areas to keep large animals out of the riparian corridor (Riparian Reserve).

BMP Number	Best Management Practices for Livestock Grazing and Wildhorse management
G 03	Locate new permanent livestock handling or management facilities (corrals, pens, or holding pastures) outside Riparian Reserves or 200 feet from waterbodies and on level ground where drainage would not enter surface waters. Make changes to existing facilities within Riparian Reserves to meet water quality standards and regulations. Encourage cattle to obtain water away from riparian area.
G 04	Adjust forage utilization levels, improved livestock distribution, and management through fencing, vegetation treatments, water source developments, or changes in season of use or livestock numbers to recover degraded waterbodies.
G 05	Apply specific livestock grazing strategies for riparian wetland areas, including timing, intensity, or exclusion for maintenance of proper functioning condition. Use one or more of the following features: Include the waterbodies, floodplains, and wetlands within a separate pasture. Fence or herd livestock out of waterbodies, floodplains, and wetlands for as long as necessary to allow vegetation to recover. Control the timing and intensity of grazing to keep livestock off stream banks when they are most vulnerable to damage and to coincide with the physiological needs of target plant species. Add more rest to the grazing cycle to increase plant vigor, allow stream banks to re-vegetate, or encourage more desirable plant species composition. Limit grazing intensity to a level that will maintain desired species composition and vigor. Permanently exclude livestock from those waterbodies, floodplains, and wetlands areas that are at high risk and have poor recovery potential, and when there is no practical way to protect them while grazing adjacent uplands.
G 06	Locate salting areas outside Riparian Reserves, and further than 400 feet from permanent or intermittent streams and Waters of the State.
G 07	Use practices of BMPs from (Table 1, Table 2, Table 3, Table 4, Table 7a and Table 7b) when designing range improvement activities that involve Waters of the State and when developing water sources for livestock watering or temporary access or gather areas.
G 08	Design and locate parking and staging or wild horse or burro gather areas of appropriate size and configuration to accommodate expected vehicles and horses /burros and prevent damage to adjacent water; aquatic, and riparian resources. When gathering wild horses and burros avoid sensitive areas such as riparian reserves, wetlands, meadows, bogs, fens, inner gorges, overly steep slopes, and unstable landforms to the extent practicable. For staging areas for wild horse and burro gathers, designate specific locations for fueling so that water-quality impacts are minimized.
G 09	In the Sonoran and Mojave deserts, fence off wetlands to livestock and wild burros to protect rare plants and habitat. Provide off-site water while protecting riparian values. In arid and semi-arid areas, fence riparian reserves and provide off-site water for livestock and wild horses, as funding allows.

Minerals Development Best Management Practices

Objective: Managing mineral and energy resources on BLM lands is to encourage and facilitate the orderly exploration, development, and production of these resources in an environmentally sound manner integrated with the management of other BLM resources. These BMPs are to be used during all mineral's management activities on BLM lands. Additional site-specific design criteria and BMPs may need to be developed to protect water quality.

The risk from activities associated with minerals can be managed by using the appropriate techniques from the following list (and Table 1, Table 2. Table 4, Table 6, Table 7a and Table 7b).

Table 12. Best management practices for minerals

BMP Number	Best Management Practices for Minerals Development
M 01	Require suitable characterization of ore, waste rock, and tailings using accepted protocols to identify materials that have the potential to release acidity or other contaminants when exposed during mining. Stipulate suitable requirements, including water treatment as needed, to avoid or minimize the development and release of acidic or other contaminants in surface or groundwater.
M 02	Require suitable characterization of mine site hydrology commensurate with the potential for impacts to surface water and groundwater resources, to include physical and chemical characteristics of surface and groundwater systems, as needed, for the range of expected seasonal variation in precipitation and potential stormflow events likely to occur at the site for the duration of the minerals activities.
M 03	Evaluate the consumptive use of water in the mining operation and its effect on water (including groundwater) dependent ecosystems.
M 04	Evaluate the potential for direct and indirect impacts to morphology, stability, and function of waterbodies, riparian reserves, and wetland habitats.
M 05	Identify suitable interim and post-project surface water and groundwater monitoring where needed to confirm predictions of impacts, detect adverse changes at the earliest practicable time, and develop appropriate changes in operations or recommend closure where needed.
M 06	Locate stockpile sites on stable ground where the material would not move into waterbodies, floodplains, and wetlands.
M 07	Locate, design, and construct salable mineral sites to control runoff and prevent or minimize sediment delivery to streams. Prevent overburden, solid wastes, drainage water, or petroleum products from entering wetlands, Riparian Reserves, flood plains, and Waters of the State.
M 08	Locate, design, and maintain settling ponds to contain sediment discharges. Monitor to ensure that contamination of ground water or surface waters does not occur.

BMP Number	Best Management Practices for Minerals Development
M 09	When a quarry or rock pit is depleted or vacated, stabilize cut banks, headwalls, and other surfaces to prevent surface erosion and landslides. Close roads, excavations, and crusher pads in accordance with Roads and Landings section. Remove all potential pollutants to prevent their entry into wetlands, Riparian Reserves, floodplains, and Waters of the State.
M 10	Use erosion-reduction practices, such as seeding, mulching, silt fences, and woody debris placement, to limit erosion and transport of sediment to streams from quarries. Provide drainage from stockpiles and mineral sites, dispersed over stable vegetated areas rather than directly into stream channels. Grade all material sites, where practicable to conform with the surrounding topography prior to closure. Utilized topsoil as a medium to for successful revegetation. Reseed and plant shrubs, grasses, forb, and trees, where needed.

Definitions

Amendment. ES and BAR Handbook, the mineral's Gold Book and other that folks are aware of ? updated.

Apron. A reinforcement mechanism that protects soil from erosional and gravitational displacement.

Armoring. Protective coverings or structures used to dissipate the erosive energy of water. Aprons and riprap are types of armoring.

Aquatic Management Zone (AMZ). An administratively designated zone adjacent to ephemeral, intermittent, and perennial channels; and around standing bodies of water, wetlands, springs, seeps and other wet or marshland areas. A protective buffer along a stream or other water body is the most commonly prescribed and important water quality protection practice. Buffer widths vary depending on stream size, topography, and underlying geological conditions (Appendix A). AMZs are designed and delineated for the application of special management controls aimed at the maintenance and/or improvement of water quality and habitat for many species including those that use burrows. AMZ delineation can have synergistic benefits with other resources such as maintenance and improvement of riparian area-dependent resources, visual and aesthetic quality, wildlife habitat, and recreation opportunities.

Beneficial Use. A use of the Waters of the State to be protected against quality degradation, including but not necessarily limited to domestic, municipal, agricultural, industrial supply, power generation, recreation, esthetic enjoyment, navigation, conservation and enhancement of fish, wildlife, and aquatic resources.

Best Management Practice (BMP). A practice, or a combination of practices, that is determined by the State (or designated area-wide planning agency) after problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing, or reducing the amount of pollution generated by nonpoint sources to a level compatible with water-quality goals.

BMP Evaluation Program (BMPEP). The field evaluation process developed in cooperation with State Water Board to evaluate the implementation and effectiveness of BMPs.

Cross Drain. A ditch relief culvert or other structure designed to capture and divert surface runoff and divert it across road before the runoff concentrates to erosive volumes and velocities.

Crowning. Forming a convex road surface, which allows runoff to drain from the running surface to either side of the road prism.

Decommissioning. Activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1), (FSM 7703). User created trails are not legal and thus are not decommissioned.

Diversion potential A stream crossing has diversion potential if, when stream crossing capacity is exceeded (i.e., the culvert plugs), the stream would back up behind the fill and flow down the road rather than flow directly over the road fill and back into the natural.

Embedding. Embedding (e.g., sinking, countersinking), a culvert to 30 percent bedload is a means to prevent erosion of stream bed or banks. Thirty percent of the bedload can move through the culvert simulating a stream. Ideally a bed stability-mobility analysis would be done by a geologist or fluvial geomorphologist to prevent instability in the ability of a culvert to handle the sediment in the stream. Scour could result, creating barriers to passage for many aquatic and semi-aquatic species.

Erosion Control Plan. An Erosion Control Plan is prepared for construction of new roads or facilities, or with disturbance in locations with high sensitivity, or large-scale disturbances that have a probability to affect water resources that could be controlled by measures described in an erosion control plan. Site specific BMPs and design criteria developed for steep or sensitive sites will be included in these Erosion Control Plans. Locations of sites where potential ground-disturbing actions associated with the project (e.g., stream diversion; exposed cut slopes; stripped and stockpiled topsoil; water source development or use), will be marked on maps. Equipment access routes, storage or fuels and stockpiled materials, and service areas should be included. Methods for stabilization for stream crossings during storms should be included. The selection of erosion and sedimentation control measures shall be based on assessments of site conditions and how storm events may contribute to erosion.

Erosion Hazard Rating (EHR). A relative rating of the potential for soil erosion on a given site. Commonly used to estimate the erosion response expected from a given land management activity. Ratings are the result of a composite analysis of the following factors: soil, topography, climate, soil cover.

Floodplain. The areas adjoining inland streams and standing bodies of water and coastal waters, including debris cones and flood-prone areas of offshore islands, including at a minimum, that area subject to a 1 percent chance of flooding in any given year.

Grade Reversals. Grade reversals are short sections of trail that change from climbing to descending, then return to climbing. The reversal shortens the water flow path and enhances the rider experience.

Ground Cover. Material on the soil surface that impedes raindrop impact and overland flow of water. Material may include duff and organic matter such as needles, sticks, and limbs, in addition to exposed roots, stumps, surface gravels, and living vegetation.

Hazardous Materials. Hazardous and toxic materials that are brought to a site because of project implementation include special paints, sealants, fuels, chemicals, or solvents. Other hazardous materials like fuel, and chemicals can enter water due to the nature of the activities such stream crossings.

Hydrologic Disconnection. means the removal of direct routes of drainage or overland flow of road runoff to a watercourse or lake.

Inner Gorge. A geomorphic feature that consists of the area of channel side slope situated immediately adjacent to the stream channel, and below the first break in the slope above the stream channel. Debris sliding and avalanching are the dominant mass wasting processes associated with the inner gorge.

Leadoff Ditches. Ditches are channels alongside a trail used to convey water to another drainage structure. They range in depth from 6 to 18 inches. A ditch that drains to the adjacent land is known as a leadoff ditch.

Nonpoint Source. Diffuse sources of water pollution that originate at indefinable sources, such as from silvicultural and recreational activities. Practically, nonpoint sources do not discharge at a specific, single location such a conveyance pipe.

Outsloping. Shaping a road prism without an inside drainage ditch to direct runoff to the outside shoulder, as opposed to insloping which directs runoff to an inside ditch. Emphasis is on maintaining flow at an angle across the road to avoid buildup of an erosive flow of water.

Point Source. Water pollution originating from a discrete identifiable source, or conveyance.

Riparian Reserves. A protective vegetative zone along a stream or other water body is an important water quality and habitat protection practice. Riparian Reserves widths vary depending on stream size, topography, and underlying geological conditions (Appendix A). These reserves provide corridors for larger mammal and birds, and habitat for amphibians, reptiles, birds, and small mammals. They provide a filter for sediment from upland activities; and are wider a than an AMZ. Treatment as long as ground disturbance.is limited is allowed in the area outside the AMZ.

Rolling the Grade. Refers to rolling dips or rolling grade dips or grade dips. A rolling dip has two design goals. The first is to get the water off an existing trail and the second is to build it long enough that the rider does not know it is there. (https://www.fs.fed.us/t-d/atv_trails_site/build/keeping-water-off-the-trail/rolling-dips.html.)

Source Water Watershed. Source water protection practices are actions taken to prevent contamination of surface and groundwater sources of drinking water. The source water protection area generally includes the watershed area upstream of a water supplier's intake. It is delineated by the boundaries of drainage basins that supply streams, lakes, and reservoirs that serve as source water. This is referred to as the source water watershed.

Standard Specifications. Standards and design requirements, from the current version of California Stormwater Quality Association BMP standard specifications. These specifications and illustrations can be used to develop approved Best Management Practices checklist, operating or Erosion Control Plan which help minimize erosion during BLM construction activities.

Storm Proofing. Roads are storm-proofed when runoff and sediment delivery to streams is strictly minimized. This is accomplished by dispersing road surface drainage, protecting stream crossings from failure or diversion, and preventing failure of unstable cutbanks or fillslopes from delivering sediment to a stream.

Temporary roads. A temporary road is a road that is designed and built along a temporary alignment, solely for use during construction. Temporary roads focus the ground disturbance of equipment and vehicles along a certain path, so that erosion and sediment movement can be planned and mitigated for in accordance with all applicable permits. Structures, such as water bars, road sloping, rolling dips and level spreaders are generally limited to low traffic volumes. Temporary constructed roads cannot encroach into jurisdictional wetlands without the appropriate permits. These roads are closed, and the land rehabilitated when the project is completed.

Unstable Areas. Lands with slope gradients at, or steeper than the mechanical strength of the underlying soil and rock materials. Land areas exhibiting one, or more of the following characteristics:

1. Active landslides.
2. Inner gorges.
3. Portions of shear zones and dormant landslides having slope gradients that are typically steeper than 60 to 65 percent.
4. Unconsolidated deposits with slope gradients at, or steeper than the stable angle of repose.

Vertical mulch. Vertical mulch along roads involves placing dead branches upright in the soil to simulate the appearance of dead shrubs. Vertical mulch leads to increased plant cover, soil moisture, soil stability, and lowers compaction in desert areas.

Water drafting. A short duration, small-pump operation that withdraws water from streams or lakes to fill conventional tanks or trailers. Water is normally used for dust abatement or for wildfire management. Short term drafting is also used to temporarily de-water or divert water around construction site.

Waters of the State. Any surface water or groundwater, including all wetlands, all classification of streams, lakes, ponds, and impoundments.

Wetlands. Those areas that are inundated by surface or groundwater with a frequency sufficient to support a prevalence of vegetation, or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, springs, seeps, wet meadows, river overflows, mud flats, and natural ponds.

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Appendix A - How to define a riparian reserve or Aquatic management zone (AMZ)

Waterbody Type	Riparian Reserve Width	Aquatic Management Zone width
Perennial and intermittent fish or amphibian bearing streams	300 ft on each side of aquatic zone for preventing erosion. Actively manage outer 200 ft. to minimize soil disturbance, reduce fuels, restore native vegetation, and thin trees. Prescribed fire with ignitions should be done in a manner to preserve soils and patchy ground cover.	100 ft on each side of stream primarily hand treatment if required, no fire ignition for prescribed fire, and no disturbance of soils if fire line required. If crossing is required, minimize watercourse crossings. No pile burning.
Perennial or intermittent nonfish-or amphibian bearing streams	150 ft. on each side of stream Actively manage outer 50 ft. to minimize soil disturbance, reduce fuels, restore native vegetation, and thin trees. Prescribed fire with ignitions should be done in a manner to preserve soils and patchy ground cover.	100 ft on each side of stream primarily hand treatment if required, no fire ignition for prescribed fire, and no disturbance of soils if fire line required. If crossing is required, minimize watercourse crossings. No pile burning,
All watercourses (minimum distances)	100 ft. on each side of watercourse. Actively manage outer 50 ft. to minimize soil disturbance, reduce fuels, restore native vegetation, and thin trees. Prescribed fire with ignitions should be done in a manner to preserve soils and patchy ground cover. If slope is over 30 percent no heavy machinery or wheeled vehicles should be permitted.	50 ft on each side primarily hand treatment if required, no fire ignition for prescribed fire, and no disturbance of soils if fire line required. If crossing is required, minimize watercourse crossings where possible. No pile burning. Prescribed fire ignition only for restoration purposes and no soil disturbance for fire line.
Wetlands seeps, springs, or other wet areas	100 feet on each side or all around. Avoid active management while wet. Minimize soil disturbance, reduce fuels, restore native vegetation, and thin invading trees or other upland vegetation. Prescribed fire with ignitions should be done in a manner to preserve soils and patchy ground cover.	75 ft on each side or all-around take care to minimize soil compaction and erosion, and primarily hand treatment. Prescribed fire ignition only for restoration purposes and no soil disturbance for fire line.
Lakes and natural ponds	300 feet around the lake or pond Actively manage outer	100 ft. around the lake or pond primarily hand treatment if

	200 ft. with care. Minimize soil disturbance, reduce fuels, restore native vegetation, and thin invading trees or other upland vegetation. Prescribed fire with ignitions should be done in a manner to preserve soils and patchy ground cover.	required, prescribed fire ignition only for restoration purposes and no soil disturbance for fire line.
Constructed ponds and reservoirs	150 feet slope distance from the edge of the wetland. Actively manage outer 50 ft. with care to minimize soil disturbance. Prescribed fire with ignitions should be done in a manner to preserve soils	50 ft. primarily hand treatment if required for shrubs, mowing for grass, prescribed fire ignition preserves soil and manages vegetation for reservoir. No soil disturbance for fire line.

Source: Aquatic Conservation Strategy, Attachment A to the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within Range of the Northern Spotted Owl, pp. C-30-31. PACFISH (INFISH contains similar provisions) .

Appendix C

Memorandum Describing Resource Topics and Significance Criteria Eliminated from Detailed Analysis in the Environmental Impact Report

Memorandum

Project: **Waste Discharge Requirements for Nonpoint Source Discharges Related to Certain Activities Conducted by the Bureau of Land Management and United States Forest Service on Federal Lands**

Subject: **Resource Topics and Significance Criteria Eliminated from Detailed Analysis in the Environmental Impact Report**

Date: May 6, 2022

To: Angela Wilson, Central Valley Regional Water Quality Control Board

From: Horizon Water and Environment

1. Introduction

This memorandum (memo) documents the reasoning for dismissing or eliminating several California Environmental Quality Act (CEQA) resource topics and significance criteria from detailed analysis in the environmental impact report (EIR) for the Waste Discharge Requirements for Nonpoint Source (NPS) Discharges Related to Certain Activities Conducted by the Bureau of Land Management (BLM) and United States Forest Service (USFS) on Federal Lands (Federal NPS Permit or Proposed Project), being proposed by the Central Valley Regional Water Quality Control Board (Central Valley Water Board). The Proposed Project would involve implementation of best management practices (BMPs), including site-specific prescriptions for water quality protection[1], by the BLM and USFS, as well as monitoring activities, as a requirement of the proposed Federal NPS Permit. The proposed Federal NPS Permit would apply to the following on-going activities conducted by the federal agencies: vegetation management, transportation management, recreation facilities management, post-wildfire management and recovery, restoration activities.

A brief summary and description of each of the resource topics and significance criteria that are eliminated from detailed analysis in the EIR is provided below. The resource topics and significance criteria are discussed with respect to the guidance in the CEQA Guidelines, Appendix G.

[1] BMPs, site specific prescriptions, on-the-ground prescriptions, and related terms are collectively referred to as "management measures" throughout this EIR. Each of the terms may have slightly different meanings and may be used in different contexts, but all generally describe measures or approaches to avoid or reduce NPS discharges and adverse water quality effects.

2. Resource Topics and Significance Criteria Eliminated From Detailed Analysis

2.1. Land Use and Planning

Setting

The Proposed Project would occur entirely on lands managed by the BLM and USFS. As such, these federal lands are not subject to local land use laws or plans, and there are no incorporated cities or towns within the Proposed Project area. Additionally, there are no existing communities within the federal lands. As described in Chapter 2, *Project Description,* of the EIR, the BLM and USFS lands are managed in accordance with federal laws and guidance in order to serve multiple uses of the public lands. Specifically, USFS lands are managed in accordance with the Forest and Land Resource Management Plan (LRMP) developed for each National Forest, while BLM management actions are completed under the direction of an approved Resource Management Plan (RMP).

Impacts

Although some of the reasonably foreseeable management measures and associated monitoring activities may take place near communities, towns, or cities, should they occur on or near the border of USFS and BLM lands, they would not physically divide an established community. The reasonably foreseeable management measures would be limited to measures and treatments to control erosion, sediment, and other NPS pollutants and the Proposed Project would not result in the construction of any new buildings, offices, or substantial infrastructure to support new developments. Therefore, there would be no potential for impact with respect to the potential to physically divide an established community (significance criterion “a”).

The on-going activities (vegetation management, transportation management, recreation facilities management, post-wildfire management, and restoration activities) being conducted by the BLM and USFS are subject to already existing plans, regulations, and policies, including applicable LRMPs and RMPs, at the federal level. As noted above, the federal lands are not subject to local land use laws or plans. Generally, the management measures and associated monitoring activities would be implemented for the purpose of protecting water quality and would not substantially conflict with elements of the LRMPs, RMPs, or other federal guidance that has the purpose of avoiding or mitigating an environmental effect. Additionally, mitigation measures have been developed throughout this DEIR that would reduce and avoid potential impacts to environmental resources that could be affected by the Proposed Project. For these reasons, implementation of the Proposed Project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation. Therefore, there would be no potential for a significant impact with respect to significance criterion “b”.

2.2. Population and Housing

Setting

Population

The Central Valley Water Board jurisdictional area covers 40 percent of California (nearly 60,000 square miles), making it the largest of the nine regional water quality control boards (RWQCBs). The Central Valley Water Board boundary also includes all or part of 38 of California's 58 counties. **Table 1** shows the population growth (2000–2019) for each county with at least a portion of its area within the boundaries of the Central Valley Water Board. As shown in Table 1, between 2000 and 2019, the population of the counties with portions in the Central Valley Water Board jurisdictional area grew by approximately 2,694,722, which is an average increase of 16 percent.

Table 1. Population in Counties with Land in the Central Valley Water Board Boundary (2000 through 2019)

County (Portion in CVWB)	2000	2010	2019	Change 2000-2019	
				Number	Percent
Alameda (East)	1,443,705	1,510,271	1,671,329	227,624	16%
Amador	35,101	38,091	39,752	4,651	13%
Butte	203,125	220,000	219,186	16,061	8%
Calaveras	40,535	45,578	45,905	5,370	13%
Colusa	18,799	21,419	21,547	2,748	15%
Contra Costa (East)	948,865	1,049,025	1,153,526	204,661	22%
El Dorado	156,314	181,058	192,843	36,529	23%
Fresno	798,766	930,450	999,101	200,335	25%
Glenn	26,432	28,122	28,393	1,961	7%
Kern	661,632	839,631	900,202	238,570	36%
Kings	129,470	152,982	152,940	23,470	18%
Lake	58,331	64,665	64,386	6,055	10%
Lassen	33,828	34,895	30,573	-3,255	-10%
Los Angeles (Small portion)	9,519,315	9,818,605	10,039,107	519,792	5%
Madera	123,179	150,865	157,327	34,148	28%
Mariposa	17,112	18,251	17,203	91	1%
Merced	211,178	255,793	277,680	66,502	31%

County (Portion in CVWB)	2000	2010	2019	Change 2000-2019	
				Number	Percent
Modoc	9,431	9,686	8,841	-590	-6%
Napa (Northeast)	124,344	136,484	137,744	13,400	11%
Nevada	92,055	98,764	99,755	7,700	8%
Placer	248,270	348,432	398,329	150,059	60%
Plumas	20,817	20,007	18,807	-2,010	-10%
Sacramento	1,223,578	1,418,788	1,552,058	328,480	27%
San Benito (Small portion)	53,214	55,269	62,808	9,594	18%
San Joaquin	563,660	685,306	762,148	198,488	35%
San Luis Obispo (Small portion)	246,746	269,637	283,111	36,365	15%
Shasta	163,242	177,223	180,080	16,838	10%
Sierra	3,559	3,240	3,005	-554	-16%
Siskiyou	44,305	44,900	43,539	-766	-2%
Solano (West)	394,495	413,344	447,643	53,148	13%
Stanislaus	446,850	514,453	550,660	103,810	23%
Sutter	78,947	94,737	96,971	18,024	23%
Tehama	56,060	63,463	65,084	9,024	16%
Tulare	368,011	442,179	466,195	98,184	27%
Tuolumne	54,522	55,365	54,478	-44	0%
Yolo	168,660	200,849	220,500	51,840	31%
Yuba	60,249	72,155	78,668	18,419	31%
			Total Growth	2,694,722	
			Average Percentage	16%	

Source: United States Census Bureau 2011, 2020

While Table 1 shows the population statistics for counties with land in the Central Valley Water Board boundary, the Proposed Project would take place on the federal lands managed by the BLM and USFS, which is generally sparsely inhabited (although there are many private inholdings/residents and communities that are directly adjacent to or enclosed/surrounded by federally managed lands). By land area, 29 percent of the Central Valley Region is federally managed by the BLM and USFS.

Housing

It is not intended for the general public to permanently live on lands managed by the BLM or USFS. Federal lands are undeveloped and typically the general public will only temporarily reside on these lands for recreational purposes (BLM 2021a). However, there is a permit process to allow minimal residential occupancy on BLM California land (BLM 2021b).

Workforce

USFS and BLM lands are federally owned, maintained, and operated. The USFS as a whole has a workforce of 30,000 employees (USFS No Date). Generally, each ranger district (there are multiple ranger districts in each National Forest) has a staff of 10-100 people. Within the Central Valley Water Board boundary, there are 15 National Forests with at least a portion of land within the boundary. Many on-the-ground activities occur on the ranger districts, including trail construction and maintenance, operation of campgrounds, and management of vegetation and wildlife habitat (USFS No Date). In the summer, the workforce of USFS increases due to the onboarding of seasonal staff to meet the additional need for services such as wildfire response, and recreation. The USFS Region 5- Pacific Southwest Region office is located in Vallejo, CA.

BLM has a workforce of over 10,000 employees nationwide (BLM 2021c). BLM California headquarters are located in Sacramento, while there are district offices in Palm Springs, Redding, and El Dorado Hills, each with multiple field offices.

2.3. Impacts

Implementation of the reasonably foreseeable management measures, which may be required by the proposed Federal NPS Permit, would not induce substantial unplanned population growth, nor would it displace substantial numbers of existing people or housing. The Proposed Project would not require or result in the construction of any housing, office buildings, or related structures; nor would it cause the need for a significant number of new employees to manage the implementation of the management measures and required monitoring because it is expected that the current work force would be utilized. Therefore, the Proposed Project would not directly or indirectly induce substantial unplanned population growth. Furthermore, implementation of the management measures would occur on USFS and BLM managed lands, which are sparsely populated, and thus the Proposed Project would not displace any existing housing or people. Therefore, there would be no potential for significant impacts under significance criterion “a” or “b”. This resource topic is dismissed from detailed consideration in this draft EIR (DEIR).

2.4. Public Services

Setting

Police Protection

Considering that the Proposed Project area is federally managed, the federal government has jurisdiction over law enforcement on these lands. Per the Federal Land Policy and Management

Act of 1976 (FLPMA), the BLM has been given resource protection and law enforcement responsibilities to ensure public safety and protection of various types of resources, such as timber, energy and minerals, recreational sites, archaeological/paleontological sites, wildlife habitat, and national monuments[2]. The BLM has approximately 200 law enforcement rangers (uniformed officers) and approximately 70 special agents (criminal investigators) on staff who promote safety, security, and environmental protection of public lands, public land users, and employees. BLM law enforcement officers also work closely with State agencies and county law enforcement offices to protect public safety (BLM 2021d).

USFS also has their own law enforcement, currently employing approximately 650 law enforcement personnel nationwide (USFS 2021). This includes Law Enforcement Officers, who enforce Federal laws and regulations governing National Forest System lands and resources, and Criminal Investigators, who plan and conduct criminal and administrative investigations as they relate to laws governing the National Forest System (USFS 2021). Each USFS region (e.g., Region 5 – Pacific Southwest Region) has a Special Agent in Charge who oversees the law enforcement program.

Schools

There are numerous schools throughout the Central Valley Water Board's jurisdictional area; however, there are no schools on USFS and BLM lands.

Parks

The federal lands managed by USFS and BLM offer many recreational opportunities. These include hiking trails, as well as off-highway vehicle (OHV) and equestrian trails, and designated areas for target shooting, hunting, etc. Both USFS and BLM also maintain campgrounds, boat ramps, and other types of recreational facilities. However, none of these recreational features would be considered public parks and neither BLM nor USFS manage any public parks.

Other Public Facilities

As discussed above, BLM and USFS offer a variety of recreational opportunities and facilities, such as camp and picnic sites; public bathrooms; horse, bike, and hiking trails; electric hook ups, and much more.

Impacts

Implementation of the reasonably foreseeable management measures would occur on federal lands, where public services are limited. Furthermore, as discussed above, the Proposed Project would not increase population. There are no schools on federal lands managed by the BLM and USFS within the Central Valley Water Board boundary and the reasonably foreseeable management measures and monitoring activities would not be expected to result in law enforcement calls for service. Although the BLM and USFS offer many recreational

[2] National monuments can be managed by a number of federal agencies such as the BLM, USFS, the United States Fish and Wildlife Service, National Park Service, etc.

opportunities, they do not manage any public parks and there are no public parks on the BLM/USFS lands. Some BLM and USFS facilities (e.g., camp and picnic sites, public bathrooms, trails, boat ramp parking lots, etc.) could be temporarily affected during implementation of some management measures, but this would not result in substantial impacts or the need for new or physically altered facilities.

Overall, the Proposed Project would not increase the demand for police protection, schools, parks, or other public facilities, and would not otherwise substantially affect service ratios, response times or other performance objectives for these public services. As such, there would be no need for new or physically altered governmental facilities related to police, schools, parks, or other public facilities, the construction of which could cause significant environmental impacts. Therefore, the significance criteria related to these public services ("a, ii"; "a, iii"; "a, iv"; and "a, v") are dismissed from detailed consideration in the DEIR.

Due to the nature of some reasonably foreseeable management measures (i.e., involving ground-disturbance and use of mechanized/combustion-engine equipment) which could be implemented under the Proposed Project, there is some potential for Proposed Project activities to increase fire risk. In particular, since many management activities would take place within forests and other highly-combustible landscapes, this would increase potential for igniting a large wildfire, which could draw limited federal and state resources, thereby impacting the ability of federal and state agencies to respond to wildfires elsewhere. Additionally, the Federal NPS Permit would require implementation of management measures and monitoring actions in conjunction with wildfire management activities on federal lands. As such, the significance criterion related to fire protection service ("a, i") is carried forward for detailed analysis in the EIR.

2.5. Recreation

Setting

As discussed under Section 2.4, "Public Services," the USFS and BLM offer numerous recreation opportunities and facilities on their lands. On-going management activities by the USFS and BLM related to recreation include the management of developed campgrounds, dispersed campsites, OHV use, and other recreation facilities such as trails, trail heads, boat ramps, docks, bathrooms, showers, potable water supplies and washing areas. Specific facilities within the Central Valley Water Board boundary are too numerous to list, but would include facilities within the 15 National Forests and 7 BLM Field Office areas with at least a portion of their area in the Central Valley Water Board boundary.

Impacts

Implementation of reasonably foreseeable management measures pursuant to the proposed Federal NPS Permit, such as developing campsites away from surface waters or riparian areas and having designated fueling locations for OHV use, would not substantially increase the use of existing recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. While implementation of specific management measures at a certain

recreational facility/area could temporarily affect that facility or area (e.g., temporary closure of a trail or facility), this would not reasonably result in such a substantial increase in the use of a nearby area or facility to result in substantial physical effects. Implementation of management measures would benefit recreation facilities management activities and recreational facilities by providing benefits such as better access, sanitation, and erosion and sediment control.

As described above in Section 2.2, "Population and Housing," the Proposed Project would not induce population growth; therefore, it would not result in a substantial increase in demand for, or use of, recreational facilities on federal lands in the Central Valley Water Board boundary. Likewise, the Proposed Project would not require or result in the construction of expansion of recreational facilities which might have an adverse physical effect on the environment. The Proposed Project would be limited to implementation of management measures for water quality protection, and associated monitoring and reporting. Therefore, there would be no potential for significant impacts under either significance criterion ("a" and "b") related to recreation. Therefore, this resource topic is eliminated from detailed analysis in the EIR.

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See United States Forest Service.

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Appendix D

Biological Resources Background Information

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CALIFORNIA DEPARTMENT OF FISH and WILDLIFE **RareFind**

Query Summary:
County IS (Alameda OR Amador OR Butte OR Calaveras OR Colusa OR Contra Costa OR El Dorado OR Fresno OR Glenn OR Kern OR Kings OR Lassen OR Madera OR Mariposa OR Merced OR Modoc OR Nevada OR Placer OR Plumas OR Sacramento OR San Benito OR San Joaquin OR San Luis Obispo OR Shasta OR Sierra OR Siskiyou OR Solano OR Stanislaus OR Tehama OR Tulare OR Tuolumne OR Yolo OR Yuba)
AND Owner/Manager CONTAINS (U.S. Bureau of Land Management OR U.S. Forest Service)

Print Close

CNDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Abies amabilis	Pacific silver fir	Gymnosperms	PGPIN01010	7	7	None	None	G5?	S2	2B.3	IUCN_LC-Least Concern	Oldgrowth, Upper montane coniferous forest
Abies lasiocarpa var. lasiocarpa	subalpine fir	Gymnosperms	PGPIN01072	17	16	None	None	G5T5	S3	2B.3	null	Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest
Abronia alpina	Ramshaw Meadows abronia	Dicots	PDNYC01020	1	1	None	None	G2	S2	1B.1	USFS_S-Sensitive	Meadow & seep
Accipiter cooperii	Cooper's hawk	Birds	ABNKC12040	118	2	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Cismontane woodland, Riparian forest, Riparian woodland, Upper montane coniferous forest
Accipiter gentilis	northern goshawk	Birds	ABNKC12060	433	252	None	None	G5	S3	null	BLM_S-Sensitive, CDF_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	North coast coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest
Accipiter striatus	sharp-shinned hawk	Birds	ABNKC12020	22	2	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Cismontane woodland, Lower montane coniferous forest, Riparian forest, Riparian woodland
Aegialia concinna	Ciervo aegilian scarab beetle	Insects	IICOL64010	3	2	None	None	G1	S1	null	BLM_S-Sensitive, IUCN_VU-Vulnerable	Interior dunes
Agelaius tricolor	tricolored blackbird	Birds	ABPBXB0020	955	7	None	Threatened	G1G2	S1S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Marsh & swamp, Swamp, Wetland
Ageratina shastensis	Shasta ageratina	Dicots	PDASTBX0R0	27	20	None	None	G3	S3	1B.2	null	Chaparral, Limestone, Lower montane coniferous forest
Agrostis hendersonii	Henderson's bent grass	Monocots	PMPOA040K0	26	6	None	None	G2Q	S2	3.2	null	Valley & foothill grassland, Vernal pool, Wetland
Agrostis hooveri	Hoover's bent grass	Monocots	PMPOA040M0	31	2	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Closed-cone coniferous forest, Valley & foothill grassland
Agrostis humilis	mountain bent grass	Monocots	PMPOA040P0	20	2	None	None	G4Q	S2	2B.3	null	Alpine boulder & rock field, Limestone, Meadow & seep, Subalpine coniferous forest, Wetland
Alisma gramineum	grass alisma	Monocots	PMALI01010	14	3	None	None	G5	S3	2B.2	null	Marsh & swamp, Wetland
Alkali Seep	Alkali Seep	Herbaceous	CTT45320CA	10	1	None	None	G3	S2.1	null	null	Meadow & seep, Wetland
Allium abramsii	Abrams' onion	Monocots	PMLIL02360	22	13	None	None	G3	S3	1B.2	null	Lower montane

												coniferous forest, Upper montane coniferous forest
Allium atrorubens var. atrorubens	Great Basin onion	Monocots	PMLIL02061	19	7	None	None	G4T4	S2	2B.3	null	Great Basin scrub, Pinon & juniper woodlands
Allium geyeri var. tenerum	bulbil onion	Monocots	PMLIL02102	1	1	None	None	G4G5T4T5	S1	2B.1	null	Meadow & seep
Allium howellii var. sanbenitense	San Benito onion	Monocots	PMLIL02163	18	10	None	None	G3G4T3	S3	1B.3	BLM_S-Sensitive	Chaparral, Valley & foothill grassland
Allium jepsonii	Jepson's onion	Monocots	PMLIL022V0	26	12	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Allium shevockii	Spanish Needle onion	Monocots	PMLIL022M0	12	6	None	None	G2	S2	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Pinon & juniper woodlands, Upper montane coniferous forest
Allium tribracteatum	three-bracted onion	Monocots	PMLIL022D0	35	21	None	None	G2	S2	1B.2	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest
Allium tuolumnense	Rawhide Hill onion	Monocots	PMLIL022W0	25	18	None	None	G2	S2	1B.2	BLM_S-Sensitive	Cismontane woodland, Ultramafic
Allium yosemitense	Yosemite onion	Monocots	PMLIL022L0	14	11	None	Rare	G3	S3	1B.3	USFS_S-Sensitive	Broadleaved upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest
Ambystoma californiense pop. 1	California tiger salamander - central California DPS	Amphibians	AAAAA01181	1261	2	Threatened	Threatened	G2G3	S2S3	null	CDFW_WL-Watch List, IUCN_VU-Vulnerable	Cismontane woodland, Meadow & seep, Riparian woodland, Valley & foothill grassland, Vernal pool, Wetland
Ambystoma macrodactylum sigillatum	southern long-toed salamander	Amphibians	AAAAA01085	611	406	None	None	G5T4	S3	null	CDFW_SSC-Species of Special Concern	null
Ammonitella yatesii	tight coin (=Yates' snail)	Mollusks	IMGASB0010	6	2	None	None	G1	S1	null	IUCN_VU-Vulnerable	Limestone
Ammospermophilus nelsoni	Nelson's antelope squirrel	Mammals	AMAFB04040	286	32	None	Threatened	G2G3	S2S3	null	BLM_S-Sensitive, IUCN_EN-Endangered	Chenopod scrub
Amsinckia lunaris	bent-flowered fiddleneck	Dicots	PDBOR01070	93	11	None	None	G3	S3	1B.2	BLM_S-Sensitive, SB_UCBG-UC Botanical Garden at Berkeley, SB_UCSC-UC Santa Cruz	Cismontane woodland, Coastal bluff scrub, Valley & foothill grassland
Anaxyrus canorus	Yosemite toad	Amphibians	AAABB01040	223	38	Threatened	None	G2G3	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, USFS_S-Sensitive	Meadow & seep, Subalpine coniferous forest, Wetland
Ancotrema voyanum	hooded lancetooth	Mollusks	IMGAS36130	173	58	None	None	G1G2	S1S2	null	null	Oldgrowth, Riparian forest, Talus slope
Androsace filiformis	slender-stemmed androsace	Dicots	PDPRI02040	3	3	None	None	G4	S1	2B.3	null	Meadow & seep, Upper montane coniferous forest, Wetland
Anemone multifida var. multifida	cut-leaf anemone	Dicots	PDRAN040E6	10	8	None	None	G5T5	S1S2	2B.2	null	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest
Anisocarpus scabridus	scabrid alpine tarplant	Dicots	PDASTDU020	19	6	None	None	G3	S3	1B.3	USFS_S-Sensitive	Upper montane coniferous forest
Anniella campi	Southern Sierra legless lizard	Reptiles	ARACC01040	9	4	None	None	G1G2	S1S2	null	CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	null
Anniella grinnelli	Bakersfield legless lizard	Reptiles	ARACC01050	20	1	None	None	G2G3	S2S3	null	CDFW_SSC-Species of Special Concern	null

Anniella pulchra	Northern California legless lizard	Reptiles	ARACC01020	375	28	None	None	G3	S3	null	CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Chaparral, Coastal dunes, Coastal scrub
Anniella spp.	California legless lizard	Reptiles	ARACC01070	119	7	None	None	G3G4	S3S4	null	CDFW_SSC-Species of Special Concern	null
Anomobryum julaceum	slender silver moss	Bryophytes	NBMUS80010	13	2	None	None	G5?	S2	4.2	null	Broadleaved upland forest, Lower montane coniferous forest, North coast coniferous forest
Antennaria flagellaris	stoloniferous pussy-toes	Dicots	PDAST0H0W0	42	41	None	None	G4	S3	4.2	null	Great Basin scrub
Anthoxanthum nitens ssp. nitens	vanilla-grass	Monocots	PMPOA35041	6	3	None	None	G5	S2	2B.3	null	Meadow & seep, Wetland
Antigone canadensis tabida	greater sandhill crane	Birds	ABNMK01014	605	103	None	Threatened	G5T5	S2	null	BLM_S-Sensitive, CDFW_FP-Fully Protected, USFS_S-Sensitive	Marsh & swamp, Meadow & seep, Wetland
Antirrhinum ovatum	oval-leaved snapdragon	Dicots	PDSCR2K010	16	3	None	None	G3	S3	4.2	null	Chaparral, Cismontane woodland, Pinon & juniper woodlands, Valley & foothill grassland
Antirrhinum subcordatum	dimorphic snapdragon	Dicots	PDSCR2S070	49	23	None	None	G3	S3	4.3	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Ultramafic
Antrozous pallidus	pallid bat	Mammals	AMACC10010	420	42	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority	Chaparral, Coastal scrub, Desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Riparian woodland, Sonoran desert scrub, Upper montane coniferous forest, Valley & foothill grassland
Aphrastochthonius grubbsi	Grubbs' Cave pseudoscorpion	Arachnids	ILARA37010	1	1	None	None	G1G2	S1S2	null	null	Limestone
Aplodontia rufa californica	Sierra Nevada mountain beaver	Mammals	AMAFA01013	131	34	None	None	G5T3T4	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Riparian forest, Riparian scrub, Riparian woodland
Aplodontia rufa humboldtiana	Humboldt mountain beaver	Mammals	AMAFA01017	28	1	None	None	G5TNR	SNR	null	null	Coastal scrub, Redwood, Riparian forest
Aquila chrysaetos	golden eagle	Birds	ABNKC22010	324	47	None	None	G5	S3	null	BLM_S-Sensitive, CDF_S-Sensitive, CDFW_FP-Fully Protected, CDFW_WL-Watch List, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Broadleaved upland forest, Cismontane woodland, Coastal prairie, Great Basin grassland, Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands, Upper montane coniferous forest, Valley & foothill grassland
Arabis aculeolata	Waldo rockcress	Dicots	PDBRA06010	8	4	None	None	G4	S2	2B.2	SB_BerrySB-Berry Seed Bank	Broadleaved upland forest, Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
Arabis mcdonaldiana	McDonald's rockcress	Dicots	PDBRA06150	27	2	Endangered	Endangered	G3	S3	1B.1	SB_BerrySB-Berry Seed Bank, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
Arabis rigidissima var. demota	Galena Creek rockcress	Dicots	PDBRA061R1	7	6	None	None	G3T3Q	S1	1B.2	USFS_S-Sensitive	Broadleaved upland forest, Upper montane coniferous forest
Arabis rigidissima	Trinity Mountains	Dicots	PDBRA061R2	6	3	None	None	G3T3	S3	1B.3	null	Upper montane

var. rigidissima	rockcress											coniferous forest
Arctostaphylos klamathensis	Klamath manzanita	Dicots	PDERI041R0	48	10	None	None	G2G3	S2S3	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Lower montane coniferous forest, Subalpine coniferous forest, Ultramafic, Upper montane coniferous forest
Arctostaphylos luciana	Santa Lucia manzanita	Dicots	PDERI040N0	10	5	None	None	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Chaparral, Cismontane woodland
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	Dicots	PDERI04271	69	15	None	None	G5T3	S3	1B.3	null	Chaparral, Cismontane woodland, Lower montane coniferous forest
Arctostaphylos myrtifolia	Ione manzanita	Dicots	PDERI04240	11	2	Threatened	None	G1	S1	1B.2	SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Cismontane woodland, Ione formation
Arctostaphylos nissenana	Nissenan manzanita	Dicots	PDERI040V0	13	7	None	None	G1	S1	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Closed-cone coniferous forest
Arctostaphylos pechoensis	Pecho manzanita	Dicots	PDERI04140	16	1	None	None	G2	S2	1B.2	null	Chaparral, Closed-cone coniferous forest, Coastal scrub
Arctostaphylos pilosula	Santa Margarita manzanita	Dicots	PDERI042Z0	58	9	None	None	G2?	S2?	1B.2	BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Broadleaved upland forest, Chaparral, Cismontane woodland, Closed-cone coniferous forest
Ardea herodias	great blue heron	Birds	ABNGA04010	156	31	None	None	G5	S4	null	CDF_S-Sensitive, IUCN_LC-Least Concern	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland
Aristocapsa insignis	Indian Valley spineflower	Dicots	PDPGN0U010	5	1	None	None	G1	S1	1B.2	null	Cismontane woodland
Arizona elegans occidentalis	California glossy snake	Reptiles	ARADB01017	260	6	None	None	G5T2	S2	null	CDFW_SSC-Species of Special Concern	null
Arnica fulgens	hillside arnica	Dicots	PDAST0Q090	50	36	None	None	G5	S3	2B.2	null	Great Basin scrub, Lower montane coniferous forest, Meadow & seep
Artemisia tripartita ssp. tripartita	threetip sagebrush	Dicots	PDAST0S1S2	4	2	None	None	G5T4T5	S2	2B.3	null	Upper montane coniferous forest
Asarum marmoratum	marbled wild-ginger	Dicots	PDARI02070	11	1	None	None	G4?	S2	2B.3	null	Lower montane coniferous forest
Ascaphus truei	Pacific tailed frog	Amphibians	AAABA01010	491	81	None	None	G4	S3S4	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Aquatic, Klamath/North coast flowing waters, Lower montane coniferous forest, North coast coniferous forest, Redwood, Riparian forest
Asio otus	long-eared owl	Birds	ABNSB13010	56	3	None	None	G5	S3?	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Cismontane woodland, Great Basin scrub, Riparian forest, Riparian woodland, Upper montane coniferous forest
Asplenium septentrionale	northern spleenwort	Ferns	PPASP021F0	8	3	None	None	G4G5	S3	2B.3	null	Chaparral, Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest
Asplenium viride	green spleenwort	Ferns	PPASP02250	1	1	None	None	G5?	S1	2B.3	SB_UCSC-UC Santa Cruz	Limestone, Subalpine coniferous forest
Astragalus agrestis	field milk-vetch	Dicots	PDFAB0F090	14	4	None	None	G5	S2	2B.2	BLM_S-Sensitive	Great Basin scrub, Meadow

												& seep
Astragalus anxius	Ash Valley milk-vetch	Dicots	PDFAB0FBD0	8	7	None	None	G1	S1	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Pinon & juniper woodlands, Upper montane coniferous forest
Astragalus argophyllus var. argophyllus	silver-leaved milk-vetch	Dicots	PDFAB0F0S1	9	3	None	None	G5T4	S2	2B.2	BLM_S-Sensitive	Alkali playa, Meadow & seep, Wetland
Astragalus austiniae	Austin's astragalus	Dicots	PDFAB0F120	12	12	None	None	G2G3	S2S3	1B.3	null	Alpine boulder & rock field, Subalpine coniferous forest
Astragalus ertterae	Walker Pass milk-vetch	Dicots	PDFAB0FB30	4	4	None	None	G2	S2	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Pinon & juniper woodlands
Astragalus geyeri var. geyeri	Geyer's milk-vetch	Dicots	PDFAB0F3M1	24	7	None	None	G4T4	S2	2B.2	null	Chenopod scrub, Great Basin scrub
Astragalus lemmonii	Lemmon's milk-vetch	Dicots	PDFAB0F4N0	12	3	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Marsh & swamp, Meadow & seep, Wetland
Astragalus lentiformis	lens-pod milk-vetch	Dicots	PDFAB0F4P0	59	56	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest
Astragalus lentiginosus var. kernensis	Kern Plateau milk-vetch	Dicots	PDFAB0FB98	47	46	None	None	G5T2?	S2	1B.2	USFS_S-Sensitive	Meadow & seep, Subalpine coniferous forest
Astragalus pulsiferae var. pulsiferae	Pulsifer's milk-vetch	Dicots	PDFAB0F783	27	14	None	None	G4T2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands
Astragalus pulsiferae var. suksdorfii	Suksdorf's milk-vetch	Dicots	PDFAB0F782	25	23	None	None	G4T2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands
Astragalus rattanii var. jepsonianus	Jepson's milk-vetch	Dicots	PDFAB0F7E1	53	11	None	None	G4T3	S3	1B.2	BLM_S-Sensitive	Cismontane woodland, Ultramafic, Valley & foothill grassland
Astragalus shevockii	Shevock's milk-vetch	Dicots	PDFAB0F850	6	6	None	None	G2	S2	1B.3	BLM_S-Sensitive	Upper montane coniferous forest
Astragalus webberi	Webber's milk-vetch	Dicots	PDFAB0F9J0	12	8	None	None	G1	S1	1B.2	USFS_S-Sensitive	Broadleaved upland forest, Lower montane coniferous forest, Meadow & seep
Athene cunicularia	burrowing owl	Birds	ABNSB10010	2011	11	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland
Atractelmis wawona	Wawona riffle beetle	Insects	IICOL58010	80	27	None	None	G3	S1S2	null	null	Aquatic
Atriplex coronata var. vallicola	Lost Hills crownscale	Dicots	PDCHE04371	76	20	None	None	G4T3	S3	1B.2	BLM_S-Sensitive	Chenopod scrub, Valley & foothill grassland, Vernal pool
Atriplex flavida	Carrizo Plain crownscale	Dicots	PDCHE04360	37	18	None	None	G3	S3	1B.3	SB_SBBG-Santa Barbara Botanic Garden	Chenopod scrub, Valley & foothill grassland, Vernal pool
Atriplex gardneri var. falcata	falcate saltbush	Dicots	PDCHE040J0	9	1	None	None	G4T4Q	S2S3	2B.2	null	Chenopod scrub, Great Basin scrub
Balsamorhiza lanata	woolly balsamroot	Dicots	PDAST11047	44	10	None	None	G3	S3	1B.2	BLM_S-Sensitive	Cismontane woodland
Balsamorhiza macrolepis	big-scale balsamroot	Dicots	PDAST11061	51	15	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland

Balsamorhiza sericea	silky balsamroot	Dicots	PDAST110C0	15	8	None	None	G4Q	S3	1B.3	SB_BerrySB-Berry Seed Bank	Lower montane coniferous forest, Ultramafic
Balsamorhiza serrata	serrated balsamroot	Dicots	PDAST110A0	5	3	None	None	G5	S2	2B.3	null	Great Basin scrub
Banksula melones	Melones Cave harvestman	Arachnids	ILARA14010	21	4	None	None	G1	S1	null	IUCN_VU-Vulnerable	Limestone
Banksula tuolumne	Tuolumne cave harvestman	Arachnids	ILARA14090	1	1	None	None	G1	S1	null	null	Limestone
Batrachoseps altasierrae	Greenhorn Mountains slender salamander	Amphibians	AAAAD02200	43	38	None	None	G3G4	S3S4	null	null	Riparian scrub, Upper montane coniferous forest
Batrachoseps bramei	Fairview slender salamander	Amphibians	AAAAD02210	15	13	None	None	G3	S3	null	USFS_S-Sensitive	Chaparral, Cismontane woodland, Riparian scrub, Talus slope
Batrachoseps minor	lesser slender salamander	Amphibians	AAAAD02170	8	3	None	None	G1	S1	null	CDFW_SSC-Species of Special Concern, IUCN_DD-Data Deficient, USFS_S-Sensitive	Broadleaved upland forest
Batrachoseps regius	Kings River slender salamander	Amphibians	AAAAD02140	14	8	None	None	G2	S2S3	null	IUCN_VU-Vulnerable, USFS_S-Sensitive	Chaparral, Talus slope
Batrachoseps simatus	Kern Canyon slender salamander	Amphibians	AAAAD02080	16	13	None	Threatened	G2G3	S2S3	null	IUCN_VU-Vulnerable, USFS_S-Sensitive	Chaparral, Cismontane woodland, Riparian scrub, Riparian woodland
Batrachoseps stebbinsi	Tehachapi slender salamander	Amphibians	AAAAD02090	25	5	None	Threatened	G2	S2S3	null	BLM_S-Sensitive, IUCN_VU-Vulnerable	Cismontane woodland, Riparian woodland
Betula glandulosa	dwarf resin birch	Dicots	PDBET02030	28	18	None	None	G5	S2	2B.2	IUCN_LC-Least Concern	Bog & fen, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Subalpine coniferous forest, Wetland
Big Tree Forest	Big Tree Forest	Forest	CTT84250CA	68	37	None	None	G3	S3.2	null	null	Lower montane coniferous forest
Boechera cobrensis	Masonic rockcress	Dicots	PDBRA06080	28	1	None	None	G5	S3	2B.3	null	Great Basin scrub, Pinon & juniper woodlands
Boechera constancei	Constance's rockcress	Dicots	PDBRA06090	59	58	None	None	G2	S2	1B.1	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
Boechera dispar	pinyon rockcress	Dicots	PDBRA060F0	97	2	None	None	G3	S3	2B.3	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Joshua tree woodland, Mojavean desert scrub, Pinon & juniper woodlands
Boechera evadens	hidden rockcress	Dicots	PDBRA40030	4	4	None	None	G1	S1	1B.3	USFS_S-Sensitive	Upper montane coniferous forest
Boechera koehleri	Koehler's stipitate rockcress	Dicots	PDBRA060Z0	29	6	None	None	G3G4	S3	1B.3	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Ultramafic
Boechera rollei	Rolle's rockcress	Dicots	PDBRA064H0	1	1	None	None	G1	S1	1B.1	null	Ultramafic, Upper montane coniferous forest
Boechera shevockii	Shevock's rockcress	Dicots	PDBRA40120	1	1	None	None	G1	S1	1B.1	USFS_S-Sensitive	Upper montane coniferous forest
Boechera tularensis	Tulare rockcress	Dicots	PDBRA40130	37	23	None	None	G3	S3	1B.3	USFS_S-Sensitive	Subalpine coniferous forest, Upper montane coniferous forest
Bombus caliginosus	obscure bumble bee	Insects	IIHYM24380	181	9	None	None	G4?	S1S2	null	IUCN_VU-Vulnerable	null
Bombus crotchii	Crotch bumble bee	Insects	IIHYM24480	437	30	None	Candidate Endangered	G3G4	S1S2	null	null	null
Bombus franklini	Franklin's bumble bee	Insects	IIHYM24010	10	8	Proposed Endangered	Candidate Endangered	G1	S1	null	IUCN_CR-Critically Endangered	null
Bombus morrisoni	Morrison bumble bee	Insects	IIHYM24460	86	9	None	None	G4G5	S1S2	null	IUCN_VU-Vulnerable	null
Bombus occidentalis	western bumble bee	Insects	IIHYM24250	306	66	None	Candidate Endangered	G2G3	S1	null	USFS_S-Sensitive	null

Bombus suckleyi	Suckley's cuckoo bumble bee	Insects	IIHYM24350	4	1	None	Candidate Endangered	GU	S1	null	null	null
Botrychium ascendens	upswept moonwort	Ferns	PPOPH010S0	53	22	None	None	G3G4	S2	2B.3	USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep
Botrychium crenulatum	scalloped moonwort	Ferns	PPOPH010L0	155	84	None	None	G4	S3	2B.2	USFS_S-Sensitive	Bog & fen, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Upper montane coniferous forest, Wetland
Botrychium lineare	slender moonwort	Ferns	PPOPH01120	5	3	None	None	G3	S1	1B.1	USFS_S-Sensitive	Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest
Botrychium lunaria	common moonwort	Ferns	PPOPH01080	7	5	None	None	G5	S2	2B.3	USFS_S-Sensitive	Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest
Botrychium minganense	Mingan moonwort	Ferns	PPOPH010R0	161	108	None	None	G4G5	S3	2B.2	USFS_S-Sensitive	Bog & fen, Lower montane coniferous forest, Meadow & seep, Upper montane coniferous forest, Wetland
Botrychium montanum	western goblin	Ferns	PPOPH010K0	69	61	None	None	G3	S2	2B.1	USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep, Oldgrowth, Upper montane coniferous forest
Botrychium pedunculosum	stalked moonwort	Ferns	PPOPH010T0	1	1	None	None	G3	S1	2B.1	USFS_S-Sensitive	Meadow & seep, Upper montane coniferous forest
Botrychium pinnatum	northwestern moonwort	Ferns	PPOPH010V0	8	7	None	None	G4?	S2	2B.3	USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep, Upper montane coniferous forest
Botrychium pumicola	pumice moonwort	Ferns	PPOPH010D0	1	1	None	None	G3	S1	2B.2	USFS_S-Sensitive	Alpine, Alpine boulder & rock field, Subalpine coniferous forest
Branchinecta conservatio	Conservancy fairy shrimp	Crustaceans	ICBRA03010	53	1	Endangered	None	G2	S2	null	IUCN_EN-Endangered	Valley & foothill grassland, Vernal pool, Wetland
Branchinecta lynchi	vernal pool fairy shrimp	Crustaceans	ICBRA03030	795	10	Threatened	None	G3	S3	null	IUCN_VU-Vulnerable	Valley & foothill grassland, Vernal pool, Wetland
Brasenia schreberi	watershield	Dicots	PDCAB01010	43	16	None	None	G5	S3	2B.3	IUCN_LC-Least Concern	Marsh & swamp, Wetland
Brodiaea insignis	Kaweah brodiaea	Monocots	PMLIL0C060	27	1	None	Endangered	G1	S1	1B.2	USFS_S-Sensitive	Cismontane woodland, Meadow & seep, Valley & foothill grassland
Brodiaea matsonii	Sulphur Creek brodiaea	Monocots	PMLIL0C0H0	2	1	None	None	G1	S1	1B.1	BLM_S-Sensitive, SB_BerrySB-Berry Seed Bank	Cismontane woodland, Meadow & seep
Brodiaea rosea	Indian Valley brodiaea	Monocots	PMLIL0C0K3	21	7	None	Endangered	G2Q	S2	3.1	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Closed-cone coniferous forest, Ultramafic, Valley & foothill grassland
Bruchia bolanderi	Bolander's bruchia	Bryophytes	NBMUS13010	28	23	None	None	G3G4	S3	4.2	USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep, Upper montane coniferous forest
Buteo regalis	ferruginous hawk	Birds	ABNKC19120	107	1	None	None	G4	S3S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Great Basin grassland, Great Basin scrub, Pinon & juniper woodlands, Valley & foothill grassland

Buteo swainsoni	Swainson's hawk	Birds	ABNKC19070	2541	86	None	Threatened	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Great Basin grassland, Riparian forest, Riparian woodland, Valley & foothill grassland
Buxbaumia viridis	buxbaumia moss	Bryophytes	NBMUS1B040	9	6	None	None	G3G4	S2	2B.2	BLM_S-Sensitive, USFS_S-Sensitive	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest
Calochortus clavatus var. avius	Pleasant Valley mariposa-lily	Monocots	PMLIL0D095	131	107	None	None	G4T2	S2	1B.2	USFS_S-Sensitive	Lower montane coniferous forest
Calochortus fimbriatus	late-flowered mariposa-lily	Monocots	PMLIL0D1J2	93	1	None	None	G3	S3	1B.3	SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral, Cismontane woodland, Riparian woodland, Ultramafic
Calochortus greenei	Greene's mariposa-lily	Monocots	PMLIL0D0H0	50	29	None	None	G3	S2S3	1B.2	BLM_S-Sensitive, SB_BerrySB-Berry Seed Bank, USFS_S-Sensitive	Cismontane woodland, Meadow & seep, Pinon & juniper woodlands, Upper montane coniferous forest
Calochortus longebarbatus var. longebarbatus	long-haired star-tulip	Monocots	PMLIL0D0R1	142	87	None	None	G4T3	S3	1B.2	SB_BerrySB-Berry Seed Bank, USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Meadow & seep, Vernal pool, Wetland
Calochortus obispoensis	San Luis mariposa-lily	Monocots	PMLIL0D110	46	4	None	None	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral, Cismontane woodland, Coastal scrub, Ultramafic, Valley & foothill grassland
Calochortus palmeri var. palmeri	Palmer's mariposa-lily	Monocots	PMLIL0D122	111	28	None	None	G3T2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Meadow & seep
Calochortus persistens	Siskiyou mariposa-lily	Monocots	PMLIL0D140	8	5	None	Rare	G2	S2	1B.2	SB_BerrySB-Berry Seed Bank, USFS_S-Sensitive	Lower montane coniferous forest, North coast coniferous forest
Calochortus simulans	La Panza mariposa-lily	Monocots	PMLIL0D170	109	46	None	None	G2	S2	1B.3	SB_CRES-San Diego Zoo CRES Native Gene Seed Bank, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley & foothill grassland
Calochortus striatus	alkali mariposa-lily	Monocots	PMLIL0D190	113	2	None	None	G3?	S2S3	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Chaparral, Chenopod scrub, Meadow & seep, Mojavean desert scrub, Wetland
Calochortus syntrophus	Callahan's mariposa-lily	Monocots	PMLIL0D1S0	10	2	None	None	G1	S1	1B.1	null	Cismontane woodland, Valley & foothill grassland
Calochortus westonii	Shirley Meadows star-tulip	Monocots	PMLIL0D1M0	24	21	None	None	G3	S3	1B.2	BLM_S-Sensitive, SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Broadleaved upland forest, Lower montane coniferous forest, Meadow & seep
Calycadenia villosa	dwarf calycadenia	Dicots	PDAST1P0B0	59	3	None	None	G3	S3	1B.1	SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral, Cismontane woodland, Meadow & seep, Valley & foothill grassland
Calyptridium pulchellum	Mariposa pussypaws	Dicots	PDPOR09060	9	2	Threatened	None	G1	S1	1B.1	null	Chaparral, Cismontane woodland
Calyptridium pygmaeum	pygmy pussypaws	Dicots	PDPOR09070	11	4	None	None	G1G2	S1S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Subalpine coniferous forest, Upper montane coniferous forest
Calystegia	Butte County	Dicots	PDCON04012	121	14	None	None	G5T3	S3	4.2	null	Chaparral,

atriplicifolia ssp. buttensis	morning-glory											Lower montane coniferous forest, Valley & foothill grassland
Calystegia collina ssp. tridactylosa	three-fingered morning-glory	Dicots	PDCON04036	11	1	None	None	G4T1	S1	1B.2	BLM_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Calystegia stebbinsii	Stebbins' morning-glory	Dicots	PDCON040H0	15	4	Endangered	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Ultramafic
Calystegia vanzuukiae	Van Zuuk's morning-glory	Dicots	PDCON040Q0	13	11	None	None	G2Q	S2	1B.3	BLM_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Camissonia benitensis	San Benito evening-primrose	Dicots	PDONA03030	60	38	Threatened	None	G2	S2	1B.1	SB_SBBG-Santa Barbara Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland
Camissonia integrifolia	Kern River evening-primrose	Dicots	PDONA030T0	6	3	None	None	G2	S2	1B.3	null	Chaparral
Camissonia sierrae ssp. alticola	Mono Hot Springs evening-primrose	Dicots	PDONA031H1	21	18	None	None	G3T2	S2	1B.2	USFS_S-Sensitive	Lower montane coniferous forest, Upper montane coniferous forest
Camissoniopsis hardhamiae	Hardham's evening-primrose	Dicots	PDONA030N0	22	2	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Limestone
Campanula exigua	chaparral harebell	Dicots	PDCAM020A0	50	10	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Ultramafic
Campanula sharsmithiae	Sharsmith's harebell	Dicots	PDCAM02100	7	1	None	None	G1G2	S1S2	1B.2	null	Chaparral, Ultramafic
Campanula shetleri	Castle Crags harebell	Dicots	PDCAM020W0	6	6	None	None	G2	S2	1B.3	SB_BerrySB-Berry Seed Bank, USFS_S-Sensitive	Lower montane coniferous forest
Campanula wilkinsiana	Wilkin's harebell	Dicots	PDCAM020Z0	24	16	None	None	G2	S2	1B.2	USFS_S-Sensitive	Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest
Campylopodiella stenocarpa	flagella-like atractylocarpus	Bryophytes	NBMUS84010	6	2	None	None	G5	S1?	2B.2	null	Cismontane woodland
Canbya candida	white pygmy-poppy	Dicots	PDPAP05020	30	12	None	None	G3G4	S3S4	4.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Joshua tree woodland, Mojavean desert scrub, Pinon & juniper woodlands
Cardamine pachystigma var. dissectifolia	dissected-leaved toothwort	Dicots	PDBRA0K1B1	19	9	None	None	G3G5T2Q	S2	1B.2	null	Chaparral, Lower montane coniferous forest, Ultramafic
Carex atherodes	wheat sedge	Monocots	PMCYP03160	9	1	None	None	G5	S1	2B.2	IUCN_LC-Least Concern	Marsh & swamp, Meadow & seep, Pinon & juniper woodlands, Wetland
Carex cyrtostachya	Sierra arching sedge	Monocots	PMCYP03M00	28	10	None	None	G2	S2	1B.2	null	Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Riparian forest
Carex davyi	Davy's sedge	Monocots	PMCYP033H0	34	19	None	None	G3	S3	1B.3	null	Subalpine coniferous forest, Upper montane coniferous forest
Carex halliana	Oregon sedge	Monocots	PMCYP035M0	17	15	None	None	G4	S2	2B.3	null	Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest, Wetland
Carex hystericina	porcupine sedge	Monocots	PMCYP036D0	4	2	None	None	G5	S2	2B.1	null	Freshwater marsh, Marsh & swamp, Wetland
Carex klamathensis	Klamath sedge	Monocots	PMCYP03L70	3	1	None	None	G2	S2	1B.2	null	Chaparral, Cismontane woodland, Ultramafic, Wetland

Carex lasiocarpa	woolly-fruited sedge	Monocots	PMCYP03720	20	14	None	None	G5	S2	2B.3	IUCN_LC-Least Concern	Bog & fen, Freshwater marsh, Marsh & swamp, Wetland
Carex limosa	mud sedge	Monocots	PMCYP037K0	40	28	None	None	G5	S3	2B.2	IUCN_LC-Least Concern	Bog & fen, Freshwater marsh, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Upper montane coniferous forest, Wetland
Carex nardina	nard sedge	Monocots	PMCYP03920	2	2	None	None	G4G5	S1	2B.2	null	Subalpine coniferous forest
Carex obispoensis	San Luis Obispo sedge	Monocots	PMCYP039J0	29	3	None	None	G3?	S3?	1B.2	BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral, Closed-cone coniferous forest, Coastal prairie, Coastal scrub, Ultramafic, Valley & foothill grassland
Carex petasata	Liddon's sedge	Monocots	PMCYP03AE0	73	63	None	None	G5	S3	2B.3	null	Broadleaved upland forest, Lower montane coniferous forest, Meadow & seep, Pinon & juniper woodlands, Wetland
Carex praticola	northern meadow sedge	Monocots	PMCYP03B20	14	2	None	None	G5	S2	2B.2	null	Meadow & seep, Wetland
Carex scoparia var. scoparia	pointed broom sedge	Monocots	PMCYP03C91	1	1	None	None	G5T5	S1	2B.2	null	Freshwater marsh, Wetland
Carex sheldonii	Sheldon's sedge	Monocots	PMCYP03CE0	48	27	None	None	G4	S2	2B.2	null	Freshwater marsh, Lower montane coniferous forest, Marsh & swamp, Riparian scrub, Wetland
Carex tompkinsii	Tompkins' sedge	Monocots	PMCYP03DR0	17	8	None	Rare	G3G4	S3S4	4.3	null	Chaparral, Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest
Carex vallicola	western valley sedge	Monocots	PMCYP03EA0	14	2	None	None	G5	S2	2B.3	null	Great Basin scrub, Meadow & seep, Wetland
Carex viridula ssp. viridula	green yellow sedge	Monocots	PMCYP03EM5	8	1	None	None	G5T5	S2	2B.3	null	Bog & fen, Marsh & swamp, North coast coniferous forest, Wetland
Carex xerophila	chaparral sedge	Monocots	PMCYP03M60	15	8	None	None	G2	S2	1B.2	BLM_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Carlquistia muirii	Muir's tarplant	Dicots	PDASTDU010	21	11	None	None	G2	S2	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest
Carpenteria californica	tree-anemone	Dicots	PDHDR04010	13	11	None	Threatened	G1?	S1?	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley, USFS_S-Sensitive	Chaparral, Cismontane woodland
Castilleja campestris var. succulenta	succulent owl's-clover	Dicots	PDSCR0D3Z1	99	2	Threatened	Endangered	G4?T2T3	S2S3	1B.2	null	Vernal pool, Wetland
Castilleja elata	Siskiyou paintbrush	Dicots	PDSCR0D213	36	3	None	None	G3	S2S3	2B.2	null	Bog & fen, Lower montane coniferous forest, Ultramafic, Wetland
Castilleja lassenensis	Lassen paintbrush	Dicots	PDSCR0D4L0	26	7	None	None	G3	S3	1B.3	null	Meadow & seep, Subalpine coniferous forest
Castilleja rubicundula var. rubicundula	pink creamsacs	Dicots	PDSCR0D482	42	11	None	None	G5T2	S2	1B.2	BLM_S-Sensitive	Chaparral, Cismontane

												woodland, Meadow & seep, Ultramafic, Valley & foothill grassland
Catabrosa aquatica	water whorlgrass	Monocots	PMPOA19010	1	1	None	None	G5	S1	2B.1	null	Meadow & seep
Catostomus microps	Modoc sucker	Fish	AFCJC02140	4	3	Delisted	Endangered	G2	S2	null	AFS_EN-Endangered, CDFW_FP-Fully Protected, IUCN_EN-Endangered	Aquatic, Sacramento/San Joaquin flowing waters
Catostomus occidentalis lacusanserinus	Goose Lake sucker	Fish	AFCJC02151	1	1	None	None	G5T2Q	S1	null	AFS_VU-Vulnerable, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters
Catostomus platyrhynchus	mountain sucker	Fish	AFCJC02160	22	9	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern	Aquatic, Great Basin flowing waters
Caulanthus californicus	California jewelflower	Dicots	PDBRA31010	67	19	Endangered	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Chenopod scrub, Pinon & juniper woodlands, Valley & foothill grassland
Caulanthus lemmonii	Lemmon's jewelflower	Dicots	PDBRA0M0E0	91	16	None	None	G3	S3	1B.2	BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Pinon & juniper woodlands, Valley & foothill grassland
Ceanothus roderickii	Pine Hill ceanothus	Dicots	PDRHA04190	9	2	Endangered	Rare	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden	Chaparral, Cismontane woodland, Ultramafic
Central Valley Drainage Hardhead/Squawfish Stream	Central Valley Drainage Hardhead/Squawfish Stream	Inland Waters	CARA2443CA	11	6	None	None	GNR	SNR	null	null	null
Central Valley Drainage Resident Rainbow Trout Stream	Central Valley Drainage Resident Rainbow Trout Stream	Inland Waters	CARA2421CA	5	5	None	None	GNR	SNR	null	null	null
Central Valley Drainage Spring Stream	Central Valley Drainage Spring Stream	Inland Waters	CARA2413CA	2	2	None	None	GNR	SNR	null	null	null
Central Valley Drainage Spring-Run Chinook Stream	Central Valley Drainage Spring-Run Chinook Stream	Inland Waters	CARA2431CA	2	2	None	None	GNR	SNR	null	null	null
Centrocercus urophasianus	greater sage-grouse	Birds	ABNLC12010	49	32	None	None	G3G4	S2S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened, USFS_S-Sensitive	Great Basin scrub
Centromadia parryi ssp. parryi	pappose tarplant	Dicots	PDAST4R0P2	39	4	None	None	G3T2	S2	1B.2	BLM_S-Sensitive	Chaparral, Coastal prairie, Marsh & swamp, Meadow & seep, Valley & foothill grassland
Chaenactis douglasii var. alpina	alpine dusty maidens	Dicots	PDAST20065	12	8	None	None	G5T5	S2	2B.3	null	Alpine, Alpine boulder & rock field
Chaenactis suffrutescens	Shasta chaenactis	Dicots	PDAST200H0	38	7	None	None	G2G3	S2S3	1B.3	BLM_S-Sensitive, SB_BerrySB-Berry Seed Bank, USFS_S-Sensitive	Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
Charadrius nivosus nivosus	western snowy plover	Birds	ABNNB03031	138	2	Threatened	None	G3T3	S2	null	CDFW_SSC-Species of Special Concern, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Great Basin standing waters, Sand shore, Wetland
Chasmistes brevirostris	shortnose sucker	Fish	AFCJC03010	5	2	Endangered	Endangered	G1	S1	null	AFS_EN-Endangered, CDFW_FP-Fully Protected, IUCN_EN-Endangered	Aquatic, Klamath/North coast flowing waters
Chlidonias niger	black tern	Birds	ABNNM10020	1	1	None	None	G4G5	S2	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Freshwater marsh, Great Basin standing waters, Wetland

Chlorogalum grandiflorum	Red Hills soaproot	Monocots	PMLIL0G020	137	90	None	None	G3	S3	1B.2	BLM_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Chlorogalum pomeridianum var. minus	dwarf soaproot	Monocots	PMLIL0G042	31	15	None	None	G5T3	S3	1B.2	BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral, Ultramafic
Chlorogalum purpureum var. reductum	Camatta Canyon amole	Monocots	PMLIL0G052	4	1	Threatened	Rare	G2T1	S1	1B.1	SB_SBBG-Santa Barbara Botanic Garden	Cismontane woodland, Valley & foothill grassland
Chorizanthe biloba var. immemora	Hernandez spineflower	Dicots	PDPGN04025	12	2	None	None	G3T1T2	S1S2	1B.2	BLM_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Chorizanthe breweri	Brewer's spineflower	Dicots	PDPGN04050	45	8	None	None	G3	S3	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Closed-cone coniferous forest, Coastal scrub, Ultramafic
Chorizanthe rectispina	straight-awned spineflower	Dicots	PDPGN040N0	38	4	None	None	G2	S2	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Coastal scrub
Chylismia claviformis ssp. cruciformis	cruciform evening-primrose	Dicots	PDONA030D4	25	13	None	None	G5T4	S2	2B.3	null	Chenopod scrub, Great Basin scrub
Cinna bolanderi	Bolander's woodreed	Monocots	PMPOA1H040	20	5	None	None	G2G3	S2S3	1B.2	USFS_S-Sensitive	Meadow & seep, Upper montane coniferous forest, Wetland
Cirsium fontinale var. campylon	Mt. Hamilton thistle	Dicots	PDAST2E163	36	1	None	None	G2T2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland
Cirsium occidentale var. lucianum	Cuesta Ridge thistle	Dicots	PDAST2E1Z6	9	3	None	None	G3G4T2	S2	1B.2	null	Chaparral, Ultramafic
Cladonia firma	popcorn lichen	Lichens	NLT0008460	4	1	None	None	G4	S1	2B.1	null	Coastal dunes, Coastal scrub
Clarkia australis	Small's southern clarkia	Dicots	PDONA05040	41	37	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Cismontane woodland, Lower montane coniferous forest
Clarkia biloba ssp. australis	Mariposa clarkia	Dicots	PDONA05051	119	95	None	None	G4G5T3	S3	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Clarkia biloba ssp. brandegeeae	Brandegee's clarkia	Dicots	PDONA05053	89	11	None	None	G4G5T4	S4	4.2	SB_UCSC-UC Santa Cruz	Chaparral, Cismontane woodland, Lower montane coniferous forest
Clarkia borealis ssp. arida	Shasta clarkia	Dicots	PDONA05061	6	3	None	None	G4T2	S2	1B.1	BLM_S-Sensitive, SB_UCBG-UC Botanical Garden at Berkeley	Cismontane woodland, Lower montane coniferous forest
Clarkia borealis ssp. borealis	northern clarkia	Dicots	PDONA05062	131	54	None	None	G4T4	S4	4.3	BLM_S-Sensitive, SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest
Clarkia gracilis ssp. albicaulis	white-stemmed clarkia	Dicots	PDONA050J1	32	12	None	None	G5T3	S3	1B.2	BLM_S-Sensitive, SB_UCBG-UC Botanical Garden at Berkeley, USFS_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Clarkia lingulata	Merced clarkia	Dicots	PDONA050P0	2	2	None	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley, USFS_S-Sensitive	Chaparral, Cismontane woodland
Clarkia mildrediae ssp. mildrediae	Mildred's clarkia	Dicots	PDONA050Q2	77	43	None	None	G3T2T3	S2S3	1B.3	USFS_S-Sensitive	Cismontane woodland, Lower montane coniferous forest
Clarkia mosquinii	Mosquin's clarkia	Dicots	PDONA050S0	78	47	None	None	G2	S2	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Cismontane woodland, Lower montane coniferous forest

Clarkia rostrata	beaked clarkia	Dicots	PDONA050Y0	74	25	None	None	G2G3	S2S3	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Cismontane woodland, Valley & foothill grassland
Clarkia springvillensis	Springville clarkia	Dicots	PDONA05120	28	13	Threatened	Endangered	G2	S2	1B.2	SB_UCSC-UC Santa Cruz	Chaparral, Cismontane woodland, Valley & foothill grassland
Clarkia xantiana ssp. parviflora	Kern Canyon clarkia	Dicots	PDONA05181	21	10	None	None	G4T3?	S3?	4.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Great Basin scrub, Valley & foothill grassland
Claytonia megarhiza	fell-fields claytonia	Dicots	PDPOR030A0	24	11	None	None	G5	S2	2B.3	null	Alpine, Alpine boulder & rock field, Subalpine coniferous forest
Claytonia peirsonii ssp. yorkii	York's spring beauty	Dicots	PDPOR03124	1	1	None	None	G2G3T1	S1	1B.1	null	Cismontane woodland, Talus slope
Cleomella hillmanii var. hillmanii	Hillman's cleomella	Dicots	PDCPP04030	5	2	None	None	G4G5T4T5	S2	2B.2	null	Chenopod scrub, Great Basin scrub
Climacium dendroides	tree climacium moss	Bryophytes	NBMUS1T020	1	1	None	None	G5	S1	2B.1	null	Bog & fen, North coast coniferous forest
Coccyzus americanus occidentalis	western yellow-billed cuckoo	Birds	ABNRB02022	165	3	Threatened	Endangered	G5T2T3	S1	null	BLM_S-Sensitive, NABCI_RWL-Red Watch List, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern	Riparian forest
Coelus gracilis	San Joaquin dune beetle	Insects	IICOL4A020	11	2	None	None	G1	S1	null	BLM_S-Sensitive, IUCN_VU-Vulnerable	Interior dunes
Colligyrus convexus	canary duskysnail	Mollusks	IMGASF8030	5	1	None	None	G1G2	S1	null	null	Aquatic
Collomia larsenii	talus collomia	Dicots	PDPLM02014	3	2	None	None	G4	S2	2B.2	USFS_S-Sensitive	Alpine, Alpine boulder & rock field, Closed-cone coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest
Collomia rawsoniana	Rawson's flaming trumpet	Dicots	PDPLM02080	24	22	None	None	G2	S2	1B.2	USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep, Riparian forest
Collomia tenella	slender collomia	Dicots	PDPLM02090	1	1	None	None	G4	S1	2B.2	null	Upper montane coniferous forest
Corallorhiza trifida	northern coralroot	Monocots	PMORC0M050	7	5	None	None	G5	S1	2B.1	null	Lower montane coniferous forest, Meadow & seep
Cordylanthus capitatus	Yakima bird's-beak	Dicots	PDSCR0J030	9	9	None	None	G4	S2	2B.2	null	Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands
Cordylanthus eremicus ssp. kernensis	Kern Plateau bird's-beak	Dicots	PDSCR0J043	14	11	None	None	G3T2	S2	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Joshua tree woodland, Pinon & juniper woodlands, Upper montane coniferous forest
Cordylanthus tenuis ssp. pallescens	pallid bird's-beak	Dicots	PDSCR0J0S3	18	4	None	None	G4G5T1	S1	1B.2	SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Lower montane coniferous forest
Cornus canadensis	bunchberry	Dicots	PDCOR01040	11	4	None	None	G5	S2	2B.2	null	Bog & fen, Meadow & seep, North coast coniferous forest
Corynorhinus townsendii	Townsend's big-eared bat	Mammals	AMACC08010	635	69	None	None	G4	S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority	Broadleaved upland forest, Chaparral, Chenopod scrub, Great Basin grassland, Great Basin scrub, Joshua tree woodland, Lower montane

												coniferous forest, Meadow & seep, Mojavean desert scrub, Riparian forest, Riparian woodland, Sonoran desert scrub, Sonoran thorn woodland, Upper montane coniferous forest, Valley & foothill grassland
Cosumnoperla hypocrena	Cosumnes stripetail	Insects	IIPLE23020	15	3	None	None	G2	S2	null	null	Aquatic
Cottus klamathensis klamathensis	Upper Klamath marbled sculpin	Fish	AFC4E02152	2	2	None	None	G4T1T2	S1S2	null	CDFW_SSC-Species of Special Concern	Aquatic
Cottus klamathensis macrops	bigeye marbled sculpin	Fish	AFC4E02151	7	1	None	None	G4T3	S2S3	null	AFS_VU-Vulnerable, CDFW_SSC-Species of Special Concern	Aquatic, Sacramento/San Joaquin flowing waters
Cottus klamathensis polyporus	Lower Klamath marbled sculpin	Fish	AFC4E02153	20	2	None	None	G4T2T4	S2S4	null	CDFW_SSC-Species of Special Concern	Aquatic
Coturnicops noveboracensis	yellow rail	Birds	ABNME01010	45	4	None	None	G4	S1S2	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, NABCI_RWL-Red Watch List, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Meadow & seep
Crepis runcinata	fiddleleaf hawksbeard	Dicots	PDAST2R0K0	32	2	None	None	G5	S3	2B.2	null	Mojavean desert scrub, Pinon & juniper woodlands
Crocanthemum suffrutescens	Bisbee Peak rush-rose	Dicots	PDCIS020F0	31	6	None	None	G2?Q	S2?	3.2	null	Chaparral, Ione formation, Ultramafic
Cryptantha celosioides	cocks-comb cat's-eye	Dicots	PDBOR0A0F0	8	3	None	None	G5	S1	2B.3	null	Pinon & juniper woodlands
Cryptantha crinita	silky cryptantha	Dicots	PDBOR0A0Q0	57	25	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Cismontane woodland, Lower montane coniferous forest, Riparian forest, Riparian woodland, Valley & foothill grassland
Cryptantha crymophila	subalpine cryptantha	Dicots	PDBOR0A0R0	16	6	None	None	G3	S3	1B.3	null	Subalpine coniferous forest
Cryptantha dissita	serpentine cryptantha	Dicots	PDBOR0A0H2	23	7	None	None	G3	S3	1B.2	BLM_S-Sensitive	Chaparral, Ultramafic
Cryptantha excavata	deep-scarred cryptantha	Dicots	PDBOR0A0W0	5	1	None	None	G1	S1	1B.1	BLM_S-Sensitive	Cismontane woodland
Cryptantha hooveri	Hoover's cryptantha	Dicots	PDBOR0A190	4	1	None	None	GH	SH	1A	null	Interior dunes, Valley & foothill grassland
Cryptantha incana	Tulare cryptantha	Dicots	PDBOR0A1D0	34	30	None	None	G2	S2	1B.3	USFS_S-Sensitive	Lower montane coniferous forest
Cryptantha mariposae	Mariposa cryptantha	Dicots	PDBOR0A1Q0	9	2	None	None	G2G3	S2S3	1B.3	BLM_S-Sensitive	Chaparral, Ultramafic
Cryptantha spithamaea	Red Hills cryptantha	Dicots	PDBOR0A2M2	6	1	None	None	G2	S2	1B.3	BLM_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Cryptochia denningi	Denning's cryptic caddisfly	Insects	IITRI11030	5	2	None	None	G1G2	S1S2	null	null	Aquatic
Cryptochia excella	Kings Canyon cryptochian caddisfly	Insects	IITRI11010	3	1	None	None	G1G2	S1S2	null	null	Aquatic
Cryptochia shasta	confusion caddisfly	Insects	IITRI11040	1	1	None	None	G1G2	S1S2	null	null	Aquatic
Cuscuta jepsonii	Jepson's dodder	Dicots	PDCUS011T0	28	7	None	None	G3	S3	1B.2	null	Broadleaved upland forest, Lower montane coniferous forest, Upper montane coniferous forest
Cymopterus deserticola	desert cymopterus	Dicots	PDAPI0U090	84	2	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Joshua tree woodland, Mojavean desert scrub
Cypseloides niger	black swift	Birds	ABNUA01010	46	5	None	None	G4	S2	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern,	null

											NABCI_YWL-Yellow Watch List, USFWS_BCC-Birds of Conservation Concern	
Dalea ornata	ornate dalea	Dicots	PDFAB1A150	7	7	None	None	G4G5	S2	2B.1	BLM_S-Sensitive, IUCN_LC-Least Concern	Pinon & juniper woodlands
Darlingtonia Seep	Darlingtonia Seep	Marsh	CTT51120CA	70	53	None	None	G4	S3.2	null	null	Bog & fen, Wetland
Deinandra halliana	Hall's tarplant	Dicots	PDAST4R0C0	69	33	None	None	G3	S3	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden	Chenopod scrub, Cismontane woodland, Valley & foothill grassland
Deinandra mohavensis	Mojave tarplant	Dicots	PDAST4R0K0	84	7	None	Endangered	G2	S2	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Chaparral, Coastal scrub, Riparian scrub
Delphinium inopinum	unexpected larkspur	Dicots	PDRAN0B0W0	30	29	None	None	G3	S3	4.3	USFS_S-Sensitive	Upper montane coniferous forest
Delphinium purpusii	rose-flowered larkspur	Dicots	PDRAN0B1G0	55	41	None	None	G3	S3	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Limestone, Pinon & juniper woodlands
Delphinium recurvatum	recurved larkspur	Dicots	PDRAN0B1J0	119	9	None	None	G2?	S2?	1B.2	BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden	Chenopod scrub, Cismontane woodland, Valley & foothill grassland
Delphinium stachydeum	spiked larkspur	Dicots	PDRAN0B1Q0	34	32	None	None	G5?	S3	2B.3	null	Great Basin scrub, Upper montane coniferous forest
Delphinium umbraculorum	umbrella larkspur	Dicots	PDRAN0B1W0	95	23	None	None	G3	S3	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland
Deltistes luxatus	Lost River sucker	Fish	AFCJC12010	6	2	Endangered	Endangered	G1	S1	null	AFS_EN-Endangered, CDFW_FP-Fully Protected, IUCN_EN-Endangered	Aquatic, Klamath/North coast flowing waters, Klamath/North coast standing waters
Dendragapus fuliginosus howardi	Mount Pinos sooty grouse	Birds	ABNLC09022	2	1	None	None	G5T2T3	S2S3	null	CDFW_SSC-Species of Special Concern	Upper montane coniferous forest
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Insects	IICOL48011	271	12	Threatened	None	G3T2	S3	null	null	Riparian scrub
Desmona bethula	amphibious caddisfly	Insects	IITRI77010	17	9	None	None	G2G3	S2S3	null	null	Aquatic
Dimeresia howellii	doublet	Dicots	PDAST2Z010	50	42	None	None	G4?	S3	2B.3	null	Lower montane coniferous forest, Pinon & juniper woodlands
Diplacus cusickioides	Cusick's monkeyflower	Dicots	PDSCR220E0	8	7	None	None	G4G5	S2	2B.3	null	Great Basin scrub, Lower montane coniferous forest
Diplacus pictus	calico monkeyflower	Dicots	PDSCR1B240	73	10	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Broadleaved upland forest, Cismontane woodland
Diplacus pulchellus	yellow-lip pansy monkeyflower	Dicots	PDSCR1B280	78	40	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep
Diplacus pygmaeus	Egg Lake monkeyflower	Dicots	PDSCR1B2C0	33	32	None	None	G4	S3	4.2	null	Great Basin scrub, Lower montane coniferous forest, Meadow & seep, Pinon & juniper woodlands, Wetland
Dipodomys ingens	giant kangaroo rat	Mammals	AMAFD03080	143	36	Endangered	Endangered	G1G2	S1S2	null	IUCN_EN-Endangered	Chenopod scrub, Valley & foothill grassland
Dipodomys nitratoides nitratoides	Tipton kangaroo rat	Mammals	AMAFD03152	79	7	Endangered	Endangered	G3T1T2	S1S2	null	IUCN_VU-Vulnerable	Chenopod scrub
Downingia laeta	Great Basin downingia	Dicots	PDCAM06080	19	7	None	None	G5	S3	2B.2	IUCN_LC-Least Concern	Great Basin scrub, Marsh & swamp,

												Meadow & seep, Pinon & juniper woodlands, Vernal pool, Wetland
Downingia pusilla	dwarf downingia	Dicots	PDCAM060C0	132	1	None	None	GU	S2	2B.2	null	Valley & foothill grassland, Vernal pool, Wetland
Draba asterophora var. asterophora	Tahoe draba	Dicots	PDBRA110D1	11	7	None	None	G2T2?	S2?	1B.2	USFS_S-Sensitive	Alpine, Alpine boulder & rock field, Subalpine coniferous forest
Draba asterophora var. macrocarpa	Cup Lake draba	Dicots	PDBRA110D2	4	4	None	None	G2T1	S1	1B.1	USFS_S-Sensitive	Subalpine coniferous forest
Draba aureola	golden alpine draba	Dicots	PDBRA110F0	7	4	None	None	G4	S2	1B.3	null	Alpine, Alpine boulder & rock field, Subalpine coniferous forest, Ultramafic
Draba carnosula	Mt. Eddy draba	Dicots	PDBRA112T0	14	12	None	None	G2	S2	1B.3	BLM_S-Sensitive, SB_BerrySB-Berry Seed Bank, USFS_S-Sensitive	Subalpine coniferous forest, Ultramafic, Upper montane coniferous forest
Draba cruciata	Mineral King draba	Dicots	PDBRA110U0	11	1	None	None	G3	S3	1B.3	USFS_S-Sensitive	Subalpine coniferous forest
Draba lonchocarpa	spear-fruited draba	Dicots	PDBRA111F0	8	1	None	None	G5	S2S3	2B.3	null	Alpine boulder & rock field, Limestone
Draba praealta	tall draba	Dicots	PDBRA11210	16	3	None	None	G5	S3	2B.3	null	Meadow & seep, Wetland
Draba sharsmithii	Mt. Whitney draba	Dicots	PDBRA113F0	8	1	None	None	G2	S2	1B.3	USFS_S-Sensitive	Alpine, Alpine boulder & rock field, Subalpine coniferous forest
Draba sierrae	Sierra draba	Dicots	PDBRA112A0	13	4	None	None	G3	S3	1B.3	null	Alpine, Alpine boulder & rock field, Limestone
Drosera anglica	English sundew	Dicots	PDDRO02010	23	18	None	None	G5	S2	2B.3	null	Bog & fen, Meadow & seep, Wetland
Dryopteris filix-mas	male fern	Ferns	PPDRY0A0B0	6	1	None	None	G5	S2	2B.3	null	Upper montane coniferous forest
Dudleya abramsii ssp. murina	mouse-gray dudleya	Dicots	PDCRA04012	36	3	None	None	G4T2	S2	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland
Eagle Lake	Eagle Lake	Inland Waters	CALC1320CA	1	1	None	None	GNR	SNR	null	null	null
Ecclisomyia bilera	Kings Creek ecclysomyian caddisfly	Insects	IITRI12010	4	2	None	None	G1G2	S1S2	null	null	Aquatic
Eleocharis torticulmis	California twisted spikerush	Monocots	PMCYP092E0	2	2	None	None	G1	S1	1B.3	USFS_S-Sensitive	Bog & fen, Lower montane coniferous forest, Meadow & seep
Elodium blandowii	Blandow's bog moss	Bryophytes	NBMUS3C011	16	8	None	None	G4	S2	2B.3	USFS_S-Sensitive	Meadow & seep, Subalpine coniferous forest
Elymus scribneri	Scribner's wheat grass	Monocots	PMPOA2H170	12	1	None	None	G5	S3	2B.3	null	Alpine, Alpine boulder & rock field
Empidonax traillii	willow flycatcher	Birds	ABPAE33040	90	35	None	Endangered	G5	S1S2	null	IUCN_LC-Least Concern, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern	Meadow & seep, Riparian scrub, Riparian woodland, Wetland
Empidonax traillii extimus	southwestern willow flycatcher	Birds	ABPAE33043	70	1	Endangered	Endangered	G5T2	S1	null	NABCI_RWL-Red Watch List	Riparian woodland
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1398	97	None	None	G3G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast

												standing waters, Wetland
Ensatina eschscholtzii croceater	yellow-blotched salamander	Amphibians	AAAAD04011	46	8	None	None	G5T3	S3	null	BLM_S-Sensitive, CDFW_WL-Watch List, USFS_S-Sensitive	Broadleaved upland forest, Chaparral
Entosphenus folletti	northern California brook lamprey	Fish	AFBAA02110	4	2	None	None	G1G2	S1S2	null	CDFW_SSC-Species of Special Concern	Aquatic
Entosphenus lethophagus	Pit-Klamath brook lamprey	Fish	AFBAA02060	14	1	None	None	G3G4	S3	null	AFS_VU-Vulnerable, CDFW_SSC-Species of Special Concern	Aquatic, Sacramento/San Joaquin flowing waters
Entosphenus similis	Klamath River lamprey	Fish	AFBAA02140	14	8	None	None	G3G4Q	S3	null	AFS_TH-Threatened, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Klamath/North coast flowing waters
Entosphenus tridentatus ssp. 1	Goose Lake lamprey	Fish	AFBAA02101	1	1	None	None	G4T1	S1	null	AFS_VU-Vulnerable, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Great Basin flowing waters
Entosthodon kochii	Koch's cord moss	Bryophytes	NBMUS2P050	4	1	None	None	G1	S1	1B.3	BLM_S-Sensitive	Cismontane woodland
Epilobium howellii	subalpine fireweed	Dicots	PDONA06180	99	88	None	None	G4	S4	4.3	null	Meadow & seep, Subalpine coniferous forest, Wetland
Epilobium luteum	yellow willowherb	Dicots	PDONA060H0	3	3	None	None	G5	S1	2B.3	null	Lower montane coniferous forest, Meadow & seep, Wetland
Epilobium nivium	Snow Mountain willowherb	Dicots	PDONA060M0	19	9	None	None	G2G3	S2S3	1B.2	USFS_S-Sensitive	Chaparral, Upper montane coniferous forest
Epilobium oreganum	Oregon fireweed	Dicots	PDONA060P0	62	12	None	None	G2	S2	1B.2	USFS_S-Sensitive	Bog & fen, Lower montane coniferous forest, Meadow & seep, Ultramafic, Upper montane coniferous forest, Wetland
Epilobium palustre	marsh willowherb	Dicots	PDONA060R0	5	4	None	None	G5	S2	2B.3	IUCN_LC-Least Concern	Bog & fen, Meadow & seep, Wetland
Epilobium siskiyouense	Siskiyou fireweed	Dicots	PDONA06100	56	41	None	None	G3	S3	1B.3	SB_BerrySB-Berry Seed Bank	Alpine boulder & rock field, Subalpine coniferous forest, Ultramafic, Upper montane coniferous forest
Eremalche parryi ssp. kernensis	Kern mallow	Dicots	PDMAL0C031	202	51	Endangered	None	G3G4T3	S3	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden	Chenopod scrub, Pinon & juniper woodlands, Valley & foothill grassland
Eremogone cliftonii	Clifton's eremogone	Dicots	PDCAR17010	68	50	None	None	G3	S3	1B.3	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
Eremophila alpestris actia	California horned lark	Birds	ABPAT02011	94	1	None	None	G5T4Q	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Marine intertidal & splash zone communities, Meadow & seep
Eremothera minor	Nelson's evening-primrose	Dicots	PDONA03110	20	3	None	None	G4	S1S2	2B.3	null	Chenopod scrub, Great Basin scrub
Erethizon dorsatum	North American porcupine	Mammals	AMAFJ01010	523	176	None	None	G5	S3	null	IUCN_LC-Least Concern	Broadleaved upland forest, Cismontane woodland, Closed-cone coniferous forest, Lower montane coniferous forest, North coast coniferous forest, Upper montane coniferous forest
Eriastrum hooveri	Hoover's eriastrum	Dicots	PDPLM03070	47	1	Delisted	None	G3	S3	4.2	SB_CalBG/RSABG-California/Rancho	Chenopod scrub, Pinon &

											Santa Ana Botanic Garden	juniper woodlands, Valley & foothill grassland
Eriastrum luteum	yellow-flowered eriastrum	Dicots	PDPLM03080	34	3	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Broadleaved upland forest, Chaparral, Cismontane woodland
Eriastrum tracyi	Tracy's eriastrum	Dicots	PDPLM030C0	119	59	None	Rare	G3Q	S3	3.2	USFS_S-Sensitive	Chaparral, Cismontane woodland, Valley & foothill grassland
Ericameria gilmanii	Gilman's goldenbush	Dicots	PDAST3L0P0	7	2	None	None	G2	S2	1B.3	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Limestone, Subalpine coniferous forest, Upper montane coniferous forest
Erigeron aequifolius	Hall's daisy	Dicots	PDAST3M030	13	10	None	None	G3	S3	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Broadleaved upland forest, Lower montane coniferous forest, Pinon & juniper woodlands, Upper montane coniferous forest
Erigeron bloomeri var. nudatus	Waldo daisy	Dicots	PDAST3M0M2	18	6	None	None	G5T4	S3	2B.3	null	Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
Erigeron eatonii var. nevadincola	Nevada daisy	Dicots	PDAST3M2U0	32	16	None	None	G5T2T3	S2S3	2B.3	null	Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands
Erigeron greenei	Greene's narrow-leaved daisy	Dicots	PDAST3M5G0	20	1	None	None	G3	S3	1B.2	null	Chaparral, Ultramafic
Erigeron inornatus var. keilii	Keil's daisy	Dicots	PDAST3M1Z2	9	5	None	None	G5T2	S2	1B.3	null	Chaparral, Lower montane coniferous forest, Meadow & seep
Erigeron lassenianus var. deficiens	Plumas rayless daisy	Dicots	PDAST3M262	35	31	None	None	G3G4T2T3	S2S3	1B.3	null	Lower montane coniferous forest, Ultramafic
Erigeron miser	starved daisy	Dicots	PDAST3M2K0	34	17	None	None	G3?	S3?	1B.3	USFS_S-Sensitive	Upper montane coniferous forest
Erigeron multiceps	Kern River daisy	Dicots	PDAST3M2N0	30	24	None	None	G2G3	S2S3	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Meadow & seep, Upper montane coniferous forest
Erigeron nivalis	snow fleabane daisy	Dicots	PDASTE1060	12	9	None	None	G5	S3	2B.3	null	Alpine boulder & rock field, Meadow & seep, Subalpine coniferous forest
Eriogonum alpinum	Trinity buckwheat	Dicots	PDPGN08060	18	14	None	Endangered	G2	S2	1B.2	USFS_S-Sensitive	Alpine, Alpine boulder & rock field, Subalpine coniferous forest, Ultramafic, Upper montane coniferous forest
Eriogonum apricum var. apricum	Ione buckwheat	Dicots	PDPGN080F1	6	1	Endangered	Endangered	G2T1	S1	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Ione formation
Eriogonum breedlovei var. breedlovei	Breedlove's buckwheat	Dicots	PDPGN080V1	10	10	None	None	G3T2	S2	1B.2	USFS_S-Sensitive	Limestone, Pinon & juniper woodlands, Upper montane coniferous forest
Eriogonum breedlovei var. shevockii	The Needles buckwheat	Dicots	PDPGN080V2	18	18	None	None	G3T3	S3	4.3	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Pinon & juniper woodlands, Upper montane coniferous forest
Eriogonum diclinum	Jaynes Canyon buckwheat	Dicots	PDPGN081S0	14	14	None	None	G3	S3	2B.3	null	Ultramafic, Upper montane coniferous forest
Eriogonum heermannii var. occidentale	western Heermann's buckwheat	Dicots	PDPGN082P6	12	3	None	None	G5T2	S2	1B.2	BLM_S-Sensitive	Cismontane woodland, Ultramafic
Eriogonum hirtellum	Klamath Mountain buckwheat	Dicots	PDPGN082T0	30	29	None	None	G2G3	S2S3	1B.3	USFS_S-Sensitive	Lower montane coniferous forest, Ultramafic,

												Upper montane coniferous forest
Eriogonum kennedyi var. alpigenum	southern alpine buckwheat	Dicots	PDPGN083B1	9	1	None	None	G4T3	S3	1B.3	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Alpine, Alpine boulder & rock field, Subalpine coniferous forest
Eriogonum kennedyi var. pinicola	Kern buckwheat	Dicots	PDPGN083B4	4	2	None	None	G4T1	S1	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Pinon & juniper woodlands
Eriogonum luteolum var. saltuarium	Jack's wild buckwheat	Dicots	PDPGN083S4	4	3	None	None	G5T1	S1	1B.2	USFS_S-Sensitive	Great Basin scrub, Upper montane coniferous forest
Eriogonum microthecum var. schoolcraftii	Schoolcraft's wild buckwheat	Dicots	PDPGN083WG	7	2	None	None	G5T3	S3	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Pinon & juniper woodlands
Eriogonum nervulosum	Snow Mountain buckwheat	Dicots	PDPGN08440	9	4	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral, Ultramafic
Eriogonum nortonii	Pinnacles buckwheat	Dicots	PDPGN08470	36	7	None	None	G2	S2	1B.3	BLM_S-Sensitive	Chaparral, Valley & foothill grassland
Eriogonum nudum var. murinum	mouse buckwheat	Dicots	PDPGN08495	11	1	None	None	G5T2	S2	1B.2	BLM_S-Sensitive	Chaparral, Cismontane woodland, Valley & foothill grassland
Eriogonum nudum var. regirivum	Kings River buckwheat	Dicots	PDPGN0849F	5	3	None	None	G5T2	S2	1B.2	USFS_S-Sensitive	Cismontane woodland, Limestone
Eriogonum nutans var. nutans	Dugway wild buckwheat	Dicots	PDPGN084B2	18	7	None	None	G5T3T4	S2?	2B.3	null	Chenopod scrub, Great Basin scrub
Eriogonum ochrocephalum var. ochrocephalum	ochre-flowered buckwheat	Dicots	PDPGN084C6	6	4	None	None	G5T2T3	S2	2B.2	null	Great Basin scrub, Pinon & juniper woodlands
Eriogonum ovalifolium var. depressum	depressed wild buckwheat	Dicots	PDPGN084FF	1	1	None	None	G5T4T5	S1	2B.1	null	Alkali playa, Great Basin scrub
Eriogonum ovalifolium var. monarchense	Monarch buckwheat	Dicots	PDPGN084FJ	1	1	None	None	G5T1	S1	1B.1	USFS_S-Sensitive	Mojavean desert scrub, Pinon & juniper woodlands
Eriogonum prociduum	prostrate buckwheat	Dicots	PDPGN084W0	33	25	None	None	G3	S3	1B.2	BLM_S-Sensitive, SB_BerrySB-Berry Seed Bank, USFS_S-Sensitive	Great Basin scrub, Pinon & juniper woodlands, Upper montane coniferous forest
Eriogonum pyrolifolium var. pyrolifolium	pyrola-leaved buckwheat	Dicots	PDPGN084Z2	15	10	None	None	G4T4	S3	2B.3	null	Alpine boulder & rock field
Eriogonum spectabile	Barron's buckwheat	Dicots	PDPGN08750	2	2	None	None	G1	S1	1B.2	USFS_S-Sensitive	Upper montane coniferous forest
Eriogonum temblorense	Temblor buckwheat	Dicots	PDPGN085P0	16	4	None	None	G2	S2	1B.2	BLM_S-Sensitive	Valley & foothill grassland
Eriogonum twisselmannii	Twisselmann's buckwheat	Dicots	PDPGN08610	13	13	None	Rare	G2	S2	1B.2	USFS_S-Sensitive	Upper montane coniferous forest
Eriogonum umbellatum var. ahartii	Ahart's buckwheat	Dicots	PDPGN086UY	30	24	None	None	G5T3	S3	1B.2	USFS_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Eriogonum umbellatum var. glaberrimum	Warner Mountains buckwheat	Dicots	PDPGN086U2	8	7	None	None	G5T2?	S2	1B.3	USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Upper montane coniferous forest
Eriogonum umbellatum var. torreyanum	Donner Pass buckwheat	Dicots	PDPGN086U9	23	17	None	None	G5T2	S2	1B.2	USFS_S-Sensitive	Meadow & seep, Upper montane coniferous forest
Eriogonum ursinum var. erubescens	blushing wild buckwheat	Dicots	PDPGN08632	36	15	None	None	G3G4T3	S3	1B.3	SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Chaparral, Lower montane coniferous forest
Eriogonum wrightii var. olanchense	Olancha Peak buckwheat	Dicots	PDPGN086D3	2	2	None	None	G5T2	S2	1B.3	USFS_S-Sensitive	Alpine, Alpine boulder & rock field, Subalpine coniferous forest
Eriophyllum congdonii	Congdon's woolly sunflower	Dicots	PDAST3N030	21	17	None	Rare	G2	S2	1B.2	USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane

												coniferous forest, Valley & foothill grassland
Eriophyllum mohavense	Barstow woolly sunflower	Dicots	PDAST3N070	80	9	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture	Alkali playa, Chenopod scrub, Mojavean desert scrub
Eriophyllum nubigenum	Yosemite woolly sunflower	Dicots	PDAST3N0A0	14	3	None	None	G2	S2	1B.3	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest
Eryngium pinnatisectum	Tuolumne button-celery	Dicots	PDAPI0Z0P0	30	1	None	None	G2	S2	1B.2	null	Cismontane woodland, Lower montane coniferous forest, Vernal pool, Wetland
Erythranthe filicaulis	slender-stemmed monkeyflower	Dicots	PDSCR1B150	49	31	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Cismontane woodland, Lower montane coniferous forest, Meadow & seep, Upper montane coniferous forest, Wetland
Erythranthe filicifolia	fern-leaved monkeyflower	Dicots	PDPHR01150	25	23	None	None	G2	S2	1B.2	null	Chaparral, Lower montane coniferous forest, Meadow & seep
Erythranthe gracilipes	slender-stalked monkeyflower	Dicots	PDSCR1B1C0	13	3	None	None	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest
Erythranthe inflatula	ephemeral monkeyflower	Dicots	PDSCR1B370	26	17	None	None	G3	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands
Erythranthe marmorata	Stanislaus monkeyflower	Dicots	PDPHR01130	10	2	None	None	G2?	S2?	1B.1	null	Cismontane woodland, Lower montane coniferous forest
Erythranthe norrisii	Kaweah monkeyflower	Dicots	PDSCR1B2Y0	8	2	None	None	G2	S2	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Chaparral, Cismontane woodland, Limestone
Erythranthe percaulis	Serpentine Canyon monkeyflower	Dicots	PDPHR01140	1	1	None	None	G1	S1	1B.1	null	Chaparral, Lower montane coniferous forest, Ultramafic
Erythranthe rhodopetra	Red Rock Canyon monkeyflower	Dicots	PDPHR01040	6	2	None	None	G1	S1	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Mojavean desert scrub
Erythranthe shevockii	Kelso Creek monkeyflower	Dicots	PDSCR1B2Z0	13	10	None	None	G1	S1	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Joshua tree woodland, Pinon & juniper woodlands
Erythranthe taylorii	Shasta limestone monkeyflower	Dicots	PDPHR01080	31	28	None	None	G2	S2	1B.1	null	Cismontane woodland, Lower montane coniferous forest
Erythranthe trinitiensis	pink-margined monkeyflower	Dicots	PDPHR01070	15	6	None	None	G2	S2	1B.3	null	Cismontane woodland, Lower montane coniferous forest, Meadow & seep, Ultramafic, Upper montane coniferous forest
Erythronium citrinum var. roderickii	Scott Mountains fawn lily	Monocots	PMLIL0U042	66	1	None	None	G4T3T4	S3S4	4.3	SB_UCSC-UC Santa Cruz	Lower montane coniferous forest, Ultramafic
Erythronium hendersonii	Henderson's fawn lily	Monocots	PMLIL0U070	7	2	None	None	G4	S2	2B.3	USFS_S-Sensitive	Lower montane coniferous forest
Erythronium klamathense	Klamath fawn lily	Monocots	PMLIL0U090	14	2	None	None	G4	S2	2B.2	SB_UCSC-UC Santa Cruz	Meadow & seep, Upper montane

												coniferous forest
Erythronium oregonum	giant fawn lily	Monocots	PMLIL0U0C0	38	1	None	None	G4G5	S2	2B.2	null	Cismontane woodland, Meadow & seep, Ultramafic
Erythronium pluriflorum	Shuteye Peak fawn lily	Monocots	PMLIL0U0Q0	6	6	None	None	G2	S2	1B.3	USFS_S-Sensitive	Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest
Erythronium pusaterii	Kaweah fawn lily	Monocots	PMLIL0U0R0	8	7	None	None	G3	S3	1B.3	USFS_S-Sensitive	Meadow & seep, Subalpine coniferous forest
Erythronium shastense	Shasta fawn lily	Monocots	PMLIL0U0V0	14	14	None	None	G2	S2	1B.2	null	Cismontane woodland, Limestone, Lower montane coniferous forest
Erythronium tuolumnense	Tuolumne fawn lily	Monocots	PMLIL0U0H0	35	30	None	None	G2G3	S2S3	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Broadleaved upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest
Eschscholzia lemmonii ssp. kernensis	Tejon poppy	Dicots	PDPAP0A071	86	7	None	None	G5T2	S2	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, SB_USDA-US Dept of Agriculture	Chenopod scrub, Valley & foothill grassland
Eschscholzia minutiflora ssp. twisselmannii	Red Rock poppy	Dicots	PDPAP0A093	27	19	None	None	G5T2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture	Mojavean desert scrub
Euderma maculatum	spotted bat	Mammals	AMACC07010	68	12	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, WBWG_H-High Priority	null
Eumetopias jubatus	Steller (=northern) sea-lion	Mammals	AMAJC03010	38	3	Delisted	None	G3	S2	null	IUCN_EN-Endangered, MMC_SSC-Species of Special Concern	Marine intertidal & splash zone communities, Protected deepwater coastal communities, Rock shore
Eumops perotis californicus	western mastiff bat	Mammals	AMACD02011	296	16	None	None	G4G5T4	S3S4	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, WBWG_H-High Priority	Chaparral, Cismontane woodland, Coastal scrub, Valley & foothill grassland
Euphilotes glaucon comstocki	Comstock's blue butterfly	Insects	IILEPG201A	2	1	None	None	G5T2	S2	null	null	Valley & foothill grassland
Euphorbia ocellata ssp. rattanii	Stony Creek spurge	Dicots	PDEUP0D1P1	39	7	None	None	G4T2?	S2?	1B.2	BLM_S-Sensitive	Chaparral, Riparian scrub, Valley & foothill grassland
Extriplex joaquinana	San Joaquin spearscale	Dicots	PDCHE041F3	127	5	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Alkali playa, Chenopod scrub, Meadow & seep, Valley & foothill grassland
Farula praelonga	long-tailed caddisfly	Insects	IITRI13100	2	1	None	None	G1G2	S1S2	null	null	Aquatic
Fen	Fen	Marsh	CTT51200CA	6	1	None	None	G2	S1.2	null	null	Bog & fen, Wetland
Fissidens aphelotaxifolius	brook pocket moss	Bryophytes	NBMUS2W290	2	2	None	None	G3G4	S1	2B.2	USFS_S-Sensitive	Lower montane coniferous forest, Upper montane coniferous forest
Fissidens pauperculus	minute pocket moss	Bryophytes	NBMUS2W0U0	22	5	None	None	G3?	S2	1B.2	USFS_S-Sensitive	North coast coniferous forest, Redwood
Frangula purshiana ssp. ultramafica	Caribou coffeeberry	Dicots	PDRHA0H061	36	35	None	None	G4T2T3	S2S3	1B.2	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Meadow & seep, Ultramafic, Upper montane coniferous forest
Frasera albicaulis	Modoc green-gentian	Dicots	PDGEN05018	21	10	None	None	G5T3T4	S2S3	2B.3	null	Great Basin

var. modocensis												scrub, Upper montane coniferous forest
Fremontodendron decumbens	Pine Hill flannelbush	Dicots	PDSTE03030	12	2	Endangered	Rare	G1	S1	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Cismontane woodland, Ultramafic
Fritillaria agrestis	stinkbells	Monocots	PMLIL0V010	32	4	None	None	G3	S3	4.2	null	Chaparral, Cismontane woodland, Pinon & juniper woodlands, Ultramafic, Valley & foothill grassland
Fritillaria brandegeei	Greenhorn fritillary	Monocots	PMLIL0V040	37	27	None	None	G2G3	S2S3	1B.3	USFS_S-Sensitive	Lower montane coniferous forest
Fritillaria eastwoodiae	Butte County fritillary	Monocots	PMLIL0V060	235	94	None	None	G3Q	S3	3.2	USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Fritillaria falcata	talus fritillary	Monocots	PMLIL0V070	16	2	None	None	G2	S2	1B.2	BLM_S-Sensitive, IUCN_EN-Endangered, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Fritillaria gentneri	Gentner's fritillary	Monocots	PMLIL0V080	2	1	Endangered	None	G1	S1	1B.1	null	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Fritillaria ojaiensis	Ojai fritillary	Monocots	PMLIL0V0N0	49	2	None	None	G3	S3	1B.2	SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Broadleaved upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Fritillaria pluriflora	adobe-lily	Monocots	PMLIL0V0F0	114	22	None	None	G2G3	S2S3	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland
Fritillaria viridea	San Benito fritillary	Monocots	PMLIL0V0L0	24	11	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Galium angustifolium ssp. onycense	Onyx Peak bedstraw	Dicots	PDRUB0N048	11	5	None	None	G5T3	S3	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Cismontane woodland, Pinon & juniper woodlands
Galium californicum ssp. sierrae	El Dorado bedstraw	Dicots	PDRUB0N0E7	17	6	Endangered	Rare	G5T1	S1	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Galium glabrescens ssp. modocense	Modoc bedstraw	Dicots	PDRUB0N0T2	23	22	None	None	G4T3	S3	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub
Galium hardhamiae	Hardham's bedstraw	Dicots	PDRUB0N0Y0	24	1	None	None	G3	S3	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Closed-cone coniferous forest, Ultramafic
Galium serpenticum ssp. scotticum	Scott Mountain bedstraw	Dicots	PDRUB0N1Y6	52	26	None	None	G4G5T2	S2	1B.2	BLM_S-Sensitive	Lower montane coniferous forest, Ultramafic
Galium serpenticum ssp. warnerense	Warner Mountains bedstraw	Dicots	PDRUB0N1Y8	11	11	None	None	G4G5T2T3	S2	1B.2	USFS_S-Sensitive	Meadow & seep, Pinon & juniper woodlands, Subalpine coniferous forest
Gambelia sila	blunt-nosed leopard lizard	Reptiles	ARACF07010	416	48	Endangered	Endangered	G1	S1	null	CDFW_FP-Fully Protected, IUCN_EN-Endangered	Chenopod scrub

Gentiana plurisetosa	Klamath gentian	Dicots	PDGEN060V0	22	15	None	None	G2G3	S2	1B.3	null	Lower montane coniferous forest, Meadow & seep, Upper montane coniferous forest, Wetland
Geum aleppicum	Aleppo avens	Dicots	PDROS0S010	9	3	None	None	G5	S2	2B.2	null	Great Basin scrub, Lower montane coniferous forest, Meadow & seep
Gila coerulea	blue chub	Fish	AFCJB13050	2	1	None	None	G3G4	S2S3	null	CDFW_SSC-Species of Special Concern	Aquatic, Klamath/North coast flowing waters, Klamath/North coast standing waters
Gilia yorkii	Monarch gilia	Dicots	PDPLM04230	3	3	None	None	G2	S2	1B.1	USFS_S-Sensitive	Chaparral, Cismontane woodland, Limestone
Githopsis tenella	delicate bluecup	Dicots	PDCAM07070	5	1	None	None	G2	S2	1B.3	BLM_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Glyceria grandis	American manna grass	Monocots	PMPOA2Y080	10	1	None	None	G5	S3	2B.3	null	Bog & fen, Marsh & swamp, Meadow & seep, Wetland
Goeracea oregona	Sagehen Creek goeracean caddisfly	Insects	IITRI0X010	3	3	None	None	G3	S1S2	null	null	Aquatic
Gonidea angulata	western ridged mussel	Mollusks	IMBIV19010	157	55	None	None	G3	S1S2	null	null	Aquatic
Goose Lake	Goose Lake	Inland Waters	CALA1310CA	1	1	None	None	GNR	SNR	null	null	null
Goose Lake Drainage Redband Trout/Lamprey Spawning Stream	Goose Lake Drainage Redband Trout/Lamprey Spawning Stream	Inland Waters	CARA2220CA	2	1	None	None	GNR	SNR	null	null	null
Goose Lake Drainage Resident Redband Trout Stream	Goose Lake Drainage Resident Redband Trout Stream	Inland Waters	CARA2230CA	1	1	None	None	GNR	SNR	null	null	null
Gopherus agassizii	desert tortoise	Reptiles	ARAAF01012	985	11	Threatened	Threatened	G3	S2S3	null	IUCN_VU-Vulnerable	Joshua tree woodland, Mojavean desert scrub, Sonoran desert scrub
Gratiola heterosepala	Boggs Lake hedge-hyssop	Dicots	PDSCR0R060	99	41	None	Endangered	G2	S2	1B.2	BLM_S-Sensitive	Freshwater marsh, Marsh & swamp, Vernal pool, Wetland
Great Basin Cutthroat Trout/Paiute Sculpin Stream	Great Basin Cutthroat Trout/Paiute Sculpin Stream	Inland Waters	CARC2320CA	2	2	None	None	GNR	SNR	null	null	null
Great Basin Sucker/Dace/Redside Stream With Cutthroat Trout	Great Basin Sucker/Dace/Redside Stream With Cutthroat Trout	Inland Waters	CARC2331CA	2	2	None	None	GNR	SNR	null	null	null
Great Basin Tui Chub Stream	Great Basin Tui Chub Stream	Inland Waters	CARC2360CA	1	1	None	None	GNR	SNR	null	null	null
Great Valley Mesquite Scrub	Great Valley Mesquite Scrub	Riparian	CTT63420CA	7	1	None	None	G1	S1.1	null	null	Riparian scrub
Great Valley Mixed Riparian Forest	Great Valley Mixed Riparian Forest	Riparian	CTT61420CA	68	3	None	None	G2	S2.2	null	null	Riparian forest
Great Valley Valley Oak Riparian Forest	Great Valley Valley Oak Riparian Forest	Riparian	CTT61430CA	33	2	None	None	G1	S1.1	null	null	Riparian forest
Greeneocharis circumscissa var. rosulata	rosette cushion cryptantha	Dicots	PDBOR0A0G3	8	5	None	None	G5T2	S2	1B.2	USFS_S-Sensitive	Alpine boulder & rock field, Subalpine coniferous forest
Gulo gulo	California wolverine	Mammals	AMAJF03010	174	71	None	Threatened	G4	S1	null	CDFW_FP-Fully Protected, IUCN_NT-Near Threatened, USFS_S-Sensitive	Alpine, Alpine dwarf scrub, Meadow & seep, Montane dwarf scrub, North coast coniferous forest, Riparian forest, Subalpine coniferous forest, Upper montane coniferous forest, Wetland
Gymnogyps californianus	California condor	Birds	ABNKA03010	13	2	Endangered	Endangered	G1	S1	null	CDF_S-Sensitive, CDFW_FP-Fully Protected, IUCN_CR-Critically Endangered, NABCI_RWL-Red Watch List	Chaparral, Valley & foothill grassland

Hackelia sharsmithii	Sharsmith's stickseed	Dicots	PDBOR0G0Q0	26	2	None	None	G3	S3	2B.3	null	Alpine, Alpine boulder & rock field, Chaparral, Subalpine coniferous forest
Haliaeetus leucocephalus	bald eagle	Birds	ABNKC10010	329	159	Delisted	Endangered	G5	S3	null	BLM_S-Sensitive, CDF_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern	Lower montane coniferous forest, Oldgrowth
Harmonia doris-nilesiae	Niles' harmonia	Dicots	PDAST650L0	25	5	None	None	G2G3	S2S3	1B.1	USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Harmonia hallii	Hall's harmonia	Dicots	PDAST650A0	23	4	None	None	G2?	S2?	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Ultramafic
Harmonia stebbinsii	Stebbins' harmonia	Dicots	PDAST650K0	21	8	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Ultramafic
Helianthus winteri	Winter's sunflower	Dicots	PDAST4N260	55	2	None	None	G2?	S2?	1B.2	BLM_S-Sensitive	Cismontane woodland, Valley & foothill grassland
Helisoma newberryi	Great Basin ramshorn	Mollusks	IMGASM6020	9	1	None	None	G1	S1S2	null	USFS_S-Sensitive	Aquatic
Helminthoglypta allynsmithi	Merced Canyon shoulderband	Mollusks	IMGASC2020	4	4	None	None	G1	S1	null	IUCN_VU-Vulnerable	Talus slope
Helminthoglypta greggi	Mohave shoulderband	Mollusks	IMGASC2270	4	1	None	None	G1	S1	null	null	Talus slope
Helminthoglypta hertleini	Oregon shoulderband	Mollusks	IMGASC2280	16	12	None	None	G3Q	S1S2	null	null	Riparian forest, Talus slope
Helminthoglypta talmadgei	Trinity shoulderband	Mollusks	IMGASC2630	21	3	None	None	G2	S2	null	null	Limestone, Lower montane coniferous forest, Riparian forest
Hemieva ranunculifolia	buttercup-leaf hemieva	Dicots	PDSAX0W010	8	5	None	None	G5	S2	2B.2	null	Meadow & seep, Upper montane coniferous forest, Wetland
Hesperarion plumbeus	leaden slug	Mollusks	IMGAS60040	2	2	None	None	G1	S1	null	null	Riparian forest
Hesperocyparis nevadensis	Piute cypress	Gymnosperms	PGCUP04012	18	18	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture	Chaparral, Cismontane woodland, Closed-cone coniferous forest, Limestone, Pinon & juniper woodlands, Ultramafic
Hesperolinon breweri	Brewer's western flax	Dicots	PDLIN01030	29	1	None	None	G2	S2	1B.2	null	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland
Hesperolinon drymarioides	drymaria-like western flax	Dicots	PDLIN01090	24	15	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Closed-cone coniferous forest, Ultramafic, Valley & foothill grassland
Hesperolinon tehamense	Tehama County western flax	Dicots	PDLIN010C0	16	14	None	None	G2	S2	1B.3	BLM_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Heteranthera dubia	water star-grass	Monocots	PMPON03010	9	1	None	None	G5	S2	2B.2	IUCN_LC-Least Concern	Marsh & swamp
Heterotheca monarchensis	Monarch golden-aster	Dicots	PDAST4V0U0	3	3	None	None	G2	S2	1B.1	USFS_S-Sensitive	Cismontane woodland, Limestone
Heterotheca shevockii	Shevock's golden-aster	Dicots	PDAST4V0T0	9	8	None	None	G2	S2	1B.3	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Chaparral, Cismontane woodland, Riparian woodland
Horkelia cuneata var.	mesa horkelia	Dicots	PDROS0W045	103	1	None	None	G4T1	S1	1B.1	USFS_S-Sensitive	Chaparral,

puberula												Cismontane woodland, Coastal scrub
Horkelia daucifolia var. indicta	Jepson's horkelia	Dicots	PDROS0W053	3	1	None	None	G4T1	S1	1B.1	null	Cismontane woodland
Horkelia hendersonii	Henderson's horkelia	Dicots	PDROS0W090	1	1	None	None	G1	S1	1B.1	SB_BerrySB-Berry Seed Bank, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Upper montane coniferous forest
Horkelia parryi	Parry's horkelia	Dicots	PDROS0W0C0	44	23	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Ione formation
Horkelia tularensis	Kern Plateau horkelia	Dicots	PDROS0W0H0	5	5	None	None	G2	S2	1B.3	USFS_S-Sensitive	Upper montane coniferous forest
Hosackia oblongifolia var. cuprea	copper-flowered bird's-foot trefoil	Dicots	PDFAB2A0W1	16	10	None	None	G5T2	S2	1B.3	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Meadow & seep, Upper montane coniferous forest, Wetland
Howellanthus dalesianus	Scott Mountain howellanthus	Dicots	PDHYD0C140	46	21	None	None	G3	S3	4.3	null	Lower montane coniferous forest, Meadow & seep, Subalpine coniferous forest, Ultramafic, Upper montane coniferous forest
Hulsea brevifolia	short-leaved hulsea	Dicots	PDAST4Z020	64	33	None	None	G3	S3	1B.2	USFS_S-Sensitive	Lower montane coniferous forest, Upper montane coniferous forest
Hulsea nana	little hulsea	Dicots	PDAST4Z060	20	16	None	None	G4	S3	2B.3	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Alpine boulder & rock field, Subalpine coniferous forest
Hulsea vestita ssp. pygmaea	pygmy hulsea	Dicots	PDAST4Z077	4	1	None	None	G5T1	S1	1B.3	USFS_S-Sensitive	Alpine boulder & rock field, Subalpine coniferous forest
Hydromantes platycephalus	Mount Lyell salamander	Amphibians	AAAAD09020	47	15	None	None	G4	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Great Basin scrub, Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest, Wetland
Hydromantes shastae	Shasta salamander	Amphibians	AAAAD09030	75	50	None	Threatened	G3	S3	null	BLM_S-Sensitive, IUCN_VU-Vulnerable, USFS_S-Sensitive	Cismontane woodland, Limestone
Hydroporus leechi	Leech's skyline diving beetle	Insects	IICOL55040	13	5	None	None	G1?	S1?	null	null	Aquatic
Icteria virens	yellow-breasted chat	Birds	ABPBX24010	100	2	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Riparian forest, Riparian scrub, Riparian woodland
Iliamna bakeri	Baker's globe mallow	Dicots	PDMAL0K010	48	41	None	None	G4	S3	4.2	null	Chaparral, Pinon & juniper woodlands
Ione Chaparral	Ione Chaparral	Scrub	CTT37D00CA	12	1	None	None	G1	S1.1	null	null	Chaparral
Iris hartwegii ssp. columbiana	Tuolumne iris	Monocots	PMIRI090D2	3	3	None	None	G4T1	S1	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Cismontane woodland, Lower montane coniferous forest
Iris munzii	Munz's iris	Monocots	PMIRI090M0	14	7	None	None	G2	S2	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Cismontane woodland
Ivesia aperta var. aperta	Sierra Valley ivesia	Dicots	PDROS0X011	50	22	None	None	G2T2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Meadow & seep, Pinon & juniper woodlands
Ivesia aperta var. canina	Dog Valley ivesia	Dicots	PDROS0X012	5	5	None	None	G2T1	S1	1B.1	USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep
Ivesia baileyi var. baileyi	Bailey's ivesia	Dicots	PDROS0X031	14	14	None	None	G5T4	S2	2B.3	null	Great Basin scrub, Lower montane coniferous forest

Ivesia baileyi var. beneolens	Owyhee ivesia	Dicots	PDROS0X032	1	1	None	None	G5T4	S1	2B.3	null	Pinon & juniper woodlands, Upper montane coniferous forest
Ivesia campestris	field ivesia	Dicots	PDROS0X050	69	42	None	None	G3	S3	1B.2	null	Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest
Ivesia longibracteata	Castle Crags ivesia	Dicots	PDROS0X0U0	1	1	None	None	G1	S1	1B.3	SB_BerrySB-Berry Seed Bank, USFS_S-Sensitive	Lower montane coniferous forest
Ivesia paniculata	Ash Creek ivesia	Dicots	PDROS0X0S0	26	25	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Pinon & juniper woodlands, Upper montane coniferous forest
Ivesia pickeringii	Pickering's ivesia	Dicots	PDROS0X0D0	13	6	None	None	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep, Ultramafic, Wetland
Ivesia sericoleuca	Plumas ivesia	Dicots	PDROS0X0K0	80	51	None	None	G2	S2	1B.2	USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Meadow & seep, Vernal pool, Wetland
Ivesia unguiculata	Yosemite ivesia	Dicots	PDROS0X0N0	26	24	None	None	G3	S3	4.2	null	Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest, Wetland
Ivesia webberi	Webber's ivesia	Dicots	PDROS0X0Q0	13	7	Threatened	None	G2	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands
Jaffueliobryum raui	Rau's jaffueliobryum moss	Bryophytes	NBMUS97010	7	1	None	None	G4	S2	2B.3	null	Alpine dwarf scrub, Chaparral, Limestone, Mojavean desert scrub, Sonoran desert scrub
Jaffueliobryum wrightii	Wright's jaffueliobryum moss	Bryophytes	NBMUS97020	21	1	None	None	G5	S2S3	2B.3	null	Alpine dwarf scrub, Limestone, Mojavean desert scrub, Pinon & juniper woodlands
Juga acutifilosa	topaz juga	Mollusks	IMGASK4010	9	1	None	None	G2	S2	null	USFS_S-Sensitive	Aquatic
Juga occata	scalloped juga	Mollusks	IMGASK4070	4	3	None	None	G1	S1	null	USFS_S-Sensitive	Aquatic
Juncus dudleyi	Dudley's rush	Monocots	PMJUN01390	12	2	None	None	G5	S1	2B.3	null	Lower montane coniferous forest, Wetland
Juncus leiospermus var. leiospermus	Red Bluff dwarf rush	Monocots	PMJUN011L2	62	8	None	None	G2T2	S2	1B.1	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Meadow & seep, Valley & foothill grassland, Vernal pool, Wetland
Juncus luciensis	Santa Lucia dwarf rush	Monocots	PMJUN013J0	37	11	None	None	G3	S3	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Great Basin scrub, Lower montane coniferous forest, Meadow & seep, Vernal pool, Wetland
Klamath/No Coast Spring Run Chinook/Summer Steelhead Stream	Klamath/No Coast Spring Run Chinook/Summer Steelhead Stream	Inland Waters	CARB2333CA	1	1	None	None	GNR	SNR	null	null	null
Klamath/North Coast Rainbow Trout Stream	Klamath/North Coast Rainbow Trout Stream	Inland Waters	CARB2312CA	9	6	None	None	GNR	SNR	null	null	null
Ladeania lanceolata	lance-leaved scurf-pea	Dicots	PDFAB5M030	11	2	None	None	G5	S2	2B.3	null	Great Basin scrub
Lagophylla diabolensis	Diablo Range hare-leaf	Dicots	PDAST5J060	15	4	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden	Cismontane woodland, Valley & foothill grassland
Lanius ludovicianus	loggerhead shrike	Birds	ABPBR01030	110	2	None	None	G4	S4	null	CDFW_SSC-Species of Special	Broadleaved upland forest,

											Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Desert wash, Joshua tree woodland, Mojavean desert scrub, Pinon & juniper woodlands, Riparian woodland, Sonoran desert scrub
Lanx alta	highcap lanx	Mollusks	IMGASL7010	13	6	None	None	G2G3	S1S2	null	null	Aquatic
Lanx patelloides	kneecap lanx	Mollusks	IMGASL7030	55	13	None	None	G2?	S2	null	USFS_S-Sensitive	Aquatic, Sacramento/San Joaquin flowing waters
Larus californicus	California gull	Birds	ABNNM03110	8	2	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	null
Lasionycteris noctivagans	silver-haired bat	Mammals	AMACC02010	139	32	None	None	G3G4	S3S4	null	IUCN_LC-Least Concern, WBWG_M-Medium Priority	Lower montane coniferous forest, Oldgrowth, Riparian forest
Lasiurus blossevillii	western red bat	Mammals	AMACC05060	128	5	None	None	G4	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, WBWG_H-High Priority	Cismontane woodland, Lower montane coniferous forest, Riparian forest, Riparian woodland
Lasiurus cinereus	hoary bat	Mammals	AMACC05030	238	16	None	None	G3G4	S4	null	IUCN_LC-Least Concern, WBWG_M-Medium Priority	Broadleaved upland forest, Cismontane woodland, Lower montane coniferous forest, North coast coniferous forest
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	Dicots	PDAST5L0A1	111	2	None	None	G4T2	S2	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden	Alkali playa, Marsh & swamp, Salt marsh, Vernal pool, Wetland
Lathyrus rigidus	rigid pea	Dicots	PDFAB250W0	10	3	None	None	G5	S1	2B.2	null	Great Basin scrub, Pinon & juniper woodlands
Lavinia symmetricus mitrulus	Pit roach	Fish	AFCJB19027	9	5	None	None	G4T2	S2	null	AFS_VU-Vulnerable, CDFW_SSC-Species of Special Concern	Aquatic, Sacramento/San Joaquin flowing waters
Lavinia symmetricus ssp. 3	Red Hills roach	Fish	AFCJB19028	8	1	None	None	G4T1	S1	null	AFS_VU-Vulnerable, BLM_S-Sensitive, CDFW_SSC-Species of Special Concern	Aquatic, Sacramento/San Joaquin flowing waters, Ultramafic
Layia discoidea	rayless layia	Dicots	PDAST5N030	43	29	None	None	G2	S2	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Layia heterotricha	pale-yellow layia	Dicots	PDAST5N070	125	37	None	None	G2	S2	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Cismontane woodland, Coastal scrub, Pinon & juniper woodlands, Valley & foothill grassland
Layia munzii	Munz's tidy-tips	Dicots	PDAST5N0B0	68	14	None	None	G2	S2	1B.2	BLM_S-Sensitive	Chenopod scrub, Valley & foothill grassland
Layia septentrionalis	Colusa layia	Dicots	PDAST5N0F0	69	3	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland
Legenere limosa	legenere	Dicots	PDCAM0C010	83	1	None	None	G2	S2	1B.1	BLM_S-Sensitive, SB_UCBG-UC Botanical Garden at Berkeley	Vernal pool, Wetland
Lepidium jaredii ssp. album	Panoche pepper-grass	Dicots	PDBRA1M0G2	60	35	None	None	G2G3T2T3	S2S3	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Valley & foothill grassland

Lepidium jaredii ssp. jaredii	Jared's pepper-grass	Dicots	PDBRA1M0G1	12	5	None	None	G2G3T1T2	S1S2	1B.2	BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden	Valley & foothill grassland
Lepidostoma ermanae	Cold Spring caddisfly	Insects	IITRI01050	1	1	None	None	G1G2	S1S2	null	null	Aquatic
Lepidurus packardi	vernal pool tadpole shrimp	Crustaceans	ICBRA10010	324	4	Endangered	None	G4	S3S4	null	IUCN_EN-Endangered	Valley & foothill grassland, Vernal pool, Wetland
Leptosiphon nuttallii ssp. howellii	Mt. Tedoc leptosiphon	Dicots	PDPLM090V4	5	5	None	None	G5T2	S2	1B.3	SB_BerrySB-Berry Seed Bank, USFS_S-Sensitive	Lower montane coniferous forest, Ultramafic
Leptosiphon serrulatus	Madera leptosiphon	Dicots	PDPLM09130	27	4	None	None	G3	S3	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Cismontane woodland, Lower montane coniferous forest
Lepus americanus klamathensis	Oregon snowshoe hare	Mammals	AMAEB03011	9	4	None	None	G5T3T4Q	S2	null	CDFW_SSC-Species of Special Concern	Riparian woodland
Lepus americanus tahoensis	Sierra Nevada snowshoe hare	Mammals	AMAEB03012	15	9	None	None	G5T3T4Q	S2	null	CDFW_SSC-Species of Special Concern	Riparian woodland
Lewisia cantelovii	Cantelow's lewisia	Dicots	PDPOR04020	73	58	None	None	G3	S3	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Broadleaved upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Lewisia congdonii	Congdon's lewisia	Dicots	PDPOR04040	10	9	None	Rare	G2	S2	1B.3	USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest, Valley & foothill grassland
Lewisia disepala	Yosemite lewisia	Dicots	PDPOR04060	22	15	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Lower montane coniferous forest, Pinon & juniper woodlands, Upper montane coniferous forest
Lewisia longipetala	long-petaled lewisia	Dicots	PDPOR040K0	14	14	None	None	G2	S2	1B.3	USFS_S-Sensitive	Alpine boulder & rock field, Subalpine coniferous forest
Limnanthes floccosa ssp. bellingeriana	Bellinger's meadowfoam	Dicots	PDLIM02041	5	4	None	None	G4T2T3	S1	1B.2	USFS_S-Sensitive	Cismontane woodland, Meadow & seep, Wetland
Limnanthes floccosa ssp. floccosa	woolly meadowfoam	Dicots	PDLIM02043	54	16	None	None	G4T4	S3	4.2	SB_UCBG-UC Botanical Garden at Berkeley	Chaparral, Cismontane woodland, Valley & foothill grassland, Vernal pool, Wetland
Linderiella occidentalis	California linderiella	Crustaceans	ICBRA06010	508	7	None	None	G2G3	S2S3	null	IUCN_NT-Near Threatened	Vernal pool
Lithobates pipiens	northern leopard frog	Amphibians	AAABH01170	19	1	None	None	G5	S2	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Freshwater marsh, Great Basin flowing waters, Great Basin standing waters, Marsh & swamp, Wetland
Loeflingia squarrosa var. artemisiarum	sagebrush loeflingia	Dicots	PDCAR0E011	26	3	None	None	G5T3	S2	2B.2	BLM_S-Sensitive	Desert dunes, Great Basin scrub, Sonoran desert scrub
Lomatium congdonii	Congdon's lomatium	Dicots	PDAPI1B0B0	20	12	None	None	G2	S2	1B.2	BLM_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Lomatium foeniculaceum ssp. macdougalii	Macdougal's lomatium	Dicots	PDAPI1B0M5	26	9	None	None	G5T4T5	S3	2B.2	null	Chenopod scrub, Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands
Lomatium grayi	Gray's lomatium	Dicots	PDAPI1B0Q0	4	2	None	None	G5	S1S2	2B.3	null	Great Basin scrub, Pinon & juniper woodlands

Lomatium hendersonii	Henderson's lomatium	Dicots	PDAPI1B0T0	14	5	None	None	G5?	S2	2B.3	null	Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands
Lomatium martindalei	Coast Range lomatium	Dicots	PDAPI1B140	9	1	None	None	G5	S2	2B.3	null	Coastal bluff scrub, Lower montane coniferous forest, Meadow & seep, Ultramafic
Lomatium peckianum	Peck's lomatium	Dicots	PDAPI1B1G0	12	3	None	None	G4	S1	2B.2	null	Chaparral, Cismontane woodland, Lower montane coniferous forest, Pinon & juniper woodlands
Lomatium ravenii var. paiutense	Paiute lomatium	Dicots	PDAPI1B1L1	21	13	None	None	G4T4	S2?	2B.3	null	Great Basin scrub
Lomatium ravenii var. ravenii	Raven's lomatium	Dicots	PDAPI1B1L2	14	7	None	None	G4T2	S2	1B.3	BLM_S-Sensitive	Great Basin scrub
Lomatium roseanum	adobe lomatium	Dicots	PDAPI1B2G0	11	10	None	None	G2G3	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest
Lomatium shevockii	Owens Peak lomatium	Dicots	PDAPI1B2C0	2	2	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Lower montane coniferous forest, Upper montane coniferous forest
Lomatium stebbinsii	Stebbins' lomatium	Dicots	PDAPI1B1V0	96	70	None	None	G2	S2	1B.1	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest
Lower McCloud River/Canyon River	Lower McCloud River/Canyon River	Inland Waters	CARA2342CA	2	1	None	None	GNR	SNR	null	null	null
Lower Pit River/Canyon River (Hardhead/Tule Perch River)	Lower Pit River/Canyon River (Hardhead/Tule Perch River)	Inland Waters	CARA2341CA	1	1	None	None	GNR	SNR	null	null	null
Lupinus antoninus	Anthony Peak lupine	Dicots	PDFAB2B0C0	6	3	None	None	G2	S2	1B.2	USFS_S-Sensitive	Lower montane coniferous forest, Upper montane coniferous forest
Lupinus citrinus var. citrinus	orange lupine	Dicots	PDFAB2B103	57	42	None	None	G2T2	S2	1B.2	USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest
Lupinus dalesiae	Quincy lupine	Dicots	PDFAB2B1A0	228	197	None	None	G3	S3	4.2	null	Chaparral, Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest
Lupinus gracilentus	slender lupine	Dicots	PDFAB2B1R0	21	4	None	None	G3	S3	1B.3	null	Subalpine coniferous forest
Lupinus latifolius var. barbatus	bearded lupine	Dicots	PDFAB2B29H	5	3	None	None	G5T2Q	S2	3.2	USFS_S-Sensitive	Upper montane coniferous forest
Lupinus padre-crowleyi	Father Crowley's lupine	Dicots	PDFAB2B2Z0	15	2	None	Rare	G2	S2	1B.2	USFS_S-Sensitive	Great Basin scrub, Riparian forest, Riparian scrub, Upper montane coniferous forest
Lupinus pusillus var. intermontanus	intermontane lupine	Dicots	PDFAB2B3B1	19	3	None	None	G5T5?	S2	2B.3	null	Great Basin scrub
Lupinus sericatus	Cobb Mountain lupine	Dicots	PDFAB2B3J0	46	1	None	None	G2?	S2?	1B.2	BLM_S-Sensitive, SB_UCSC-UC Santa Cruz	Broadleaved upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Lupinus spectabilis	shaggyhair lupine	Dicots	PDFAB2B3P0	24	15	None	None	G2	S2	1B.2	BLM_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Lupinus uncialis	lilliput lupine	Dicots	PDFAB2B410	18	1	None	None	G4	S2	2B.2	BLM_S-Sensitive	Great Basin scrub, Limestone, Pinon & juniper woodlands
Lysimachia thyrsiflora	tufted loosestrife	Dicots	PDPRI070S0	5	1	None	None	G5	S1?	2B.3	null	Meadow & seep, Upper montane

												coniferous forest, Wetland
Lytta hoppingi	Hopping's blister beetle	Insects	IICOL4C010	5	1	None	None	G1G2	S1S2	null	null	null
Lytta molesta	molestan blister beetle	Insects	IICOL4C030	17	1	None	None	G2	S2	null	null	Vernal pool, Wetland
Lytta morrisoni	Morrison's blister beetle	Insects	IICOL4C040	10	1	None	None	G1G2	S1S2	null	null	Valley & foothill grassland
Madia radiata	showy golden madia	Dicots	PDAST650E0	100	37	None	None	G3	S3	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden	Cismontane woodland, Valley & foothill grassland
Malacothamnus aboriginum	Indian Valley bush-mallow	Dicots	PDMAL0Q020	63	8	None	None	G3	S3	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden	Chaparral, Cismontane woodland
Malacothamnus palmeri var. palmeri	Santa Lucia bush-mallow	Dicots	PDMAL0Q0B5	10	2	None	None	G3T2Q	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral
Margaritifera falcata	western pearlshell	Mollusks	IMBIV27020	78	37	None	None	G4G5	S1S2	null	null	Aquatic
Martes caurina	Pacific marten	Mammals	AMAJF01030	39	29	None	None	G4G5	S3	null	IUCN_LC-Least Concern, USFS_S-Sensitive	North coast coniferous forest, Oldgrowth, Subalpine coniferous forest, Upper montane coniferous forest
Martes caurina humboldtensis	Humboldt marten	Mammals	AMAJF01012	44	11	Threatened	Endangered	G4G5T1	S1	null	CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	North coast coniferous forest, Oldgrowth, Redwood
Martes caurina sierrae	Sierra marten	Mammals	AMAJF01014	149	112	None	None	G4G5T3	S3	null	USFS_S-Sensitive	null
Masticophis flagellum ruddocki	San Joaquin coachwhip	Reptiles	ARADB21021	96	2	None	None	G5T2T3	S2?	null	CDFW_SSC-Species of Special Concern	Chenopod scrub, Valley & foothill grassland
Meesia longiseta	long seta hump moss	Bryophytes	NBMUS4L010	4	2	None	None	G5	S1	2B.3	null	Bog & fen, Meadow & seep, Ultramafic, Upper montane coniferous forest
Meesia triquetra	three-ranked hump moss	Bryophytes	NBMUS4L020	19	13	None	None	G5	S4	4.2	null	Bog & fen, Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest, Wetland
Meesia uliginosa	broad-nerved hump moss	Bryophytes	NBMUS4L030	52	46	None	None	G5	S3	2B.2	USFS_S-Sensitive	Bog & fen, Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest, Wetland
Mertensia bella	Oregon bluebells	Dicots	PDBOR0N040	2	2	None	None	G4	S1	2B.2	null	Meadow & seep, Upper montane coniferous forest, Wetland
Mertensia cusickii	Toiyabe bluebells	Dicots	PDBOR0N0M0	2	2	None	None	G4?	S2	2B.2	null	Great Basin scrub, Meadow & seep
Mertensia longiflora	long bluebells	Dicots	PDBOR0N0D0	11	9	None	None	G4?	S2	2B.2	null	Great Basin scrub, Lower montane coniferous forest
Mertensia oblongifolia var. amoena	beautiful sagebrush bluebells	Dicots	PDBOR0N0G1	13	12	None	None	G5T5	S2	2B.2	null	Great Basin scrub, Meadow & seep, Upper montane coniferous forest
Mertensia oblongifolia var. oblongifolia	sagebrush bluebells	Dicots	PDBOR0N0G2	12	9	None	None	G5T5	S3	2B.2	null	Great Basin scrub, Lower montane coniferous forest, Meadow & seep, Subalpine coniferous forest

Metapogon hurdi	Hurd's metapogon robberfly	Insects	IIDIP08010	3	1	None	None	G1G2	S1S2	null	null	Interior dunes
Mielichhoferia elongata	elongate copper moss	Bryophytes	NBMUS4Q022	20	7	None	None	G5	S3S4	4.3	USFS_S-Sensitive	Cismontane woodland
Mielichhoferia mielichhoferiana	Mielichhofer's copper moss	Bryophytes	NBMUS4Q021	1	1	None	None	G2G3	S1	2B.3	null	Limestone, Subalpine coniferous forest
Mielichhoferia shevockii	Shevock's copper moss	Bryophytes	NBMUSA1010	6	5	None	None	G2	S2	1B.2	BLM_S-Sensitive	Cismontane woodland
Mitellastra caulescens	leafy-stemmed mitrewort	Dicots	PDSAX0N020	21	4	None	None	G5	S4	4.2	null	Broadleaved upland forest, Lower montane coniferous forest, Meadow & seep, North coast coniferous forest
Monadenia callipeplus	downy sideband	Mollusks	IMGASC7110	3	2	None	None	G1?	S1S2	null	null	Oldgrowth, Riparian forest
Monadenia chaceana	Siskiyou shoulderband	Mollusks	IMGASC7150	3	2	None	None	G2G3	S2	null	null	Limestone, Riparian forest
Monadenia churchi	Klamath sideband	Mollusks	IMGASC7010	8	7	None	None	G2G3	S2	null	null	Talus slope
Monadenia circumcarinata	keeled sideband	Mollusks	IMGASC7020	6	6	None	None	G1	S1	null	BLM_S-Sensitive, IUCN_VU-Vulnerable	Limestone, Talus slope
Monadenia cristulata	crested sideband	Mollusks	IMGASC7120	1	1	None	None	G1?	S1S2	null	null	Oldgrowth, Riparian forest
Monadenia fidelis leonina	A terrestrial snail	Mollusks	IMGASC7037	1	1	None	None	G4G5T1T2	S1S2	null	null	null
Monadenia infumata ochromphalus	yellow-based sideband	Mollusks	IMGASC7051	2	1	None	None	G2T1	S1	null	null	Oldgrowth, Riparian forest
Monadenia mormonum hirsuta	hirsute Sierra sideband	Mollusks	IMGASC7072	4	1	None	None	G2T1	S1	null	BLM_S-Sensitive	Chaparral, Cismontane woodland, Valley & foothill grassland
Monadenia troglodytes troglodytes	Shasta sideband	Mollusks	IMGASC7091	15	13	None	None	G1G2T1T2	S1S2	null	IUCN_DD-Data Deficient, USFS_S-Sensitive	Chaparral, Cismontane woodland, Limestone, Lower montane coniferous forest
Monadenia troglodytes wintu	Wintu sideband	Mollusks	IMGASC7092	10	8	None	None	G1G2T1T2	S1S2	null	IUCN_DD-Data Deficient, USFS_S-Sensitive	null
Monadenia tuolumneana	Tuolumne sideband	Mollusks	IMGASC7100	2	1	None	None	G1	S1	null	BLM_S-Sensitive	Limestone
Monadenia yosemitensis	Yosemite Mariposa sideband	Mollusks	IMGASZ3010	7	3	None	None	G1	S1S2	null	null	Riparian forest
Monardella beneolens	sweet-smelling monardella	Dicots	PDLAM180U0	6	2	None	None	G2	S2	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Alpine boulder & rock field, Subalpine coniferous forest, Upper montane coniferous forest
Monardella follettii	Follett's monardella	Dicots	PDLAM180W0	30	30	None	None	G2	S2	1B.2	USFS_S-Sensitive	Lower montane coniferous forest, Ultramafic
Monardella linoides ssp. oblonga	Tehachapi monardella	Dicots	PDLAM180D2	57	17	None	None	G5T2	S2	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Lower montane coniferous forest, Pinon & juniper woodlands, Upper montane coniferous forest
Monardella palmeri	Palmer's monardella	Dicots	PDLAM180H0	24	3	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Monardella stebbinsii	Stebbins' monardella	Dicots	PDLAM180L0	11	7	None	None	G2	S2	1B.2	USFS_S-Sensitive	Broadleaved upland forest, Chaparral, Lower montane coniferous forest, Ultramafic
Monolopia congdonii	San Joaquin woollythreads	Dicots	PDASTA8010	111	36	Endangered	None	G2	S2	1B.2	SB_UCBG-UC Botanical Garden at Berkeley	Chenopod scrub, Valley & foothill grassland
Monotropa uniflora	ghost-pipe	Dicots	PDMON03030	115	2	None	None	G5	S2	2B.2	null	Broadleaved upland forest, North coast coniferous forest
Monvero Residual Dunes	Monvero Residual Dunes	Dune	CTT23300CA	3	3	None	None	G1	S1.2	null	null	Interior dunes
Muhlenbergia utilis	aparejo grass	Monocots	PMPOA481X0	14	1	None	None	G4	S2S3	2B.2	null	Chaparral, Cismontane woodland, Coastal scrub,

												Marsh & swamp, Meadow & seep, Ultramafic
Mylopharodon conocephalus	hardhead	Fish	AFCJB25010	33	6	None	None	G3	S3	null	CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters
Myotis ciliolabrum	western small-footed myotis	Mammals	AMACC01140	82	2	None	None	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern, WBWG_M-Medium Priority	null
Myotis evotis	long-eared myotis	Mammals	AMACC01070	139	43	None	None	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern, WBWG_M-Medium Priority	null
Myotis thysanodes	fringed myotis	Mammals	AMACC01090	86	36	None	None	G4	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority	null
Myotis volans	long-legged myotis	Mammals	AMACC01110	117	60	None	None	G4G5	S3	null	IUCN_LC-Least Concern, WBWG_H-High Priority	Upper montane coniferous forest
Myotis yumanensis	Yuma myotis	Mammals	AMACC01020	265	29	None	None	G5	S4	null	BLM_S-Sensitive, IUCN_LC-Least Concern, WBWG_LM-Low-Medium Priority	Lower montane coniferous forest, Riparian forest, Riparian woodland, Upper montane coniferous forest
Nardia hiroshii	Hiroshi's flapwort	Bryophytes	NBHEP2A080	1	1	None	None	G4G5	S1	2B.3	null	Meadow & seep
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Dicots	PDPLM0C0E1	64	2	None	None	G4T2	S2	1B.1	null	Cismontane woodland, Lower montane coniferous forest, Meadow & seep, Valley & foothill grassland, Vernal pool, Wetland
Navarretia miwukensis	Mi-Wuk navarretia	Dicots	PDPLM0C210	12	6	None	None	G1G2	S1S2	1B.2	null	Lower montane coniferous forest
Navarretia nigelliformis ssp. radians	shining navarretia	Dicots	PDPLM0C0J2	102	1	None	None	G4T2	S2	1B.2	BLM_S-Sensitive	Cismontane woodland, Valley & foothill grassland, Vernal pool, Wetland
Navarretia panochensis	Panoche navarretia	Dicots	PDPLM0C220	34	13	None	None	G3	S3	1B.3	null	Chenopod scrub, Valley & foothill grassland
Navarretia paradoxiclara	Patterson's navarretia	Dicots	PDPLM0C150	11	1	None	None	G2	S2	1B.3	BLM_S-Sensitive	Meadow & seep, Ultramafic
Navarretia paradoxinota	Porter's navarretia	Dicots	PDPLM0C160	9	1	None	None	G2	S2	1B.3	BLM_S-Sensitive	Meadow & seep, Ultramafic
Navarretia peninsularis	Baja navarretia	Dicots	PDPLM0C0L0	35	1	None	None	G3	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Meadow & seep, Pinon & juniper woodlands
Navarretia prostrata	prostrate vernal pool navarretia	Dicots	PDPLM0C0Q0	61	17	None	None	G2	S2	1B.2	null	Coastal scrub, Meadow & seep, Valley & foothill grassland, Vernal pool, Wetland
Navarretia setiloba	Piute Mountains navarretia	Dicots	PDPLM0C0S0	56	1	None	None	G2	S2	1B.1	BLM_S-Sensitive, USFS_S-Sensitive	Cismontane woodland, Pinon & juniper woodlands, Valley & foothill grassland
Nebria darlingtoni	South Forks ground beetle	Insects	IICOL6L100	5	4	None	None	G1	S1	null	null	null
Nebria gebleri siskiyouensis	Siskiyou ground beetle	Insects	IICOL6L091	3	2	None	None	G4G5T4	S1S2	null	null	null
Nebria sahlbergii triad	Trinity Alps ground beetle	Insects	IICOL6L081	5	2	None	None	G1T1	S1	null	null	null
Nemacladus calcaratus	Chimney Creek nemacladus	Dicots	PDCAM0F0E0	3	2	None	None	G1	S1	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Pinon & juniper woodlands

Nemacladus twisselmannii	Twisselmann's nemacladus	Dicots	PDCAM0F0D0	3	2	None	Rare	G1	S1	1B.2	USFS_S-Sensitive	Upper montane coniferous forest
Nemophila breviflora	Great Basin nemophila	Dicots	PDHYD0B020	23	18	None	None	G4G5	S3	2B.3	null	Great Basin scrub, Meadow & seep, Upper montane coniferous forest
Neotamias speciosus callipeplus	Mount Pinos chipmunk	Mammals	AMAFB02171	2	2	None	None	G4T2	S2	null	USFS_S-Sensitive	Upper montane coniferous forest
Neotamias speciosus speciosus	lodgepole chipmunk	Mammals	AMAFB02172	24	2	None	None	G4T3T4	S2S3	null	null	Chaparral, Upper montane coniferous forest
Neothremma genella	golden-horned caddisfly	Insects	IITRI16020	3	3	None	None	G1G2	S1S2	null	null	Aquatic
Neviusia cliftonii	Shasta snow-wreath	Dicots	PDROS14020	26	21	None	Candidate Endangered	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Cismontane woodland, Limestone, Lower montane coniferous forest, Riparian woodland
North Central Coast Drainage Sacramento Sucker/Roach River	North Central Coast Drainage Sacramento Sucker/Roach River	Inland Waters	CARA2623CA	4	1	None	None	GNR	SNR	null	null	null
Northern Basalt Flow Vernal Pool	Northern Basalt Flow Vernal Pool	Herbaceous	CTT44131CA	28	16	None	None	G3	S2.2	null	null	Vernal pool, Wetland
Northern Interior Cypress Forest	Northern Interior Cypress Forest	Forest	CTT83220CA	22	4	None	None	G2	S2.2	null	null	Closed-cone coniferous forest
Northern Vernal Pool	Northern Vernal Pool	Herbaceous	CTT44100CA	20	1	None	None	G2	S2.1	null	null	Vernal pool, Wetland
Ochotona princeps schisticeps	gray-headed pika	Mammals	AMAEA0102L	332	52	None	None	G5T4	S2S4	null	IUCN_NT-Near Threatened	Alpine talus & scree slope, Talus slope
Oncorhynchus clarkii henshawi	Lahontan cutthroat trout	Fish	AFCHA02081	27	12	Threatened	None	G5T3	S1	null	AFS_TH-Threatened	Aquatic, Great Basin flowing waters
Oncorhynchus clarkii seleniris	Paiute cutthroat trout	Fish	AFCHA02089	12	2	Threatened	None	G5T1T2	S1	null	AFS_EN-Endangered	Aquatic, Great Basin flowing waters
Oncorhynchus mykiss aguabonita	California golden trout	Fish	AFCHA0209A	4	3	None	None	G5T1	S1	null	AFS_TH-Threatened, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Sacramento/San Joaquin flowing waters
Oncorhynchus mykiss aquilarum	Eagle Lake rainbow trout	Fish	AFCHA02091	1	1	None	None	G5T1	S1	null	AFS_TH-Threatened, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Great Basin standing waters
Oncorhynchus mykiss gilberti	Kern River rainbow trout	Fish	AFCHA02093	1	1	None	None	G5T1Q	S1	null	AFS_TH-Threatened, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Sacramento/San Joaquin flowing waters
Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	Fish	AFCHA0209K	31	6	Threatened	None	G5T2Q	S2	null	AFS_TH-Threatened	Aquatic, Sacramento/San Joaquin flowing waters
Oncorhynchus mykiss irideus pop. 36	summer-run steelhead trout	Fish	AFCHA0213B	20	6	None	Candidate Endangered	G5T4Q	S2	null	CDFW_SSC-Species of Special Concern	Aquatic, Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters
Oncorhynchus mykiss irideus pop. 9	steelhead - south-central California coast DPS	Fish	AFCHA0209H	41	1	Threatened	None	G5T2Q	S2	null	AFS_TH-Threatened	Aquatic, Sacramento/San Joaquin flowing waters, South coast flowing waters
Oncorhynchus mykiss ssp. 1	Goose Lake redband trout	Fish	AFCHA02096	1	1	None	None	G5T2Q	S2	null	AFS_VU-Vulnerable, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	Aquatic, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters
Oncorhynchus mykiss whitei	Little Kern golden trout	Fish	AFCHA0209B	2	1	Threatened	None	G5T2	S2	null	AFS_EN-Endangered	Aquatic, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters
Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	Fish	AFCHA0205L	13	7	Threatened	Threatened	G5T1T2Q	S2	null	AFS_TH-Threatened	Aquatic, Sacramento/San Joaquin flowing waters
Oncorhynchus	chinook salmon -	Fish	AFCHA02056	6	1	Candidate	Candidate	G5T3Q	S1S2	null	CDFW_SSC-	Aquatic,

tshawytscha pop. 30	upper Klamath and Trinity Rivers ESU						Endangered				Species of Special Concern, USFS_S-Sensitive	Klamath/North coast flowing waters
Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	Fish	AFCHA0205B	2	1	Endangered	Endangered	G5T1Q	S1	null	AFS_EN-Endangered	Aquatic, Sacramento/San Joaquin flowing waters
Onychomys torridus tularensis	Tulare grasshopper mouse	Mammals	AMAFF06021	53	2	None	None	G5T1T2	S1S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern	Chenopod scrub
Ophioglossum pusillum	northern adder's-tongue	Ferns	PPOPH020F0	5	1	None	None	G5	S1	2B.2	USFS_S-Sensitive	Marsh & swamp, Meadow & seep, Wetland
Opuntia basilaris var. treleasei	Bakersfield cactus	Dicots	PDCAC0D055	62	1	Endangered	Endangered	G5T1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chenopod scrub, Cismontane woodland, Valley & foothill grassland
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Monocots	PMPOA4G060	47	1	Threatened	Endangered	G1	S1	1B.1	null	Vernal pool, Wetland
Orcuttia tenuis	slender Orcutt grass	Monocots	PMPOA4G050	100	56	Threatened	Endangered	G2	S2	1B.1	SB_UCBG-UC Botanical Garden at Berkeley	Vernal pool, Wetland
Oreocarya schoolcraftii	Schoolcraft's cryptantha	Dicots	PDBOR0A3H0	1	1	None	None	G3	S1	2B.2	null	Great Basin scrub
Oreonana purpurascens	purple mountain-parsley	Dicots	PDAPI1G020	25	19	None	None	G3	S3	1B.2	USFS_S-Sensitive	Broadleaved upland forest, Subalpine coniferous forest, Upper montane coniferous forest
Oreonana vestita	woolly mountain-parsley	Dicots	PDAPI1G030	55	2	None	None	G3	S3	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest
Oreostemma elatum	tall alpine-aster	Dicots	PDASTEA020	29	19	None	None	G2	S2	1B.2	USFS_S-Sensitive	Bog & fen, Meadow & seep, Upper montane coniferous forest
Orobittacus obscurus	gold rush hanging scorpionfly	Insects	IIMEC07010	2	2	None	None	G1	S1	null	null	Riparian forest
Orthocarpus bracteosus	rosy orthocarpus	Dicots	PDSCR1H030	8	2	None	None	G3	S1	2B.1	null	Meadow & seep, Wetland
Orthotrichum holzingeri	Holzinger's orthotrichum moss	Bryophytes	NBMUS560E0	7	5	None	None	G3G4	S2	1B.3	null	Cismontane woodland, Lower montane coniferous forest, Pinon & juniper woodlands, Upper montane coniferous forest
Orthotrichum spjutii	Spjut's bristle moss	Bryophytes	NBMUS56160	2	1	None	None	G1G2	S1	1B.3	null	Lower montane coniferous forest, Pinon & juniper woodlands, Subalpine coniferous forest, Upper montane coniferous forest
Osmorhiza depauperata	blunt-fruited sweet-cicely	Dicots	PDAPI1K050	2	2	None	None	G5	S1	2B.3	null	Lower montane coniferous forest
Ovis canadensis sierrae	Sierra Nevada bighorn sheep	Mammals	AMALE04015	5	3	Endangered	Endangered	G4T2	S2	null	CDFW_FP-Fully Protected	Alpine, Alpine dwarf scrub, Chaparral, Chenopod scrub, Great Basin scrub, Mojavean desert scrub, Montane dwarf scrub, Pinon & juniper woodlands, Riparian woodland, Sonoran desert scrub
Packera eurycephala var. lewisrosei	Lewis Rose's ragwort	Dicots	PDAST8H182	39	35	None	None	G4T2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Packera indecora	rayless mountain ragwort	Dicots	PDAST8H1R0	6	2	None	None	G5	S2?	2B.2	null	Meadow & seep

Packera layneae	Layne's ragwort	Dicots	PDAST8H1V0	48	20	Threatened	Rare	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley, SB_UCSC-UC Santa Cruz	Chaparral, Cismontane woodland, Ultramafic
Pandion haliaetus	osprey	Birds	ABNKC01010	504	104	None	None	G5	S4	null	CDF_S-Sensitive, CDFW_WL-Watch List, IUCN_LC-Least Concern	Riparian forest
Parnassia cirrata var. intermedia	Cascade grass-of-Parnassus	Dicots	PDSAX0P044	31	4	None	None	G5T4	S3	2B.2	USFS_S-Sensitive	Bog & fen, Meadow & seep, Wetland
Paronychia ahartii	Ahart's paronychia	Dicots	PDCAR0L0V0	59	23	None	None	G3	S3	1B.1	BLM_S-Sensitive	Cismontane woodland, Valley & foothill grassland, Vernal pool, Wetland
Pedicularis centranthera	Great Basin lousewort	Dicots	PDSCR1K070	9	4	None	None	G4	S2	2B.3	BLM_S-Sensitive	Great Basin scrub
Pekania pennanti	Fisher	Mammals	AMAJF01020	555	151	None	None	G5	S2S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	North coast coniferous forest, Oldgrowth, Riparian forest
Pekania pennanti pop. 2	Fisher - Southern Sierra Nevada ESU	Mammals	AMAJF01022	188	129	Endangered	Threatened	G5T1	S1	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, USFS_S-Sensitive	North coast coniferous forest, Oldgrowth, Riparian forest
Peltigera gowardii	western waterfan lichen	Lichens	NLVER00460	26	24	None	None	G4?	S3	4.2	USFS_S-Sensitive	Riparian forest
Penstemon filiformis	thread-leaved beardtongue	Dicots	PDSCR1L2A0	95	21	None	None	G4	S4	4.2	null	Cismontane woodland, Lower montane coniferous forest, Ultramafic
Penstemon janishiae	Janish's beardtongue	Dicots	PDSCR1L3A0	14	6	None	None	G4	S1	2B.2	BLM_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands
Penstemon personatus	closed-throated beardtongue	Dicots	PDSCR1L4Y0	26	23	None	None	G2	S2	1B.2	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest
Penstemon sudans	Susanville beardtongue	Dicots	PDSCR1L620	151	67	None	None	G4	S4	4.3	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Pinon & juniper woodlands
Penstemon tracyi	Tracy's beardtongue	Dicots	PDSCR1L6A0	8	1	None	None	G2	S2	1B.3	SB_USDA-US Dept of Agriculture, USFS_S-Sensitive	Upper montane coniferous forest
Pentachaeta exilis ssp. aeolica	San Benito pentachaeta	Dicots	PDAST6X041	16	1	None	None	G5T2	S2	1B.2	BLM_S-Sensitive, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Cismontane woodland, Valley & foothill grassland
Perognathus inornatus	San Joaquin pocket mouse	Mammals	AMAFD01060	140	3	None	None	G2G3	S2S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern	Cismontane woodland, Mojavean desert scrub, Valley & foothill grassland
Petrophytum caespitosum ssp. acuminatum	marble rockmat	Dicots	PDROS18010	8	2	None	None	G5T2	S2	1B.3	USFS_S-Sensitive	Limestone, Lower montane coniferous forest, Upper montane coniferous forest
Phacelia cookei	Cooke's phacelia	Dicots	PDHYD0C0Y0	6	6	None	None	G1	S1	1B.1	SB_BerrySB-Berry Seed Bank, USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest
Phacelia greenei	Scott Valley phacelia	Dicots	PDHYD0C1V0	24	15	None	None	G2	S2	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Closed-cone coniferous forest, Lower montane coniferous forest, Subalpine coniferous forest, Ultramafic,

												Upper montane coniferous forest
Phacelia inundata	playa phacelia	Dicots	PDHYD0C2E0	24	22	None	None	G2	S2	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Alkali playa, Great Basin scrub, Lower montane coniferous forest
Phacelia leonis	Siskiyou phacelia	Dicots	PDHYD0C2N0	24	11	None	None	G3	S2?	1B.3	null	Meadow & seep, Ultramafic, Upper montane coniferous forest
Phacelia nashiana	Charlotte's phacelia	Dicots	PDHYD0C350	72	49	None	None	G3	S3	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture	Joshua tree woodland, Mojavean desert scrub, Pinon & juniper woodlands
Phacelia novenmillensis	Nine Mile Canyon phacelia	Dicots	PDHYD0C3A0	26	23	None	None	G3	S3	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Broadleaved upland forest, Cismontane woodland, Pinon & juniper woodlands, Upper montane coniferous forest
Phacelia phacelioides	Mt. Diablo phacelia	Dicots	PDHYD0C3Q0	16	1	None	None	G2	S2	1B.2	BLM_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Phacelia sericea var. ciliosa	blue alpine phacelia	Dicots	PDHYD0C4A1	13	12	None	None	G5T4T5	S3	2B.2	null	Great Basin scrub, Upper montane coniferous forest
Phacelia stebbinsii	Stebbins' phacelia	Dicots	PDHYD0C4D0	79	60	None	None	G3	S3	1B.2	USFS_S-Sensitive	Cismontane woodland, Lower montane coniferous forest, Meadow & seep
Phalacrocorax auritus	double-crested cormorant	Birds	ABNFD01020	39	1	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Riparian forest, Riparian scrub, Riparian woodland
Philotiella speciosa bohartorum	Boharts' blue butterfly	Insects	IILEPG3011	2	2	None	None	G3G4T1	S1	null	null	Chaparral, Cismontane woodland, Valley & foothill grassland
Phlox muscoides	squarestem phlox	Dicots	PDPLM0D115	45	30	None	None	G4G5	S3	2B.3	null	Alpine boulder & rock field, Great Basin scrub, Subalpine coniferous forest
Phrynosoma blainvillii	coast horned lizard	Reptiles	ARACF12100	784	8	None	None	G3G4	S3S4	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Chaparral, Cismontane woodland, Coastal bluff scrub, Coastal scrub, Desert wash, Pinon & juniper woodlands, Riparian scrub, Riparian woodland, Valley & foothill grassland
Picea engelmannii	Engelmann spruce	Gymnosperms	PGPIN03030	10	7	None	None	G5	S2	2B.2	IUCN_LC-Least Concern	Upper montane coniferous forest
Picoides arcticus	black-backed woodpecker	Birds	ABNYF07090	62	43	None	None	G5	S2	null	null	null
Pine Creek Tributary To Eagle Lake	Pine Creek Tributary To Eagle Lake	Inland Waters	CARC2333CA	1	1	None	None	GNR	SNR	null	null	null
Pinguicula macroceras	horned butterwort	Dicots	PDLNT01040	26	4	None	None	G4	S2	2B.2	IUCN_LC-Least Concern	Bog & fen, Ultramafic, Wetland
Piperia candida	white-flowered rein orchid	Monocots	PMORC1X050	222	6	None	None	G3	S3	1B.2	null	Broadleaved upland forest, Lower montane coniferous forest, North coast coniferous forest, Ultramafic
Pisidium ultramontanum	montane peaclam	Mollusks	IMBIV51220	8	2	None	None	G1	S1	null	IUCN_VU-Vulnerable, USFS_S-Sensitive	Aquatic
Pit River Drainage Modoc Sucker Stream	Pit River Drainage Modoc Sucker Stream	Inland Waters	CARA2333CA	5	3	None	None	GNR	SNR	null	null	null
Pit River Drainage Rainbow/Redband Trout Stream	Pit River Drainage Rainbow/Redband Trout Stream	Inland Waters	CARA2321CA	1	1	None	None	GNR	SNR	null	null	null
Pit River Drainage	Pit River Drainage	Inland Waters	CARA2331CA	1	1	None	None	GNR	SNR	null	null	null

Speckled Dace/Pit Sculpin Stream	Speckled Dace/Pit Sculpin Stream											
Plagiobothrys torreyi var. torreyi	Yosemite popcornflower	Dicots	PDBOR0V152	12	2	None	None	G4T3Q	S3	1B.2	null	Lower montane coniferous forest, Meadow & seep, Wetland
Plagiobothrys uncinatus	hooked popcornflower	Dicots	PDBOR0V170	14	1	None	None	G2	S2	1B.2	USFS_S-Sensitive	Chaparral, Cismontane woodland, Valley & foothill grassland
Plegadis chihi	white-faced ibis	Birds	ABNGE02020	20	1	None	None	G5	S3S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Marsh & swamp, Wetland
Plethodon asupak	Scott Bar salamander	Amphibians	AAAAD12560	42	31	None	Threatened	G1G2	S1S2	null	IUCN_VU-Vulnerable	null
Plethodon elongatus	Del Norte salamander	Amphibians	AAAAD12050	151	36	None	None	G4	S3	null	CDFW_WL-Watch List, IUCN_NT-Near Threatened	Oldgrowth
Plethodon stormi	Siskiyou Mountains salamander	Amphibians	AAAAD12180	84	73	None	Threatened	G3?	S1S2	null	IUCN_EN-Endangered, USFS_S-Sensitive	Lower montane coniferous forest
Poa lettermanii	Letterman's blue grass	Monocots	PMPOA4Z1H0	11	4	None	None	G4	S3	2B.3	null	Alpine boulder & rock field
Poa sierrae	Sierra blue grass	Monocots	PMPOA4Z310	88	71	None	None	G3	S3	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Lower montane coniferous forest
Pogogyne floribunda	profuse-flowered pogogyne	Dicots	PDLAM1K070	105	99	None	None	G3G4	S3?	4.2	null	Meadow & seep, Vernal pool, Wetland
Pohlia flexuosa	flexuose threadmoss	Bryophytes	NBMUS5S1D0	1	1	None	None	G5	S1	2B.1	null	Lower montane coniferous forest
Pohlia tundrae	tundra thread moss	Bryophytes	NBMUS5S1B0	8	3	None	None	G3	S3	2B.3	null	null
Polemonium carneum	Oregon polemonium	Dicots	PDPLM0E050	16	1	None	None	G3G4	S2	2B.2	null	Coastal prairie, Coastal scrub, Lower montane coniferous forest
Polemonium eddyense	Mt. Eddy sky pilot	Dicots	PDPLM0E0S0	2	1	None	None	G1	S1	1B.2	SB_UCSC-UC Santa Cruz	Alpine boulder & rock field, Ultramafic
Polemonium pulcherrimum var. shastense	Mt. Shasta sky pilot	Dicots	PDPLM0E0J4	14	13	None	None	G5T2	S2	1B.2	null	Alpine boulder & rock field, Subalpine coniferous forest, Upper montane coniferous forest
Polygala subspinosa	spiny milkwort	Dicots	PDPGL021Q0	71	52	None	None	G4?	S3	2B.2	null	Great Basin scrub, Pinon & juniper woodlands
Polygonum polygaloides ssp. esotericum	Modoc County knotweed	Dicots	PDPGN0L1Y2	45	24	None	None	G4G5T3	S3	1B.3	BLM_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Meadow & seep, Vernal pool, Wetland
Ponderosa Dune Forest	Ponderosa Dune Forest	Forest	CTT84221CA	1	1	None	None	G1	S1.1	null	null	Lower montane coniferous forest, Oldgrowth
Potamogeton epihydrus	Nuttall's ribbon-leaved pondweed	Monocots	PMPOT03080	25	6	None	None	G5	S2S3	2B.2	IUCN_LC-Least Concern	Marsh & swamp, Wetland
Potamogeton praelongus	white-stemmed pondweed	Monocots	PMPOT030V0	12	6	None	None	G5	S2	2B.3	IUCN_LC-Least Concern	Marsh & swamp, Wetland
Potamogeton robbinsii	Robbins' pondweed	Monocots	PMPOT030Z0	17	8	None	None	G5	S3	2B.3	IUCN_LC-Least Concern	Marsh & swamp, Wetland
Potamogeton zosteriformis	eel-grass pondweed	Monocots	PMPOT03160	20	1	None	None	G5	S3	2B.2	null	Marsh & swamp, Wetland
Potentilla basaltica	Black Rock potentilla	Dicots	PDROS1B270	2	1	None	None	G1	S1	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Meadow & seep
Potentilla cristae	crested potentilla	Dicots	PDROS1B2F0	8	8	None	None	G2	S2	1B.3	null	Alpine boulder & rock field, Subalpine coniferous forest, Ultramafic
Potentilla newberryi	Newberry's cinquefoil	Dicots	PDROS1B130	23	16	None	None	G3G4	S2S3	2B.3	null	Marsh & swamp, Vernal pool, Wetland
Progne subis	purple martin	Birds	ABPAU01010	71	13	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Broadleaved upland forest, Lower montane coniferous forest
Prosopium williamsoni	mountain whitefish	Fish	AFCHA03060	23	6	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern	null
Psiloscops flammeolus	flammulated owl	Birds	ABNSB01020	8	7	None	None	G4	S2S4	null	IUCN_LC-Least Concern, NABCI_YWL-Yellow Watch List,	Lower montane coniferous forest,

											USFWS_BCC-Birds of Conservation Concern	Subalpine coniferous forest
Ptilidium californicum	Pacific fuzzwort	Bryophytes	NBHEP2U010	177	120	None	None	G4G5	S3S4	4.3	BLM_S-Sensitive	Lower montane coniferous forest, Upper montane coniferous forest
Pyrgulopsis eremica	Smoke Creek pyrg	Mollusks	IMGASJ0990	14	1	None	None	G2	S2	null	null	Aquatic, Great Basin flowing waters
Pyrgulopsis lasseni	Willow Creek pyrg	Mollusks	IMGASJ0490	4	4	None	None	G1G2	S1S2	null	USFS_S-Sensitive	Aquatic
Pyrgulopsis taylori	San Luis Obispo pyrg	Mollusks	IMGASJ0A50	5	1	None	None	G1	S1	null	null	null
Pyrrocoma lucida	sticky pyrrocoma	Dicots	PDASTDT0E0	76	49	None	None	G3	S3	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Lower montane coniferous forest, Meadow & seep
Raillardella pringlei	showy raillardella	Dicots	PDAST7X030	25	11	None	None	G2G3	S2S3	1B.2	SB_BerrySB-Berry Seed Bank, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Bog & fen, Meadow & seep, Ultramafic, Upper montane coniferous forest, Wetland
Rana boylii	foothill yellow-legged frog	Amphibians	AAABH01050	2467	613	None	Endangered	G3	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened, USFS_S-Sensitive	Aquatic, Chaparral, Cismontane woodland, Coastal scrub, Klamath/North coast flowing waters, Lower montane coniferous forest, Meadow & seep, Riparian forest, Riparian woodland, Sacramento/San Joaquin flowing waters
Rana cascadae	Cascades frog	Amphibians	AAABH01060	413	225	None	Candidate Endangered	G3G4	S3	null	CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened, USFS_S-Sensitive	Aquatic, Lower montane coniferous forest
Rana draytonii	California red-legged frog	Amphibians	AAABH01022	1664	8	Threatened	None	G2G3	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable	Aquatic, Artificial flowing waters, Artificial standing waters, Freshwater marsh, Marsh & swamp, Riparian forest, Riparian scrub, Riparian woodland, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland
Rana muscosa	southern mountain yellow-legged frog	Amphibians	AAABH01330	186	25	Endangered	Endangered	G1	S1	null	CDFW_WL-Watch List, IUCN_EN-Endangered, USFS_S-Sensitive	Aquatic
Rana pretiosa	Oregon spotted frog	Amphibians	AAABH01180	4	2	Threatened	None	G2	SH	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable	Aquatic, Meadow & seep
Rana sierrae	Sierra Nevada yellow-legged frog	Amphibians	AAABH01340	659	316	Endangered	Threatened	G1	S1	null	CDFW_WL-Watch List, IUCN_EN-Endangered, USFS_S-Sensitive	Aquatic
Ranunculus macounii	Macoun's buttercup	Dicots	PDRAN0L1M0	2	1	None	None	G5	S1	2B.2	IUCN_LC-Least Concern	Great Basin scrub, Meadow & seep, Pinon & juniper woodlands, Wetland
Rhamnus alnifolia	alder buckthorn	Dicots	PDRHA0C010	27	15	None	None	G5	S3	2B.2	null	Lower montane coniferous forest, Meadow & seep, Riparian scrub, Upper montane coniferous forest, Wetland

Rhyacophila spinata	spiny rhyacophilan caddisfly	Insects	IITRI19080	5	4	None	None	G1G2	S1S2	null	null	Aquatic, Sacramento/San Joaquin flowing waters
Rhyacotriton variegatus	southern torrent salamander	Amphibians	AAAAJ01020	416	17	None	None	G3G4	S2S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	Lower montane coniferous forest, Oldgrowth, Redwood, Riparian forest
Rhynchospora alba	white beaked-rush	Monocots	PMCYP0N010	11	2	None	None	G5	S2	2B.2	IUCN_LC-Least Concern	Bog & fen, Marsh & swamp, Meadow & seep, Wetland
Rhynchospora capitellata	brownish beaked-rush	Monocots	PMCYP0N080	25	12	None	None	G5	S1	2B.2	IUCN_LC-Least Concern	Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Upper montane coniferous forest, Wetland
Ribes hudsonianum var. petiolare	western black currant	Dicots	PDGRO020N2	6	3	None	None	G5T5	S2	2B.3	null	Riparian scrub
Ribes menziesii var. ixoderme	aromatic canyon gooseberry	Dicots	PDGRO02104	25	1	None	None	G4T2	S2	1B.2	null	Chaparral, Cismontane woodland
Ribes tularense	Sequoia gooseberry	Dicots	PDGRO021L0	7	2	None	None	G1	S1	1B.3	BLM_S-Sensitive	Lower montane coniferous forest, Upper montane coniferous forest
Riella americana	American riella	Bryophytes	NBHEP31020	1	1	None	None	G3	S1	2B.2	null	Lower montane coniferous forest, Pinon & juniper woodlands, Wetland
Riparia riparia	bank swallow	Birds	ABPAU08010	298	6	None	Threatened	G5	S2	null	BLM_S-Sensitive, IUCN_LC-Least Concern	Riparian scrub, Riparian woodland
Rorippa columbiae	Columbia yellow cress	Dicots	PDBRA27060	26	15	None	None	G3	S2	1B.2	USFS_S-Sensitive	Alkali playa, Lower montane coniferous forest, Meadow & seep, Vernal pool, Wetland
Rorippa subumbellata	Tahoe yellow cress	Dicots	PDBRA270M0	31	8	None	Endangered	G1	S1	1B.1	SB_BerrySB-Berry Seed Bank, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep, Wetland
Rosa gymnocarpa var. serpentina	Gasquet rose	Dicots	PDROS1J1V1	7	2	None	None	G5T3T4	S2	1B.3	SB_BerrySB-Berry Seed Bank, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Ultramafic
Rubus nivalis	snow dwarf bramble	Dicots	PDROS1K4S0	4	1	None	None	G4?	S1	2B.3	null	North coast coniferous forest
Rumex venosus	winged dock	Dicots	PDPGN0P1K0	16	4	None	None	G5?	S3	2B.3	null	Great Basin scrub
Rupertia hallii	Hall's rupertia	Dicots	PDFAB62010	51	19	None	None	G2G3	S2S3	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Cismontane woodland, Lower montane coniferous forest
Sabulina howellii	Howell's sandwort	Dicots	PDCAR0G0F0	24	1	None	None	G4	S3	1B.3	null	Chaparral, Lower montane coniferous forest, Ultramafic
Sabulina stolonifera	Scott Mountain sandwort	Dicots	PDCAR0G110	9	7	None	None	G2	S2	1B.3	USFS_S-Sensitive	Lower montane coniferous forest, Ultramafic
Sabulina stricta	bog sandwort	Dicots	PDCAR0G0U0	18	6	None	None	G5	S3	2B.3	null	Alpine, Alpine boulder & rock field, Alpine dwarf scrub, Meadow & seep
Sagittaria sanfordii	Sanford's arrowhead	Monocots	PMALI040Q0	126	2	None	None	G3	S3	1B.2	BLM_S-Sensitive	Marsh & swamp, Wetland
Salix bebbiana	Bebb's willow	Dicots	PDSAL020E0	5	2	None	None	G5	S2S3	2B.3	IUCN_LC-Least Concern	Marsh & swamp, Riparian scrub, Wetland
Salix nivalis	snow willow	Dicots	PDSAL024K0	14	1	None	None	G5	S2	2B.3	null	Alpine, Alpine dwarf scrub
Saltugilia latimeri	Latimer's woodland-gilia	Dicots	PDPLM0H010	60	2	None	None	G3	S3	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_USDA-	Chaparral, Limestone, Mojavean desert scrub, Pinon &

											US Dept of Agriculture, USFS_S-Sensitive	juniper woodlands
Salvelinus confluentus	bull trout	Fish	AFCHA05020	2	2	Threatened	Endangered	G5	SX	null	IUCN_VU-Vulnerable	Aquatic, Sacramento/San Joaquin flowing waters
Sanicula tracyi	Tracy's sanicle	Dicots	PDAPI1Z0K0	80	6	None	None	G4	S4	4.2	USFS_S-Sensitive	Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest
Saussurea americana	American saw-wort	Dicots	PDAST8B020	3	3	None	None	G5	S1	2B.2	null	Lower montane coniferous forest, Meadow & seep
Saxifraga cespitosa	tufted saxifrage	Dicots	PDSAX0U0C0	2	2	None	None	G5	S1	2B.3	null	Meadow & seep
Scheuchzeria palustris	American scheuchzeria	Monocots	PMSCH02010	5	3	None	None	G5	S1	2B.1	USFS_S-Sensitive	Bog & fen, Marsh & swamp, Wetland
Schoenoplectus subterminalis	water bulrush	Monocots	PMCYP0Q1G0	32	18	None	None	G4G5	S3	2B.3	IUCN_LC-Least Concern	Bog & fen, Marsh & swamp, Wetland
Scutellaria galericulata	marsh skullcap	Dicots	PDLAM1U0J0	39	14	None	None	G5	S2	2B.2	null	Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Wetland
Scutellaria holmgreniorum	Holmgren's skullcap	Dicots	PDLAM1U1C0	11	10	None	None	G3Q	S3	3.3	null	Great Basin scrub, Pinon & juniper woodlands
Sedum albomarginatum	Feather River stonecrop	Dicots	PDCRA0A030	15	14	None	None	G2	S2	1B.2	SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Ultramafic
Sedum divergens	Cascade stonecrop	Dicots	PDCRA0A0B0	4	3	None	None	G5?	S2	2B.3	null	Alpine boulder & rock field
Sedum flavidum	pale yellow stonecrop	Dicots	PDCRA0A0L2	67	10	None	None	G3	S3	4.3	null	Broadleaved upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic, Upper montane coniferous forest
Sedum marmorense	Marble Mountains stonecrop	Dicots	PDCRA0A230	6	6	None	None	G1G2	S1S2	1B.2	null	Subalpine coniferous forest, Talus slope, Ultramafic, Upper montane coniferous forest
Sedum oblanceolatum	Applegate stonecrop	Dicots	PDCRA0A0T0	10	9	None	None	G3	S1	1B.1	SB_BerrySB-Berry Seed Bank	Upper montane coniferous forest
Sedum paradisum ssp. paradisum	Canyon Creek stonecrop	Dicots	PDCRA0A0U3	31	11	None	None	G3G4T3	S3	1B.3	BLM_S-Sensitive, USFS_S-Sensitive	Broadleaved upland forest, Chaparral, Lower montane coniferous forest, Subalpine coniferous forest
Sedum rubiginosum	Mt. Tedoc stonecrop	Dicots	PDCRA0A240	3	2	None	None	G1	S1	1B.2	null	Lower montane coniferous forest, Talus slope, Ultramafic, Upper montane coniferous forest
Senecio aphanactis	chaparral ragwort	Dicots	PDAST8H060	98	18	None	None	G3	S2	2B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank	Chaparral, Cismontane woodland, Coastal scrub
Senecio clevelandii var. heterophyllus	Red Hills ragwort	Dicots	PDAST8H0R2	12	10	None	None	G4?T2Q	S2	1B.2	BLM_S-Sensitive	Cismontane woodland, Ultramafic
Setophaga petechia	yellow warbler	Birds	ABPBX03010	78	2	None	None	G5	S3S4	null	CDFW_SSC-Species of Special Concern, USFWS_BCC-Birds of Conservation Concern	Riparian forest, Riparian scrub, Riparian woodland
Shepherdia canadensis	Canadian buffalo-berry	Dicots	PDELG03020	1	1	None	None	G5	S1	2B.1	null	Ultramafic, Upper montane

												coniferous forest
Sidalcea hickmanii ssp. anomala	Cuesta Pass checkerbloom	Dicots	PDMAL110A1	4	2	None	Rare	G3T1	S1	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral, Closed-cone coniferous forest, Ultramafic
Sidalcea hickmanii ssp. parishii	Parish's checkerbloom	Dicots	PDMAL110A3	24	3	None	Rare	G3T1	S1	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, USFS_S-Sensitive	Chaparral, Cismontane woodland, Lower montane coniferous forest
Sidalcea keckii	Keck's checkerbloom	Dicots	PDMAL110D0	50	1	Endangered	None	G2	S2	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Cismontane woodland, Ultramafic, Valley & foothill grassland
Sidalcea multifida	cut-leaf checkerbloom	Dicots	PDMAL110G0	32	26	None	None	G3	S2	2B.3	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Great Basin scrub, Joshua tree woodland, Lower montane coniferous forest, Meadow & seep, Pinon & juniper woodlands
Sidalcea oregana ssp. hydrophila	marsh checkerbloom	Dicots	PDMAL110K2	35	11	None	None	G5T2	S2	1B.2	null	Meadow & seep, Riparian forest, Wetland
Sidalcea robusta	Butte County checkerbloom	Dicots	PDMAL110P0	38	3	None	None	G2	S2	1B.2	BLM_S-Sensitive	Chaparral, Cismontane woodland
Silene marmorensis	Marble Mountain campion	Dicots	PDCAR0U0Z0	41	41	None	None	G2	S2	1B.2	null	Broadleaved upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Silene occidentalis ssp. longistipitata	long-stiped campion	Dicots	PDCAR0U161	18	9	None	None	G4T2Q	S2	1B.2	USFS_S-Sensitive	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest
Silene oregana	Oregon campion	Dicots	PDCAR0U170	32	28	None	None	G4	S2	2B.2	null	Great Basin scrub, Subalpine coniferous forest
Silene salmonacea	Klamath Mountain catchfly	Dicots	PDCAR0U2D0	71	2	None	None	G3	S3	1B.2	SB_UCSC-UC Santa Cruz, USFS_S-Sensitive	Lower montane coniferous forest, Ultramafic
Silene suksdorfii	Cascade alpine campion	Dicots	PDCAR0U1W0	10	3	None	None	G4	S3	2B.3	null	Alpine boulder & rock field, Subalpine coniferous forest, Upper montane coniferous forest
Siphateles bicolor ssp. 12	Eagle Lake tui chub	Fish	AFCJB1303L	1	1	None	None	G4T1T2	S1S2	null	CDFW_SSC-Species of Special Concern	Aquatic, Great Basin standing waters
Siphateles bicolor thalassinus	Goose Lake tui chub	Fish	AFCJB1303Q	1	1	None	None	G4T2T3	S2	null	AFS_TH-Threatened, CDFW_SSC-Species of Special Concern	Aquatic, Sacramento/San Joaquin standing waters
Siphateles bicolor vaccaceps	Cow Head tui chub	Fish	AFCJB1303M	4	1	None	None	G4T1	S1	null	AFS_EN-Endangered, BLM_S-Sensitive, CDFW_SSC-Species of Special Concern	Aquatic, Great Basin flowing waters
Smilax jamesii	English Peak greenbrier	Monocots	PMSMI010D0	158	36	None	None	G3G4	S3S4	4.2	null	Broadleaved upland forest, Lower montane coniferous forest, Marsh & swamp, North coast coniferous forest, Upper montane coniferous forest, Wetland
Solidago lepida var. salebrosa	Rocky Mountains Canada goldenrod	Dicots	PDAST8P2D3	3	1	None	None	G5T5	S1	3.2	null	Marsh & swamp, Meadow & seep, Wetland
Southern Interior Cypress Forest	Southern Interior Cypress Forest	Forest	CTT83230CA	24	15	None	None	G2	S2.1	null	null	Closed-cone coniferous forest
Spea hammondii	western spadefoot	Amphibians	AAABF02020	1422	24	None	None	G2G3	S3	null	BLM_S-Sensitive,	Cismontane

											CDFW_SSC-Species of Special Concern, IUCN_NT-Near Threatened	woodland, Coastal scrub, Valley & foothill grassland, Vernal pool, Wetland
Speyeria egleis tehachapina	Tehachapi Mountain silverspot butterfly	Insects	IILEPJ6105	4	3	None	None	G5T2	S2	null	USFS_S-Sensitive	null
Sphaeralcea grossulariifolia	currant-leaved desert mallow	Dicots	PDMAL14090	11	6	None	None	G4G5	S2	2B.3	null	Chenopod scrub, Great Basin scrub
Sphagnum Bog	Sphagnum Bog	Marsh	CTT51110CA	12	4	None	None	G3	S1.2	null	null	Bog & fen, Wetland
Stachys pilosa	hairy marsh hedge-nettle	Dicots	PDLAM1X1A0	24	7	None	None	G5	S3	2B.3	null	Great Basin scrub, Meadow & seep
Stanleya viridiflora	green-flowered prince's plume	Dicots	PDBRA2E060	10	1	None	None	G4	S2	2B.3	null	Great Basin scrub
Stellaria longifolia	long-leaved starwort	Dicots	PDCAR0X0M0	18	10	None	None	G5	S2	2B.2	null	Bog & fen, Meadow & seep, Riparian woodland, Upper montane coniferous forest, Wetland
Stellaria obtusa	obtuse starwort	Dicots	PDCAR0X0U0	31	19	None	None	G5	S4	4.3	null	Lower montane coniferous forest, Riparian woodland, Upper montane coniferous forest, Wetland
Stenotus lanuginosus var. lanuginosus	woolly stenotus	Dicots	PDASTCX012	65	54	None	None	G5T5	S3	2B.2	BLM_S-Sensitive	Great Basin scrub, Meadow & seep, Pinon & juniper woodlands
Stipa exigua	little ricegrass	Monocots	PMPOA80030	3	2	None	None	G4G5	S2	2B.3	BLM_S-Sensitive	Great Basin scrub
Streptanthus albidus ssp. peramoenus	most beautiful jewelflower	Dicots	PDBRA2G012	103	1	None	None	G2T2	S2	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley, USFS_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland
Streptanthus cordatus var. piutensis	Piute Mountains jewelflower	Dicots	PDBRA2G0D2	6	2	None	None	G5T1	S1	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Broadleaved upland forest, Closed-cone coniferous forest, Pinon & juniper woodlands
Streptanthus fenestratus	Tehipite Valley jewelflower	Dicots	PDBRA2G0H0	11	4	None	None	G2	S2	1B.1	USFS_S-Sensitive	Lower montane coniferous forest, Upper montane coniferous forest
Streptanthus hesperidis	green jewelflower	Dicots	PDBRA2G510	35	1	None	None	G2G3	S2S3	1B.2	BLM_S-Sensitive	Chaparral, Cismontane woodland, Ultramafic
Streptanthus oliganthus	Masonic Mountain jewelflower	Dicots	PDBRA2G0V0	21	1	None	None	G3	S3	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Pinon & juniper woodlands
Streptanthus tortuosus ssp. truei	True's mountain jewelflower	Dicots	PDBRA2G108	4	4	None	None	G5T1T2	S1S2	1B.1	null	Lower montane coniferous forest
Strix nebulosa	great gray owl	Birds	ABNSB12040	79	39	None	Endangered	G5	S1	null	CDF_S-Sensitive, IUCN_LC-Least Concern, USFS_S-Sensitive	Lower montane coniferous forest, Oldgrowth, Subalpine coniferous forest, Upper montane coniferous forest
Stygobromus gallawayae	Gallaway's amphipod	Crustaceans	ICMAL05E10	1	1	None	None	G1	S1	null	null	Aquatic
Stygobromus grahami	Graham's Cave amphipod	Crustaceans	ICMAL05920	6	1	None	None	G2	S2	null	null	Aquatic
Stygobromus sheldoni	Sheldon's amphipod	Crustaceans	ICMAL05A40	3	3	None	None	G1	S1	null	null	Aquatic
Stygobromus sierrensis	Sierra amphipod	Crustaceans	ICMAL05A50	2	2	None	None	G1	S1	null	null	Aquatic
Stylocline masonii	Mason's neststraw	Dicots	PDAST8Y080	7	1	None	None	G1	S1	1B.1	USFS_S-Sensitive	Chenopod scrub, Desert wash, Pinon & juniper woodlands
Suaeda occidentalis	western seablite	Dicots	PDCHE0P080	9	1	None	None	G5	S2	2B.3	null	Great Basin scrub
Symphyotrichum defoliatum	San Bernardino aster	Dicots	PDASTE80C0	102	1	None	None	G2	S2	1B.2	SB_CalBG/RSABG-California/Rancho	Cismontane woodland,

											Santa Ana Botanic Garden, SB_CRES-San Diego Zoo CRES Native Gene Seed Bank, USFS_S-Sensitive	Coastal scrub, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Valley & foothill grassland
Synthyris missurica ssp. missurica	kitten-tails	Dicots	PDSCR1W042	35	32	None	None	G4G5T4T5	S3	2B.3	SB_BerrySB-Berry Seed Bank	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest
Taricha torosa	Coast Range newt	Amphibians	AAAAF02032	88	2	None	None	G4	S4	null	CDFW_SSC-Species of Special Concern	null
Tauschia howellii	Howell's tauschia	Dicots	PDAPI27050	6	6	None	None	G2G3	S2S3	1B.3	USFS_S-Sensitive	Subalpine coniferous forest, Upper montane coniferous forest
Taxidea taxus	American badger	Mammals	AMAJF04010	594	47	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Alkali marsh, Alkali playa, Alpine, Alpine dwarf scrub, Bog & fen, Brackish marsh, Broadleaved upland forest, Chaparral, Chenopod scrub, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, Desert dunes, Desert wash, Freshwater marsh, Great Basin grassland, Great Basin scrub, Interior dunes, Ione formation, Joshua tree woodland, Limestone, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Mojavean desert scrub, Montane dwarf scrub, North coast coniferous forest, Oldgrowth, Pavement plain, Redwood, Riparian forest, Riparian scrub, Riparian woodland, Salt marsh, Sonoran desert scrub, Sonoran thorn woodland, Ultramafic, Upper montane coniferous forest, Upper Sonoran scrub, Valley & foothill grassland
Tetrix sierrana	Sierra pygmy grasshopper	Insects	IIORT27010	2	1	None	None	G1G2	S1S2	null	IUCN_VU-Vulnerable	Lower montane coniferous forest
Thamnophis hammondii	two-striped gartersnake	Reptiles	ARADB36160	184	13	None	None	G4	S3S4	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive	Marsh & swamp, Riparian scrub, Riparian woodland, Wetland
Thelypodium howellii ssp. howellii	Howell's thelypodium	Dicots	PDBRA2N051	11	2	None	None	G1T1	S1	1B.2	BLM_S-Sensitive, USFS_S-Sensitive	Great Basin scrub, Meadow & seep
Thelypodium integrifolium ssp. complanatum	foxtail thelypodium	Dicots	PDBRA2N062	13	3	None	None	G5T4T5	S2	2B.2	null	Great Basin scrub, Meadow & seep
Thelypodium	many-flowered	Dicots	PDBRA2N0A0	30	12	None	None	G5	S3?	2B.2	null	Chenopod

milleflorum	thelypodium											scrub, Great Basin scrub
Thermopsis robusta	robust false lupine	Dicots	PDFAB3Z0D0	104	42	None	None	G2	S2	1B.2	USFS_S-Sensitive	Broadleaved upland forest, North coast coniferous forest, Ultramafic
Toxostoma bendirei	Bendire's thrasher	Birds	ABPBK06050	68	1	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Joshua tree woodland, Mojavean desert scrub
Toxostoma lecontei	Le Conte's thrasher	Birds	ABPBK06100	238	6	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Desert wash, Mojavean desert scrub, Sonoran desert scrub
Trichodon cylindricus	cylindrical trichodon	Bryophytes	NBMUS7N020	14	8	None	None	G4G5	S2	2B.2	null	Broadleaved upland forest, Meadow & seep, Upper montane coniferous forest
Trifolium bolanderi	Bolander's clover	Dicots	PDFAB400G0	32	23	None	None	G3	S3	1B.2	SB_USDA-US Dept of Agriculture, USFS_S-Sensitive	Lower montane coniferous forest, Meadow & seep, Upper montane coniferous forest, Wetland
Trifolium dedeckerae	Dedecker's clover	Dicots	PDFAB400Q0	14	4	None	None	G2	S2	1B.3	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, USFS_S-Sensitive	Lower montane coniferous forest, Pinon & juniper woodlands, Subalpine coniferous forest, Upper montane coniferous forest
Trifolium gymnocarpon ssp. plummerae	Plummer's clover	Dicots	PDFAB40112	11	7	None	None	G5T4	S2	2B.3	null	Great Basin scrub, Pinon & juniper woodlands
Trifolium jokerstii	Butte County golden clover	Dicots	PDFAB40310	11	1	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_USDA-US Dept of Agriculture	Valley & foothill grassland, Vernal pool, Wetland
Triglochin palustris	marsh arrow-grass	Monocots	PMJCG02040	18	2	None	None	G5	S2	2B.3	null	Marsh & swamp, Meadow & seep, Subalpine coniferous forest, Wetland
Trilobopsis roperi	Shasta chaparral	Mollusks	IMGASA2030	40	28	None	None	G2	S1	null	USFS_S-Sensitive	null
Trilobopsis tehamana	Tehama chaparral	Mollusks	IMGASA2040	12	10	None	None	G2	S1	null	USFS_S-Sensitive	null
Triteleia grandiflora	large-flowered triteleia	Monocots	PMLIL21060	4	2	None	None	G4G5	S1	2B.1	null	Great Basin scrub, Pinon & juniper woodlands
Triteleia hendersonii	Henderson's triteleia	Monocots	PMLIL21070	2	1	None	None	G4	S1	2B.2	null	Cismontane woodland
Triteleia piutensis	Piute Mountains triteleia	Monocots	PMLIL210H0	2	1	None	None	G1	S1	1B.1	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Pinon & juniper woodlands
Tropidocarpum californicum	Kings gold	Dicots	PDBRA33010	8	2	None	None	G1	S1	1B.1	BLM_S-Sensitive	Chenopod scrub
Tuctoria greenei	Greene's tuctoria	Monocots	PMPOA6N010	50	2	Endangered	Rare	G1	S1	1B.1	null	Vernal pool, Wetland
Utricularia intermedia	flat-leaved bladderwort	Dicots	PDLNT020A0	29	15	None	None	G5	S3	2B.2	IUCN_LC-Least Concern	Bog & fen, Marsh & swamp, Meadow & seep, Vernal pool, Wetland
Utricularia ochroleuca	cream-flowered bladderwort	Dicots	PDLNT020E0	5	2	None	None	G4G5	S1	2B.2	null	Marsh & swamp, Meadow & seep, Wetland
Vaccinium scoparium	little-leaved huckleberry	Dicots	PDERI180Y0	29	20	None	None	G5	S3	2B.2	null	Subalpine coniferous forest
Vaccinium shastense ssp. shastense	Shasta huckleberry	Dicots	PDERI181Z1	21	10	None	None	G4T3	S3	1B.3	BLM_S-Sensitive	Chaparral, Cismontane woodland, Lower montane

												coniferous forest, Riparian forest, Subalpine coniferous forest
Valeriana occidentalis	western valerian	Dicots	PDVAL03080	1	1	None	None	G5	S1	2B.3	null	Lower montane coniferous forest
Valley Needlegrass Grassland	Valley Needlegrass Grassland	Herbaceous	CTT42110CA	45	2	None	None	G3	S3.1	null	null	Valley & foothill grassland
Valley Sacaton Grassland	Valley Sacaton Grassland	Herbaceous	CTT42120CA	9	1	None	None	G1	S1.1	null	null	Valley & foothill grassland
Valley Sink Scrub	Valley Sink Scrub	Scrub	CTT36210CA	29	3	None	None	G1	S1.1	null	null	Chenopod scrub
Verbena californica	Red Hills vervain	Dicots	PDVER0N050	12	9	Threatened	Threatened	G2	S2	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Cismontane woodland, Ultramafic, Valley & foothill grassland
Vespericola karokorum	Karok hesperian	Mollusks	IMGASA4040	22	8	None	None	G2	S2	null	IUCN_DD-Data Deficient	Riparian forest
Vespericola shasta	Shasta hesperian	Mollusks	IMGASA4070	8	6	None	None	G1	S1	null	USFS_S-Sensitive	Riparian forest
Viburnum ellipticum	oval-leaved viburnum	Dicots	PDCPR07080	39	6	None	None	G4G5	S3?	2B.3	null	Chaparral, Cismontane woodland, Lower montane coniferous forest
Viola howellii	Howell's violet	Dicots	PDVIO040U0	1	1	None	None	G4	S1	2B.2	null	North coast coniferous forest
Viola pinetorum ssp. grisea	grey-leaved violet	Dicots	PDVIO04431	90	66	None	None	G4G5T3	S3	1B.2	BLM_S-Sensitive	Meadow & seep, Subalpine coniferous forest, Upper montane coniferous forest
Viola tomentosa	felt-leaved violet	Dicots	PDVIO04280	54	45	None	None	G3	S3	4.2	null	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest
Vireo bellii pusillus	least Bell's vireo	Birds	ABPBW01114	503	2	Endangered	Endangered	G5T2	S2	null	IUCN_NT-Near Threatened, NABCI_YWL-Yellow Watch List	Riparian forest, Riparian scrub, Riparian woodland
Vulpes macrotis mutica	San Joaquin kit fox	Mammals	AMAJA03041	1020	51	Endangered	Threatened	G4T2	S2	null	null	Chenopod scrub, Valley & foothill grassland
Vulpes vulpes necator	Sierra Nevada red fox	Mammals	AMAJA03012	201	115	Proposed Endangered	Threatened	G5T1T2	S1	null	USFS_S-Sensitive	Alpine, Alpine dwarf scrub, Broadleaved upland forest, Meadow & seep, Riparian scrub, Subalpine coniferous forest, Upper montane coniferous forest, Wetland
Wildflower Field	Wildflower Field	Herbaceous	CTT42300CA	5	1	None	None	G2	S2.2	null	null	Valley & foothill grassland
Wyethia reticulata	El Dorado County mule ears	Dicots	PDAST9X0D0	25	7	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chaparral, Cismontane woodland, Lower montane coniferous forest, Ultramafic
Xanthocephalus xanthocephalus	yellow-headed blackbird	Birds	ABPBXB3010	13	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Marsh & swamp, Wetland
Xerospermophilus mohavensis	Mohave ground squirrel	Mammals	AMAFB05150	432	49	None	Threatened	G2G3	S2S3	null	BLM_S-Sensitive, IUCN_VU-Vulnerable	Chenopod scrub, Joshua tree woodland, Mojavean desert scrub

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Inventory of Rare and Endangered Plants of California

CALIFORNIA NATIVE PLANT SOCIETY

Search Results

Back Export Results

38 matches found. Click on scientific name for details

Search Criteria: CRPR is one of [**1A,1B,2A,2B,3,4**]Fed List is one of [**FE,FT,FC**] **and** State List is one of [**FE,FT,FC**] , G Rank is one of [**G1,G2,G3,G4,G5,GH,GX,GU,GNR**], S Rank is one of [**S1,S2,S3,S4,S5,SH,SX,SU,SNR**], CA Indigenous is **Yes**, County is one of [**ALA,AMA,BUT,CAL,COL,CCA,ELD,FRE,GLE,KRN,KNG,LAS,MAD,MPA,MER,MOD,NEV,PLA,PLU,SAC,SBT,SJQ,SLO,SHA,SIE,SIS,SOL,STA,SUT,TEH,TUL,TUO,YOL,YUB**], Lifeform is one of [**tree,herb,shrub,vine,leaf,stem,moss,liverwort,lichen**], Habitat is one of [**AlpBR,AlpDS,BgFns,BUFrs,Chprl,ChScr,CmWld,CCFrs,CBScr,CoDns,CoPrr,CoScr,DeDns,GBGrs,GBScr,InDns,JTWld,LCFrs,MshSw,Medws,MDScr,NCFrs,PbPln,PJWld,Plyas,RpFrs,RpScr,RpWld,SDScr,STWld,SCFrs,Unkno,UCFrs**] Duration is one of [**ann,per,ephem**], Bloom Month is one of [**jan,feb,mar,apr,may,jun,jul,aug,sep,oct,nov,dec**]

Scientific Name | Common Name | Family | Lifeform | Blooming Period | Fed List | State List | Global Rank | State Rank | CA Rare Plant Rank | General Habitats | Micro Habitats | Lowest Elevation | Highest Elevation | CA Endemic | Date Added | Photo

Search:

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Amsinckia grandiflora	large-flowered fiddleneck	Boraginaceae	annual herb	(Mar)Apr-May	FE	CE	G1	S1	1B.1	 © 2015 Zoya Akulova
Arctostaphylos pallida	pallid manzanita	Ericaceae	perennial evergreen shrub	Dec-Mar	FT	CE	G1	S1	1B.1	No Photo Available
Brodiaea pallida	Chinese Camp brodiaea	Themidaceae	perennial bulbiferous herb	May-Jun	FT	CE	G1	S1	1B.1	No Photo Available
Calystegia stebbinsii	Stebbins' morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jul	FE	CE	G1	S1	1B.1	No Photo Available
Castilleja campestris var. *succulenta*	succulent owl's-clover	Orobanchaceae	annual herb (hemiparasitic)	(Mar)Apr-May	FT	CE	G4?T2T3	S2S3	1B.2	No Photo Available
Caulanthus californicus	California jewelflower	Brassicaceae	annual herb	Feb-May	FE	CE	G1	S1	1B.1	No Photo Available
Ceanothus roderickii	Pine Hill ceanothus	Rhamnaceae	perennial evergreen shrub	Apr-Jun	FE	CR	G1	S1	1B.1	No Photo Available
Chlorogalum purpureum var. *reductum*	Camatta Canyon amole	Agavaceae	perennial bulbiferous herb	Apr-May	FT	CR	G2T1	S1	1B.1	No Photo Available
Chloropyron molle ssp. *molle*	soft salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Nov	FE	CR	G2T1	S1	1B.2	No Photo Available
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	FE	CE	G1	S1	1B.1	No Photo Available
Cirsium fontinale var. *obispoense*	Chorro Creek bog thistle	Asteraceae	perennial herb	Feb-Jul(Aug-Sep)	FE	CE	G2T2	S2	1B.2	No Photo Available
Cirsium scariosum var. *loncholepis*	La Graciosa thistle	Asteraceae	perennial herb	May-Aug	FE	CT	G5T1	S1	1B.1	No Photo Available
Clarkia franciscana	Presidio clarkia	Onagraceae	annual herb	May-Jul	FE	CE	G1	S1	1B.1	No Photo Available
Clarkia speciosa ssp. *immaculata*	Pismo clarkia	Onagraceae	annual herb	May-Jul	FE	CR	G4T1	S1	1B.1	No Photo Available
Clarkia springvillensis	Springville clarkia	Onagraceae	annual herb	(Mar)Apr-Jul	FT	CE	G2	S2	1B.2	No Photo Available
Eriodictyon altissimum	Indian Knob mountainbalm	Namaceae	perennial evergreen shrub	Mar-Jun	FE	CE	G1	S1	1B.1	No Photo Available

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Eriogonum apricum var. *apricum*	Ione buckwheat	Polygonaceae	perennial herb	Jul-Oct	FE	CE	G2T1	S1	1B.1	No Photo Available
Eriogonum apricum var. *prostratum*	Irish Hill buckwheat	Polygonaceae	perennial herb	Jun-Jul	FE	CE	G2T1	S1	1B.1	No Photo Available
Erysimum capitatum var. *angustatum*	Contra Costa wallflower	Brassicaceae	perennial herb	Mar-Jul	FE	CE	G5T1	S1	1B.1	No Photo Available
Fremontodendron decumbens	Pine Hill flannelbush	Malvaceae	perennial evergreen shrub	Apr-Jul	FE	CR	G1	S1	1B.2	No Photo Available
Galium californicum ssp. *sierrae*	El Dorado bedstraw	Rubiaceae	perennial herb	May-Jun	FE	CR	G5T1	S1	1B.2	No Photo Available
Holocarpha macradenia	Santa Cruz tarplant	Asteraceae	annual herb	Jun-Oct	FT	CE	G1	S1	1B.1	No Photo Available
Limnanthes floccosa ssp. *californica*	Butte County meadowfoam	Limnanthaceae	annual herb	Mar-May	FE	CE	G4T1	S1	1B.1	No Photo Available
Lupinus nipomensis	Nipomo Mesa lupine	Fabaceae	annual herb	Dec-May	FE	CE	G1	S1	1B.1	No Photo Available
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	FT	CE	G1	S1	1B.1	No Photo Available
Oenothera deltoides ssp. *howellii*	Antioch Dunes evening-primrose	Onagraceae	perennial herb	Mar-Sep	FE	CE	G5T1	S1	1B.1	No Photo Available
Opuntia basilaris var. *treleasei*	Bakersfield cactus	Cactaceae	perennial stem	Apr-May	FE	CE	G5T1	S1	1B.1	No Photo Available
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	FT	CE	G1	S1	1B.1	No Photo Available
Orcuttia pilosa	hairy Orcutt grass	Poaceae	annual herb	May-Sep	FE	CE	G1	S1	1B.1	No Photo Available
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	FT	CE	G2	S2	1B.1	No Photo Available
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	Apr-Jul(Sep)	FE	CE	G1	S1	1B.1	No Photo Available
Packera layneae	Layne's ragwort	Asteraceae	perennial herb	Apr-Aug	FT	CR	G2	S2	1B.2	No Photo Available
Phlox hirsuta	Yreka phlox	Polemoniaceae	perennial herb	Apr-Jun	FE	CE	G1	S1	1B.2	No Photo Available
Pseudobahia bahiifolia	Hartweg's golden sunburst	Asteraceae	annual herb	Mar-Apr	FE	CE	G1	S1	1B.1	No Photo Available
Pseudobahia peirsonii	San Joaquin adobe sunburst	Asteraceae	annual herb	Feb-Apr	FT	CE	G1	S1	1B.1	No Photo Available
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	FE	CR	G1	S1	1B.1	No Photo Available
Tuctoria mucronata	Crampton's tuctoria or Solano grass	Poaceae	annual herb	Apr-Aug	FE	CE	G1	S1	1B.1	No Photo Available
Verbena californica	Red Hills vervain	Verbenaceae	perennial herb	May-Sep	FT	CT	G2	S2	1B.1	No Photo Available

Showing 1 to 38 of 38 entries

Developed by
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Northern section of USFS lands in Central Valley RWQCB

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
Phone: (707) 822-7201 Fax: (707) 822-8411

In Reply Refer To: August 13, 2021
Consultation Code: 08EACT00-2021-SLI-0449
Event Code: 08EACT00-2021-E-01053
Project Name: Federal NPS Project - USFS lands North

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08EACT00-2021-SLI-0449
Event Code: 08EACT00-2021-E-01053
Project Name: Federal NPS Project - USFS lands North
Project Type: ** OTHER **
Project Description: USFS lands (north) in Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.37738470000005,-121.65460038105064,14z



Counties: California and Oregon

Endangered Species Act Species

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Longfin Smelt *Spirinchus thaleichthys* Population: San Francisco Bay delta DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9011	Candidate

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Burke's Goldfields *Lasthenia burkei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4338	Endangered
Contra Costa Goldfields *Lasthenia conjugens* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered
Keck's Checker-mallow *Sidalcea keckii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5704	Endangered
Showy Indian Clover *Trifolium amoenum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6459	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* https://ecos.fws.gov/ecp/species/1123#crithab	Final

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
Phone: (541) 885-8481 Fax: (541) 885-7837

In Reply Refer To: August 13, 2021
Consultation Code: 08EKLA00-2021-SLI-0092
Event Code: 08EKLA00-2021-E-00241
Project Name: Federal NPS Project - USFS lands North

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as designated and proposed critical habitat that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). For anadromous fish species (i.e., salmon), please contact the National Marine Fisheries Service at http://www.westcoast.fisheries.noaa.gov/protected_species/species_list/species_lists.html.

Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat. These provisions apply to non-Federal lands when there is a Federal nexus (e.g., funding or permits).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally threatened, endangered, proposed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.;* http://www.fws.gov/midwest/eagle/protect/laws.html). The Service developed the National Bald Eagle Management Guidelines (http://www.fws.gov/northeast/ecologicalservices/eaglenationalguide.html) to provide guidance on measures that may be used to avoid and minimize adverse impacts to bald eagles. Projects affecting bald or golden eagles may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds, including bald and golden eagles, and bats.

The Migratory Bird Treaty Act (16 U.S.C. 703-712; http://www.fws.gov/midwest/eagle/protect/laws.html) implements protections for migratory birds. Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any correspondence about your project that you submit to our office.

For projects in California, the office shown in the letterhead may not be the lead office for your project. Table 1 below provides lead Service field offices by county and land ownership/project type for northern California. Please refer to this table when you are ready to contact the field office corresponding to your project; a map and contact information for the Pacific Southwest Region field offices is located here: http://www.fws.gov/cno/es/.

Table 1: Lead Service offices by County and Ownership/Program in Northern California

County	Ownership/Program	Office Lead*
Lassen	Modoc National Forest	KFFWO
	Lassen National Forest	SFWO
	Toiyabe National Forest	RFWO
	BLM Surprise and Eagle Lake Resource Areas	RFWO
	BLM Alturas Resource Area	KFFWO
	Lassen Volcanic National Park	SFWO
	All other ownerships	By jurisdiction (see map)
Modoc	Modoc National Forest	KFFWO

	BLM Alturas Resource Area	KFFWO
	Klamath Basin National Wildlife Refuge Complex	KFFWO
	BLM Surprise and Eagle Lake Resource Areas	RFWO
	All other ownerships	By jurisdiction (see map)
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	YFWO
	Hat Creek Ranger District	SFWO
	Whiskeytown National Recreation Area	YFWO
	BLM Alturas Resource Area	KFFWO
	Caltrans	SFWO/ AFWO
	Ahjumawi Lava Springs State Park	SFWO
	All other ownerships	By jurisdiction (see map)
Siskiyou	Klamath National Forest (except Ukonom District)	YFWO
	Six Rivers National Forest and Ukonom District of Klamath National Forest	AFWO
	Shasta Trinity National Forest	YFWO
	Lassen National Forest	SFWO
	Modoc National Forest	KFFWO
	Lava Beds National Volcanic Monument	KFFWO
	BLM Alturas Resource Area	KFFWO
	Klamath Basin National Wildlife Refuge Complex	KFFWO
	All other ownerships	By jurisdiction (see map)

All	FERC-ESA	By jurisdiction (see map)

*Office Leads:

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08EKLA00-2021-SLI-0092
Event Code: 08EKLA00-2021-E-00241
Project Name: Federal NPS Project - USFS lands North
Project Type: ** OTHER **
Project Description: USFS lands (north) in Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.37738470000005,-121.65460038105064,14z



Counties: California and Oregon

Endangered Species Act Species

There is a total of 18 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
Oregon Spotted Frog *Rana pretiosa* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6633	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Longfin Smelt *Spirinchus thaleichthys* Population: San Francisco Bay delta DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9011	Candidate
Lost River Sucker *Deltistes luxatus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5604	Endangered
Shortnose Sucker *Chasmistes brevirostris* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7160	Endangered

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Shasta Crayfish *Pacifastacus fortis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8284	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Gentner's Fritillary *Fritillaria gentneri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8120	Endangered
Greene's Tuctoria *Tuctoria greenei* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1573	Endangered
Slender Orcutt Grass *Orcuttia tenuis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1063	Threatened

Conifers and Cycads

NAME	STATUS
Whitebark Pine *Pinus albicaulis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1748	Proposed Threatened

Critical habitats

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* https://ecos.fws.gov/ecp/species/1123#crithab	Final
Slender Orcutt Grass *Orcuttia tenuis* https://ecos.fws.gov/ecp/species/1063#crithab	Final

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black Swift *Cypseloides niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10

NAME	BREEDING SEASON
Black Tern *Chlidonias niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Cassin's Finch *Carpodacus cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Franklin's Gull *Leucophaeus pipixcan* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Lewis's Woodpecker *Melanerpes lewis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Long-eared Owl *asio otus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Pinyon Jay *Gymnorhinus cyanocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9420	Breeds Feb 15 to Jul 15

NAME	BREEDING SEASON
Rufous Hummingbird *selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Sage Thrasher *Oreoscoptes montanus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9433	Breeds Apr 15 to Aug 10
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

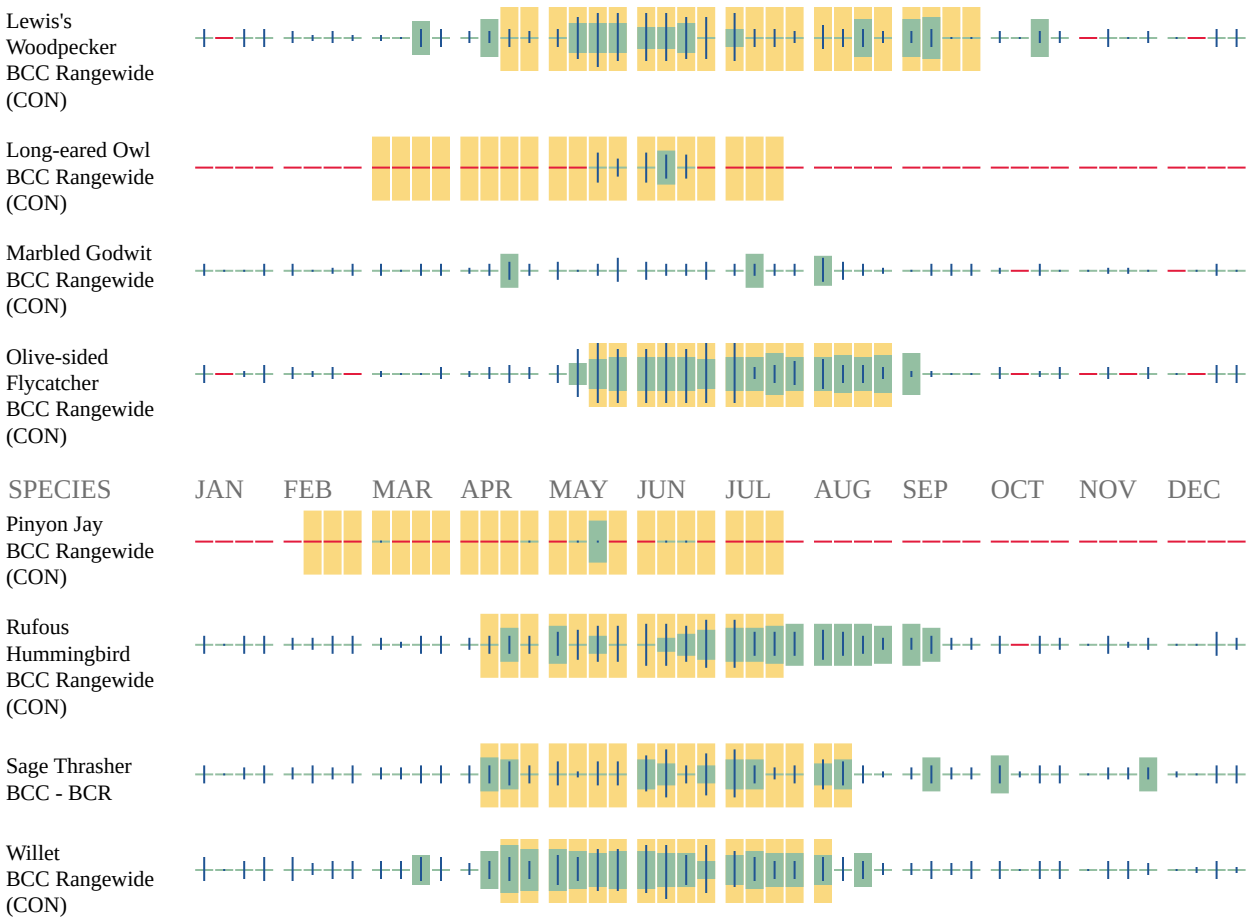
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits

may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);

2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities,

should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

Due to your project's size, the list below may be incomplete, or the acreages reported may be inaccurate. For a full list, please contact the local U.S. Fish and Wildlife office or visit https://www.fws.gov/wetlands/data/mapper.HTML

FRESHWATER POND

- PABFh
- PABFx
- PABGh
- PUBFh
- PUSCh
- PUSCx
- PABF
- PABG
- PABH

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1C
- PEM1Ch
- PEM1Fh
- PEM1Cx
- PEM1Ah
- PEM1Fx
- PEM1B

FRESHWATER FORESTED/SHRUB WETLAND

- PFOC
- PSSA
- PSSC

RIVERINE

- R4SBC
- R5UBF
- R4SBA
- R3UBH

LAKE

- L2ABK
- L1UBH
- L2ABF

United States Department of the Interior

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In Reply Refer To: August 13, 2021
Consultation Code: 08ENVD00-2021-SLI-0519
Event Code: 08ENVD00-2021-E-01524
Project Name: Federal NPS Project - USFS lands North

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The attached species list indicates threatened, endangered, proposed, and candidate species and designated or proposed critical habitat that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act of 1973, as amended (ESA, 16 U.S.C. 1531 *et seq*.), for projects that are authorized, funded, or carried out by a Federal agency. Candidate species have no protection under the ESA but are included for consideration because they could be listed prior to the completion of your project. Consideration of these species during project planning may assist species conservation efforts and may prevent the need for future listing actions. For additional information regarding species that may be found in the proposed project area, visit http://www.fws.gov/nevada/es/ipac.html.

The purpose of the ESA is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 *et seq*.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or

designated or proposed critical habitat. Guidelines for preparing a Biological Assessment can be found at: http://www.fws.gov/midwest/endangered/section7/ba_guide.html.

If a Federal action agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this species list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally listed, proposed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally, as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation, for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the attached list.

The Nevada Fish and Wildlife Office (NFWO) no longer provides species of concern lists. Most of these species for which we have concern are also on the Animal and Plant At-Risk Tracking List for Nevada (At-Risk list) maintained by the State of Nevada’s Natural Heritage Program (Heritage). Instead of maintaining our own list, we adopted Heritage's At-Risk list and are partnering with them to provide distribution data and information on the conservation needs for at-risk species to agencies or project proponents. The mission of Heritage is to continually evaluate the conservation priorities of native plants, animals, and their habitats, particularly those most vulnerable to extinction or in serious decline. In addition, in order to avoid future conflicts, we ask that you consider these at-risk species early in your project planning and explore management alternatives that provide for their long-term conservation.

For a list of at-risk species by county, visit Heritage's website (http://heritage.nv.gov). For a specific list of at-risk species that may occur in the project area, you can obtain a data request form from the website (http://heritage.nv.gov/get_data) or by contacting the Administrator of Heritage at 901 South Stewart Street, Suite 5002, Carson City, Nevada 89701-5245, (775) 684-2900. Please indicate on the form that your request is being obtained as part of your coordination with the Service under the ESA. During your project analysis, if you obtain new information or data for any Nevada sensitive species, we request that you provide the information to Heritage at the above address.

Furthermore, certain species of fish and wildlife are classified as protected by the State of Nevada (http://www.leg.state.nv.us/NAC/NAC-503.html). You must first obtain the appropriate license, permit, or written authorization from the Nevada Department of Wildlife (NDOW) to

take, or possess any parts of protected fish and wildlife species. Please visit http://www.ndow.org or contact NDOW in northern Nevada (775) 688-1500, in southern Nevada (702) 486-5127, or in eastern Nevada (775) 777-2300.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq*.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Service's wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

The Service's Pacific Southwest Region developed the *Interim Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities* (Interim Guidelines). This document provides energy facility developers with a tool for assessing the risk of potential impacts to wildlife resources and delineates how best to design and operate a bird- and bat-friendly wind facility. These Interim Guidelines are available upon request from the NFWO. The intent of a Bird and Bat Conservation Strategy is to conserve wildlife resources while supporting project developers through: (1) establishing project development in an adaptive management framework; (2) identifying proper siting and project design strategies; (3) designing and implementing pre-construction surveys; (4) implementing appropriate conservation measures for each development phase; (5) designing and implementing appropriate post-construction monitoring strategies; (6) using post-construction studies to better understand the dynamics of mortality reduction (*e.g.*, changes in blade cut-in speed, assessments of blade "feathering" success, and studies on the effects of visual and acoustic deterrents) including efforts tied into Before-After/Control-Impact analysis; and (7) conducting a thorough risk assessment and validation leading to adjustments in management and mitigation actions.

The template and recommendations set forth in the Interim Guidelines were based upon the Avian Powerline Interaction Committee's Avian Protection Plan template (http://www.aplic.org/) developed for electric utilities and modified accordingly to address the unique concerns of wind energy facilities. These recommendations are also consistent with the Service's wind energy guidelines. We recommend contacting us as early as possible in the planning process to discuss the need and process for developing a site-specific Bird and Bat Conservation Strategy.

The Service has also developed guidance regarding wind power development in relation to prairie grouse leks (sage-grouse are included in this). This document can be found at: http://www.fws.gov/southwest/es/Oklahoma/documents/te_species/wind%20power/prairie%20grouse%20lek%205%20mile%20public.pdf.

Migratory Birds are a Service Trust Resource. Based on the Service's conservation responsibilities and management authority for migratory birds under the Migratory Bird Treaty Act of 1918, as amended (MBTA; 16 U.S.C. 703 *et seq*.), we recommend that any land clearing or other surface disturbance associated with proposed actions within the project area be timed to avoid potential destruction of bird nests or young, or birds that breed in the area. Such destruction may be in violation of the MBTA. Under the MBTA, nests with eggs or young of migratory birds may not be harmed, nor may migratory birds be killed. Therefore, we recommend land clearing be conducted outside the avian breeding season. If this is not feasible,

we recommend a qualified biologist survey the area prior to land clearing. If nests are located, or if other evidence of nesting (*i.e.*, mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active.

Guidance for minimizing impacts to migratory birds for projects involving communications towers (*e.g.*, cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

If wetlands, springs, or streams are are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit. For projects located in northern Nevada (Carson City, Churchill, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lander, Lyon, Mineral, Pershing, Storey, and Washoe Counties) contact the Reno Regulatory Office at 300 Booth Street, Room 3060, Reno, Nevada 89509, (775) 784-5304; in southern Nevada (Clark, Lincoln, Nye, and White Pine Counties) contact the St. George Regulatory Office at 321 North Mall Drive, Suite L-101, St. George, Utah 84790-7314, (435) 986-3979; or in California along the eastern Sierra contact the Sacramento Regulatory Office at 650 Capitol Mall, Suite 5-200, Sacramento, California 95814, (916) 557-5250.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

The table below outlines lead FWS field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project, and send any documentation regarding your project to that corresponding office. Therefore, the lead FWS field office may not be the office listed above in the letterhead.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO

Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO
Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO

Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)
Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO
Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
	All ownerships but tidal/estuarine	All	SFWO
Napa			
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)

Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO
Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO

Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO
Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO
Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)

Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO
Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08ENVD00-2021-SLI-0519
Event Code: 08ENVD00-2021-E-01524
Project Name: Federal NPS Project - USFS lands North
Project Type: ** OTHER **
Project Description: USFS lands (north) in Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.37738470000005,-121.65460038105064,14z



Counties: California and Oregon

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
Sierra Nevada Yellow-legged Frog *Rana sierrae* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9529	Endangered

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Carson Wandering Skipper *Pseudocopaeodes eunus obscurus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/674	Endangered
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Webber's Ivesia *Ivesia webberi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4682	Threatened

Conifers and Cycads

NAME	STATUS
Whitebark Pine *Pinus albicaulis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1748	Proposed Threatened

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Sierra Nevada Yellow-legged Frog *Rana sierrae* https://ecos.fws.gov/ecp/species/9529#crithab	Final

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Black-throated Gray Warbler *Dendroica nigrescens* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jul 20

NAME	BREEDING SEASON
Cassin's Finch *Carpodacus cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Dec 1 to Aug 31
Lewis's Woodpecker *Melanerpes lewis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Pinyon Jay *Gymnorhinus cyanocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9420	Breeds Feb 15 to Jul 15
Rufous Hummingbird *selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Sage Thrasher *Oreoscoptes montanus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9433	Breeds Apr 15 to Aug 10
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

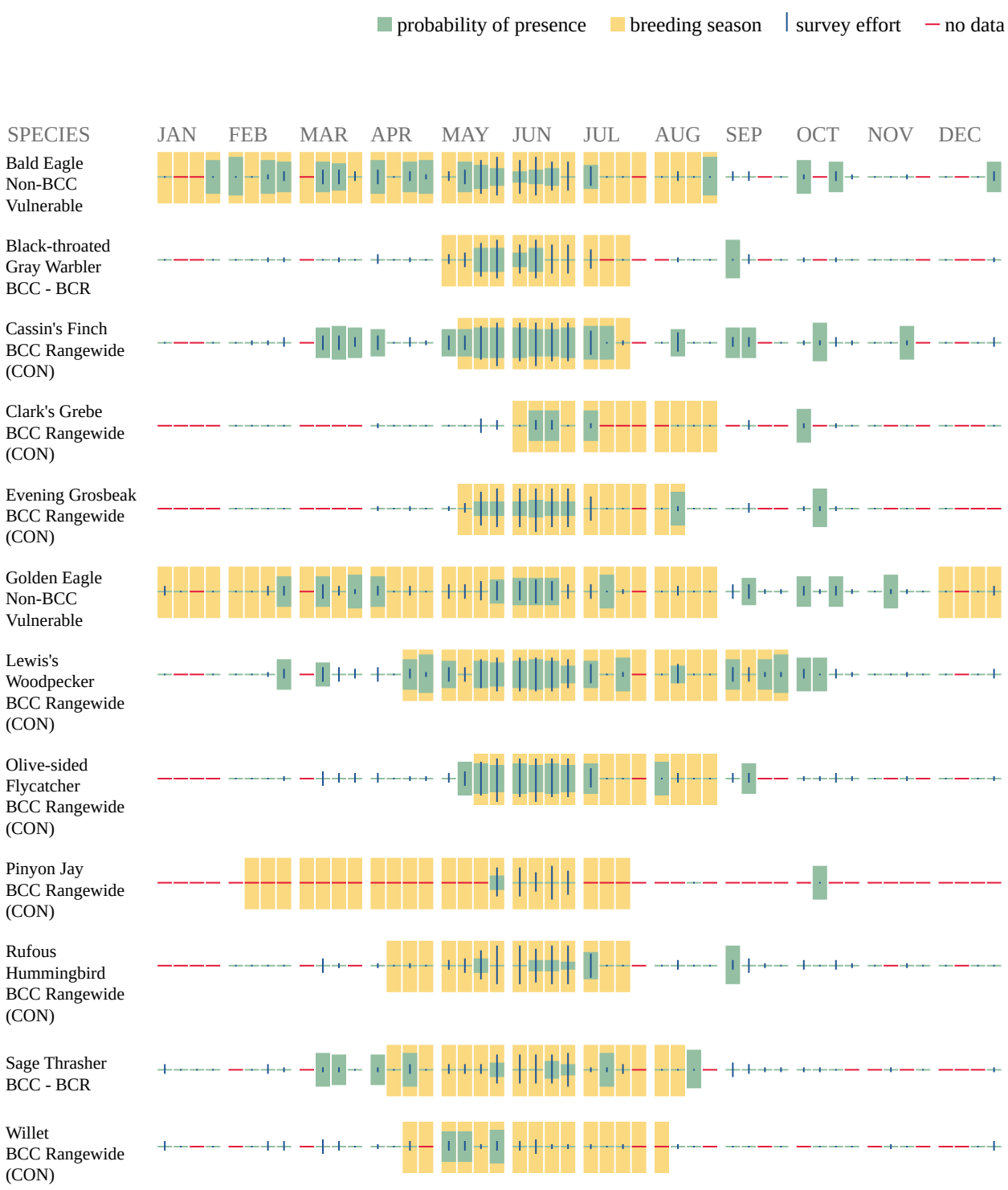
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1C

FRESHWATER FORESTED/SHRUB WETLAND

- PSSA
- PSSC
- PFOC

RIVERINE

- R4SBC

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: August 13, 2021
Consultation Code: 08ESMF00-2021-SLI-2532
Event Code: 08ESMF00-2021-E-07323
Project Name: Federal NPS Project - USFS lands North

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08ESMF00-2021-SLI-2532
Event Code: 08ESMF00-2021-E-07323
Project Name: Federal NPS Project - USFS lands North
Project Type: ** OTHER **
Project Description: USFS lands (north) in Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.37738470000005,-121.65460038105064,14z



Counties: California and Oregon

Endangered Species Act Species

There is a total of 27 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
Oregon Spotted Frog *Rana pretiosa* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6633	Threatened
Sierra Nevada Yellow-legged Frog *Rana sierrae* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9529	Endangered

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Lahontan Cutthroat Trout *Oncorhynchus clarkii henshawi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3964	Threatened
Longfin Smelt *Spirinchus thaleichthys* Population: San Francisco Bay delta DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9011	Candidate

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Shasta Crayfish *Pacifastacus fortis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8284	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Burke's Goldfields *Lasthenia burkei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4338	Endangered
Butte County Meadowfoam *Limnanthes floccosa ssp. californica* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4223	Endangered
Contra Costa Goldfields *Lasthenia conjugens* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered
Greene's Tuctoria *Tuctoria greenei* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1573	Endangered
Keck's Checker-mallow *Sidalcea keckii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5704	Endangered
Layne's Butterweed *Senecio layneae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4062	Threatened
Pine Hill Flannelbush *Fremontodendron californicum ssp. decumbens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4818	Endangered
Showy Indian Clover *Trifolium amoenum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6459	Endangered
Slender Orcutt Grass *Orcuttia tenuis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1063	Threatened
Stebbins' Morning-glory *Calystegia stebbinsii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3991	Endangered
Webber's Ivesia *Ivesia webberi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4682	Threatened

Conifers and Cycads

NAME	STATUS
Whitebark Pine *Pinus albicaulis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1748	Proposed Threatened

Critical habitats

There are 5 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
California Red-legged Frog *Rana draytonii* https://ecos.fws.gov/ecp/species/2891#crithab	Final
Greene's Tuctoria *Tuctoria greenei* https://ecos.fws.gov/ecp/species/1573#crithab	Final
Northern Spotted Owl *Strix occidentalis caurina* https://ecos.fws.gov/ecp/species/1123#crithab	Final
Sierra Nevada Yellow-legged Frog *Rana sierrae* https://ecos.fws.gov/ecp/species/9529#crithab	Final
Slender Orcutt Grass *Orcuttia tenuis* https://ecos.fws.gov/ecp/species/1063#crithab	Final

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
Phone: (530) 842-5763 Fax: (530) 842-4517

In Reply Refer To: August 13, 2021
Consultation Code: 08EYRE00-2021-SLI-0132
Event Code: 08EYRE00-2021-E-00418
Project Name: Federal NPS Project - USFS lands North

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies federally threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that this list does not reflect State listed species or fulfill requirements related to any California Department of Fish and Wildlife consultation. Additionally, this list does not include species covered by the National Marine Fisheries Service (NMFS). For NMFS species please see the related website at the following link:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

If your project does not involve Federal funding or permits and does not occur on Federal land, we recommend you review this list and determine if any of these species or critical habitat may be affected. If you determine that there will be no effects to federally listed or proposed species or critical habitat, there is no need to coordinate with the Service. If you think or know that there will be effects, please contact our office for further guidance. We can assist you in incorporating measures to avoid or minimize impacts, and discuss whether permits are needed.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential effects to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and

implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

If wetlands, springs, or streams are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html).

Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

The table below outlines lead Service field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project. Please send any documentation regarding your project to that office. Please note that the lead Service field office for your consultation may not be the office listed above in the letterhead. Please visit the following link to view a map of Service field office jurisdictional boundaries:

http://www.fws.gov/yreka/specieslist/JurisdictionalBoundaryES_R8_20150313.pdf

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of the letter you submit to our office along with any request for consultation or correspondence about your project.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO
Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO

El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)
Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO

Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO
Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO

San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO
Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO

Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)
Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO

Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08EYRE00-2021-SLI-0132
Event Code: 08EYRE00-2021-E-00418
Project Name: Federal NPS Project - USFS lands North
Project Type: ** OTHER **
Project Description: USFS lands (north) in Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.37738470000005,-121.65460038105064,14z



Counties: California and Oregon

Endangered Species Act Species

There is a total of 16 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
Oregon Spotted Frog *Rana pretiosa* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6633	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Longfin Smelt *Spirinchus thaleichthys* Population: San Francisco Bay delta DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9011	Candidate
Lost River Sucker *Deltistes luxatus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5604	Endangered
Shortnose Sucker *Chasmistes brevirostris* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7160	Endangered

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Shasta Crayfish *Pacifastacus fortis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8284	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Gentner's Fritillary *Fritillaria gentneri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8120	Endangered
Slender Orcutt Grass *Orcuttia tenuis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1063	Threatened

Conifers and Cycads

NAME	STATUS
Whitebark Pine *Pinus albicaulis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1748	Proposed Threatened

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* https://ecos.fws.gov/ecp/species/1123#crithab	Final

Southern section of USFS lands in Central Valley RWQCB

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901
http://www.fws.gov/carlsbad/

In Reply Refer To: August 13, 2021
Consultation Code: 08ECAR00-2021-SLI-1357
Event Code: 08ECAR00-2021-E-03070
Project Name: Federal NPS Permit USFS lands -south

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

Project Summary

Consultation Code: 08ECAR00-2021-SLI-1357
Event Code: 08ECAR00-2021-E-03070
Project Name: Federal NPS Permit USFS lands -south
Project Type: ** OTHER **
Project Description: USFS south in Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@35.95507755000003,-118.4223985430836,14z



Counties: California

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: SSN DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Endangered
Sierra Nevada Bighorn Sheep *Ovis canadensis sierrae* Population: Sierra Nevada There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3646	Endangered

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/321

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
Phone: (775) 861-6300 Fax: (775) 861-6301
http://www.fws.gov/reno/

In Reply Refer To: August 13, 2021
Consultation Code: 08ENVD00-2021-SLI-0520
Event Code: 08ENVD00-2021-E-01526
Project Name: Federal NPS Permit USFS lands -south

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The attached species list indicates threatened, endangered, proposed, and candidate species and designated or proposed critical habitat that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act of 1973, as amended (ESA, 16 U.S.C. 1531 *et seq*.), for projects that are authorized, funded, or carried out by a Federal agency. Candidate species have no protection under the ESA but are included for consideration because they could be listed prior to the completion of your project. Consideration of these species during project planning may assist species conservation efforts and may prevent the need for future listing actions. For additional information regarding species that may be found in the proposed project area, visit http://www.fws.gov/nevada/es/ipac.html.

The purpose of the ESA is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 *et seq*.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or

designated or proposed critical habitat. Guidelines for preparing a Biological Assessment can be found at: http://www.fws.gov/midwest/endangered/section7/ba_guide.html.

If a Federal action agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this species list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally listed, proposed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally, as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation, for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the attached list.

The Nevada Fish and Wildlife Office (NFWO) no longer provides species of concern lists. Most of these species for which we have concern are also on the Animal and Plant At-Risk Tracking List for Nevada (At-Risk list) maintained by the State of Nevada’s Natural Heritage Program (Heritage). Instead of maintaining our own list, we adopted Heritage's At-Risk list and are partnering with them to provide distribution data and information on the conservation needs for at-risk species to agencies or project proponents. The mission of Heritage is to continually evaluate the conservation priorities of native plants, animals, and their habitats, particularly those most vulnerable to extinction or in serious decline. In addition, in order to avoid future conflicts, we ask that you consider these at-risk species early in your project planning and explore management alternatives that provide for their long-term conservation.

For a list of at-risk species by county, visit Heritage's website (http://heritage.nv.gov). For a specific list of at-risk species that may occur in the project area, you can obtain a data request form from the website (http://heritage.nv.gov/get_data) or by contacting the Administrator of Heritage at 901 South Stewart Street, Suite 5002, Carson City, Nevada 89701-5245, (775) 684-2900. Please indicate on the form that your request is being obtained as part of your coordination with the Service under the ESA. During your project analysis, if you obtain new information or data for any Nevada sensitive species, we request that you provide the information to Heritage at the above address.

Furthermore, certain species of fish and wildlife are classified as protected by the State of Nevada (http://www.leg.state.nv.us/NAC/NAC-503.html). You must first obtain the appropriate license, permit, or written authorization from the Nevada Department of Wildlife (NDOW) to

take, or possess any parts of protected fish and wildlife species. Please visit http://www.ndow.org or contact NDOW in northern Nevada (775) 688-1500, in southern Nevada (702) 486-5127, or in eastern Nevada (775) 777-2300.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq*.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Service's wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

The Service's Pacific Southwest Region developed the *Interim Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities* (Interim Guidelines). This document provides energy facility developers with a tool for assessing the risk of potential impacts to wildlife resources and delineates how best to design and operate a bird- and bat-friendly wind facility. These Interim Guidelines are available upon request from the NFWO. The intent of a Bird and Bat Conservation Strategy is to conserve wildlife resources while supporting project developers through: (1) establishing project development in an adaptive management framework; (2) identifying proper siting and project design strategies; (3) designing and implementing pre-construction surveys; (4) implementing appropriate conservation measures for each development phase; (5) designing and implementing appropriate post-construction monitoring strategies; (6) using post-construction studies to better understand the dynamics of mortality reduction (*e.g.*, changes in blade cut-in speed, assessments of blade "feathering" success, and studies on the effects of visual and acoustic deterrents) including efforts tied into Before-After/Control-Impact analysis; and (7) conducting a thorough risk assessment and validation leading to adjustments in management and mitigation actions.

The template and recommendations set forth in the Interim Guidelines were based upon the Avian Powerline Interaction Committee's Avian Protection Plan template (http://www.aplic.org/) developed for electric utilities and modified accordingly to address the unique concerns of wind energy facilities. These recommendations are also consistent with the Service's wind energy guidelines. We recommend contacting us as early as possible in the planning process to discuss the need and process for developing a site-specific Bird and Bat Conservation Strategy.

The Service has also developed guidance regarding wind power development in relation to prairie grouse leks (sage-grouse are included in this). This document can be found at: http://www.fws.gov/southwest/es/Oklahoma/documents/te_species/wind%20power/prairie%20grouse%20lek%205%20mile%20public.pdf.

Migratory Birds are a Service Trust Resource. Based on the Service's conservation responsibilities and management authority for migratory birds under the Migratory Bird Treaty Act of 1918, as amended (MBTA; 16 U.S.C. 703 *et seq*.), we recommend that any land clearing or other surface disturbance associated with proposed actions within the project area be timed to avoid potential destruction of bird nests or young, or birds that breed in the area. Such destruction may be in violation of the MBTA. Under the MBTA, nests with eggs or young of migratory birds may not be harmed, nor may migratory birds be killed. Therefore, we recommend land clearing be conducted outside the avian breeding season. If this is not feasible,

we recommend a qualified biologist survey the area prior to land clearing. If nests are located, or if other evidence of nesting (*i.e.*, mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active.

Guidance for minimizing impacts to migratory birds for projects involving communications towers (*e.g.*, cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

If wetlands, springs, or streams are are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit. For projects located in northern Nevada (Carson City, Churchill, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lander, Lyon, Mineral, Pershing, Storey, and Washoe Counties) contact the Reno Regulatory Office at 300 Booth Street, Room 3060, Reno, Nevada 89509, (775) 784-5304; in southern Nevada (Clark, Lincoln, Nye, and White Pine Counties) contact the St. George Regulatory Office at 321 North Mall Drive, Suite L-101, St. George, Utah 84790-7314, (435) 986-3979; or in California along the eastern Sierra contact the Sacramento Regulatory Office at 650 Capitol Mall, Suite 5-200, Sacramento, California 95814, (916) 557-5250.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

The table below outlines lead FWS field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project, and send any documentation regarding your project to that corresponding office. Therefore, the lead FWS field office may not be the office listed above in the letterhead.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO

Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO
Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO

Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)
Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO
Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
	All ownerships but tidal/estuarine	All	SFWO
Napa			
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)

Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO
Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO

Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO
Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO
Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)

Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO
Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

Project Summary

Consultation Code: 08ENVD00-2021-SLI-0520
Event Code: 08ENVD00-2021-E-01526
Project Name: Federal NPS Permit USFS lands -south
Project Type: ** OTHER **
Project Description: USFS south in Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@35.95507755000003,-118.4223985430836,14z



Counties: California

Endangered Species Act Species

There is a total of 19 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: SSN DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Endangered
Sierra Nevada Bighorn Sheep *Ovis canadensis sierrae* Population: Sierra Nevada There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3646	Endangered
Sierra Nevada Red Fox *Vulpes vulpes necator* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4252	Endangered

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
Mountain Yellow-legged Frog *Rana muscosa* Population: Northern California DPS There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8037	Endangered
Sierra Nevada Yellow-legged Frog *Rana sierrae* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9529	Endangered
Yosemite Toad *Anaxyrus canorus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7255	Threatened

Fishes

NAME	STATUS
Cui-ui *Chasmistes cujus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/456	Endangered
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Lahontan Cutthroat Trout *Oncorhynchus clarkii henshawi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3964	Threatened
Little Kern Golden Trout *Oncorhynchus aguabonita whitei* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5041	Threatened
Owens Pupfish *Cyprinodon radiosus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4982	Endangered
Owens Tui Chub *Gila bicolor ssp. snyderi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7289	Endangered
Paiute Cutthroat Trout *Oncorhynchus clarkii seleniris* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6890	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Conifers and Cycads

NAME	STATUS
Whitebark Pine *Pinus albicaulis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1748	Proposed Threatened

Critical habitats

There are 4 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Mountain Yellow-legged Frog *Rana muscosa* https://ecos.fws.gov/ecp/species/8037#crithab	Final
Sierra Nevada Bighorn Sheep *Ovis canadensis sierrae* https://ecos.fws.gov/ecp/species/3646#crithab	Final
Sierra Nevada Yellow-legged Frog *Rana sierrae* https://ecos.fws.gov/ecp/species/9529#crithab	Final
Yosemite Toad *Anaxyrus canorus* https://ecos.fws.gov/ecp/species/7255#crithab	Final

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Black Rosy-finch *Leucosticte atrata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9460	Breeds Jun 15 to Aug 31

NAME	BREEDING SEASON
Black Swift *Cypseloides niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
Black-throated Gray Warbler *Dendroica nigrescens* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jul 20
California Spotted Owl *Strix occidentalis occidentalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/7266	Breeds Mar 10 to Jun 15
Cassin's Finch *Carpodacus cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Dec 1 to Aug 31
Lawrence's Goldfinch *Carduelis lawrencei* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Lewis's Woodpecker *Melanerpes lewis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Long-eared Owl *asio otus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15

NAME	BREEDING SEASON
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Oak Titmouse *Baeolophus inornatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9656	Breeds Mar 15 to Jul 15
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Pinyon Jay *Gymnorhinus cyanocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9420	Breeds Feb 15 to Jul 15
Rufous Hummingbird *selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Sage Thrasher *Oreoscoptes montanus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9433	Breeds Apr 15 to Aug 10
Virginia's Warbler *Vermivora virginiae* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9441	Breeds May 1 to Jul 31
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Wrentit *Chamaea fasciata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 10

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

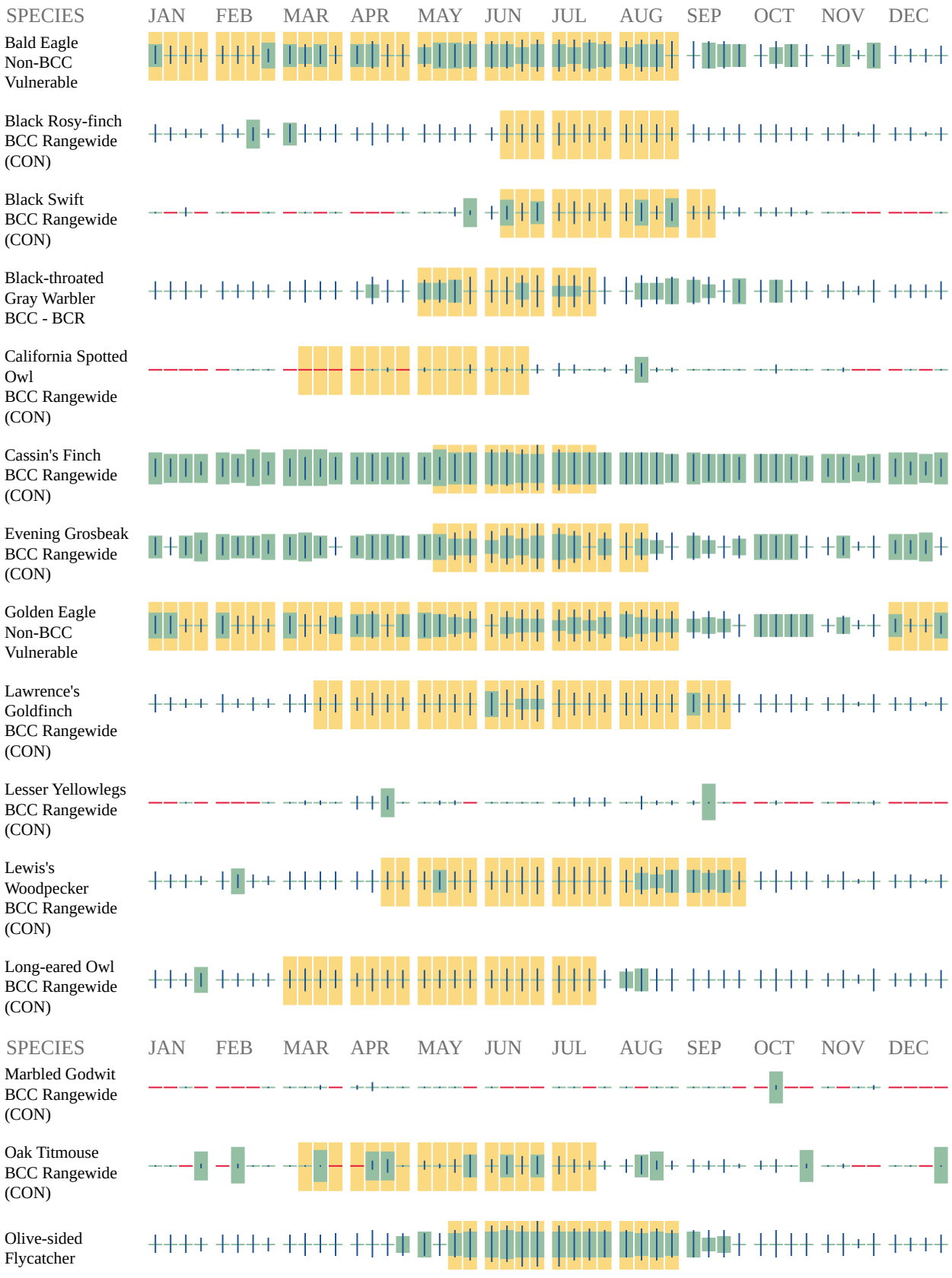
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

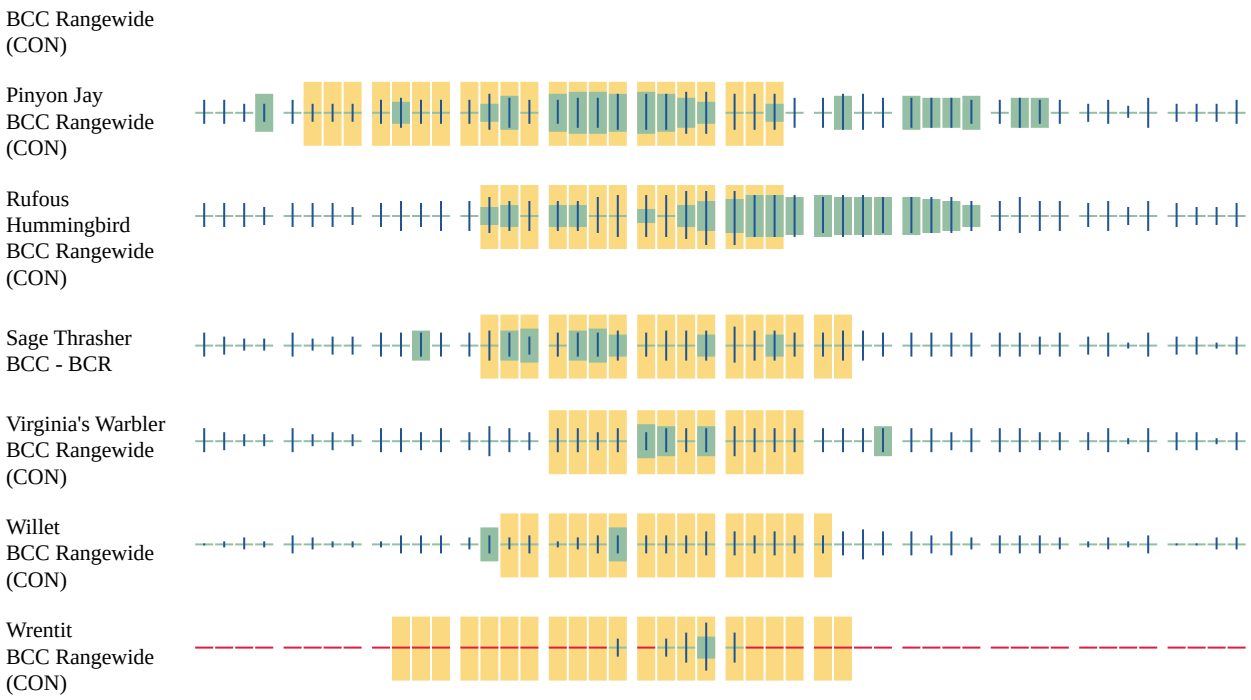
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort – no data


SPECIES
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Bald Eagle
Non-BCC
Vulnerable
Black Rosy-finch
BCC Rangewide
(CON)
Black Swift
BCC Rangewide
(CON)
Black-throated
Gray Warbler
BCC - BCR
California Spotted
Owl
BCC Rangewide
(CON)
Cassin's Finch
BCC Rangewide
(CON)
Evening Grosbeak
BCC Rangewide
(CON)
Golden Eagle
Non-BCC
Vulnerable
Lawrence's
Goldfinch
BCC Rangewide
(CON)
Lesser Yellowlegs
BCC Rangewide
(CON)
Lewis's
Woodpecker
BCC Rangewide
(CON)
Long-eared Owl
BCC Rangewide
(CON)
SPECIES
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Marbled Godwit
BCC Rangewide
(CON)
Oak Titmouse
BCC Rangewide
(CON)
Olive-sided
Flycatcher



Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles)

potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

Due to your project's size, the list below may be incomplete, or the acreages reported may be inaccurate. For a full list, please contact the local U.S. Fish and Wildlife office or visit https://www.fws.gov/wetlands/data/mapper.HTML

LAKE

- L1UBH
- L2USC

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1B
- PEM1C

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: August 13, 2021
Consultation Code: 08ESMF00-2021-SLI-2533
Event Code: 08ESMF00-2021-E-07325
Project Name: Federal NPS Permit USFS lands -south

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

Project Summary

Consultation Code: 08ESMF00-2021-SLI-2533
Event Code: 08ESMF00-2021-E-07325
Project Name: Federal NPS Permit USFS lands -south
Project Type: ** OTHER **
Project Description: USFS south in Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@35.95507755000003,-118.4223985430836,14z



Counties: California

Endangered Species Act Species

There is a total of 48 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Buena Vista Lake Ornate Shrew *Sorex ornatus relictus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1610	Endangered
Fisher *Pekania pennanti* Population: SSN DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Endangered
Fresno Kangaroo Rat *Dipodomys nitratoides exilis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5150	Endangered
Giant Kangaroo Rat *Dipodomys ingens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6051	Endangered
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered
Sierra Nevada Bighorn Sheep *Ovis canadensis sierrae* Population: Sierra Nevada There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3646	Endangered
Sierra Nevada Red Fox *Vulpes vulpes necator* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4252	Endangered
Tipton Kangaroo Rat *Dipodomys nitratoides nitratoides* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7247	Endangered

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard *Gambelia silus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened
Mountain Yellow-legged Frog *Rana muscosa* Population: Northern California DPS There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8037	Endangered
Sierra Nevada Yellow-legged Frog *Rana sierrae* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9529	Endangered
Yosemite Toad *Anaxyrus canorus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7255	Threatened

Fishes

NAME	STATUS
Cui-ui *Chasmistes cujus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/456	Endangered
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Lahontan Cutthroat Trout *Oncorhynchus clarkii henshawi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3964	Threatened
Little Kern Golden Trout *Oncorhynchus aguabonita whitei* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5041	Threatened
Owens Tui Chub *Gila bicolor ssp. snyderi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7289	Endangered
Paiute Cutthroat Trout *Oncorhynchus clarkii seleniris* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6890	Threatened

Insects

NAME	STATUS
Kern Primrose Sphinx Moth *Euproserpinus euterpe* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7881	Threatened
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Riverside Fairy Shrimp *Streptocephalus woottoni* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8148	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Bakersfield Cactus *Opuntia treleasei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7799	Endangered
California Jewelflower *Caulanthus californicus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4599	Endangered
California Orcutt Grass *Orcuttia californica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4923	Endangered
Chinese Camp Brodiaea *Brodiaea pallida* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8290	Threatened
Fleshy Owl's-clover *Castilleja campestris ssp. succulenta* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8095	Threatened
Hartweg's Golden Sunburst *Pseudobahia bahiifolia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1704	Endangered
Keck's Checker-mallow *Sidalcea keckii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5704	Endangered
Layne's Butterweed *Senecio layneae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4062	Threatened
Mariposa Pussypaws *Calyptridium pulchellum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2695	Threatened
Red Hills Vervain *Verbena californica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7344	Threatened
San Joaquin Adobe Sunburst *Pseudobahia peirsonii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2931	Threatened
San Joaquin Orcutt Grass *Orcuttia inaequalis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5506	Threatened
San Joaquin Wooly-threads *Monolopia (=Lembertia) congdonii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3746	Endangered

NAME	STATUS
Spreading Navarretia *Navarretia fossalis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1334	Threatened
Springville Clarkia *Clarkia springvillensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8309	Threatened

Conifers and Cycads

NAME	STATUS
Whitebark Pine *Pinus albicaulis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1748	Proposed Threatened

Critical habitats

There are 8 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
California Condor *Gymnogyps californianus* https://ecos.fws.gov/ecp/species/8193#crithab	Final
California Red-legged Frog *Rana draytonii* https://ecos.fws.gov/ecp/species/2891#crithab	Final
Little Kern Golden Trout *Oncorhynchus aguabonita whitei* https://ecos.fws.gov/ecp/species/5041#crithab	Final
Mountain Yellow-legged Frog *Rana muscosa* https://ecos.fws.gov/ecp/species/8037#crithab	Final
Sierra Nevada Bighorn Sheep *Ovis canadensis sierrae* https://ecos.fws.gov/ecp/species/3646#crithab	Final
Sierra Nevada Yellow-legged Frog *Rana sierrae* https://ecos.fws.gov/ecp/species/9529#crithab	Final
Southwestern Willow Flycatcher *Empidonax traillii extimus* https://ecos.fws.gov/ecp/species/6749#crithab	Final
Yosemite Toad *Anaxyrus canorus* https://ecos.fws.gov/ecp/species/7255#crithab	Final

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
Phone: (805) 644-1766 Fax: (805) 644-3958

In Reply Refer To: August 13, 2021
Consultation Code: 08EVEN00-2021-SLI-0508
Event Code: 08EVEN00-2021-E-01620
Project Name: Federal NPS Permit USFS lands -south

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed list identifies species listed as threatened and endangered, species proposed for listing as threatened or endangered, designated and proposed critical habitat, and species that are candidates for listing that may occur within the boundary of the area you have indicated using the U.S. Fish and Wildlife Service's (Service) Information Planning and Conservation System (IPaC). The species list fulfills the requirements under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the species list should be verified after 90 days. We recommend that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists following the same process you used to receive the enclosed list. Please include the Consultation Tracking Number in the header of this letter with any correspondence about the species list.

Due to staff shortages and excessive workload, we are unable to provide an official list more specific to your area. Numerous other sources of information are available for you to narrow the list to the habitats and conditions of the site in which you are interested. For example, we recommend conducting a biological site assessment or surveys for plants and animals that could help refine the list.

If a Federal agency is involved in the project, that agency has the responsibility to review its proposed activities and determine whether any listed species may be affected. If the project is a major construction project*, the Federal agency has the responsibility to prepare a biological assessment to make a determination of the effects of the action on the listed species or critical habitat. If the Federal agency determines that a listed species or critical habitat is likely to be adversely affected, it should request, in writing through our office, formal consultation pursuant to section 7 of the Act. Informal consultation may be used to exchange information and resolve conflicts with respect to threatened or endangered species or their critical habitat prior to a

written request for formal consultation. During this review process, the Federal agency may engage in planning efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act.

Federal agencies are required to confer with the Service, pursuant to section 7(a)(4) of the Act, when an agency action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10(a)). A request for formal conference must be in writing and should include the same information that would be provided for a request for formal consultation. Conferences can also include discussions between the Service and the Federal agency to identify and resolve potential conflicts between an action and proposed species or proposed critical habitat early in the decision-making process. The Service recommends ways to minimize or avoid adverse effects of the action. These recommendations are advisory because the jeopardy prohibition of section 7(a)(2) of the Act does not apply until the species is listed or the proposed critical habitat is designated. The conference process fulfills the need to inform Federal agencies of possible steps that an agency might take at an early stage to adjust its actions to avoid jeopardizing a proposed species.

When a proposed species or proposed critical habitat may be affected by an action, the lead Federal agency may elect to enter into formal conference with the Service even if the action is not likely to jeopardize or result in the destruction or adverse modification of proposed critical habitat. If the proposed species is listed or the proposed critical habitat is designated after completion of the conference, the Federal agency may ask the Service, in writing, to confirm the conference as a formal consultation. If the Service reviews the proposed action and finds that no significant changes in the action as planned or in the information used during the conference have occurred, the Service will confirm the conference as a formal consultation on the project and no further section 7 consultation will be necessary. Use of the formal conference process in this manner can prevent delays in the event the proposed species is listed or the proposed critical habitat is designated during project development or implementation.

Candidate species are those species presently under review by the Service for consideration for Federal listing. Candidate species should be considered in the planning process because they may become listed or proposed for listing prior to project completion. Preparation of a biological assessment, as described in section 7(c) of the Act, is not required for candidate species. If early evaluation of your project indicates that it is likely to affect a candidate species, you may wish to request technical assistance from this office.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Wildlife's Natural Diversity Data Base. You can contact the California Department of Fish and Wildlife at (916) 324-3812 for information on other sensitive species that may occur in this area.

[*A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.]

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08EVEN00-2021-SLI-0508
Event Code: 08EVEN00-2021-E-01620
Project Name: Federal NPS Permit USFS lands -south
Project Type: ** OTHER **
Project Description: USFS south in Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@35.95507755000003,-118.4223985430836,14z



Counties: California

Endangered Species Act Species

There is a total of 13 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Buena Vista Lake Ornate Shrew *Sorex ornatus relictus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1610	Endangered
Giant Kangaroo Rat *Dipodomys ingens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6051	Endangered
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard *Gambelia silus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Crustaceans

NAME	STATUS
Riverside Fairy Shrimp *Streptocephalus woottoni* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8148	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
California Orcutt Grass *Orcuttia californica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4923	Endangered
Spreading Navarretia *Navarretia fossalis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1334	Threatened

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
California Condor *Gymnogyps californianus* https://ecos.fws.gov/ecp/species/8193#crithab	Final

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
Phone: (707) 822-7201 Fax: (707) 822-8411

In Reply Refer To: August 13, 2021
Consultation Code: 08EACT00-2021-SLI-0448
Event Code: 08EACT00-2021-E-01051
Project Name: Federal NPS Permit - BLM lands

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

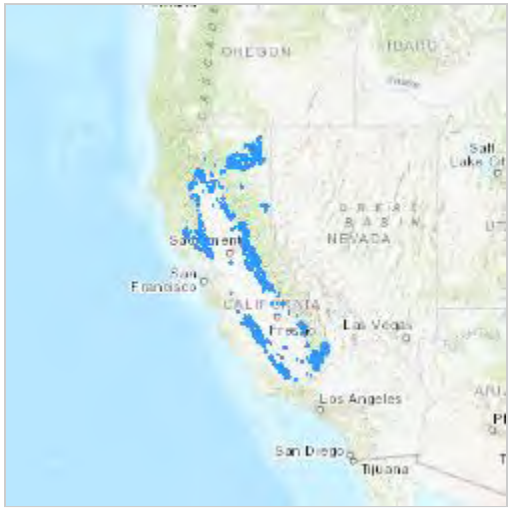
Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08EACT00-2021-SLI-0448
Event Code: 08EACT00-2021-E-01051
Project Name: Federal NPS Permit - BLM lands
Project Type: ** OTHER **
Project Description: BLM lands within Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.94367390000005,-121.37320941764483,14z



Counties: California

Endangered Species Act Species

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Crustaceans

NAME	STATUS
California Freshwater Shrimp *Syncaris pacifica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7903	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Burke's Goldfields *Lasthenia burkei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4338	Endangered
Contra Costa Goldfields *Lasthenia conjugens* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered
Keck's Checker-mallow *Sidalcea keckii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5704	Endangered
Showy Indian Clover *Trifolium amoenum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6459	Endangered
Slender Orcutt Grass *Orcuttia tenuis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1063	Threatened

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* https://ecos.fws.gov/ecp/species/1123#crithab	Final

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901
http://www.fws.gov/carlsbad/

In Reply Refer To: August 13, 2021
Consultation Code: 08ECAR00-2021-SLI-1356
Event Code: 08ECAR00-2021-E-03068
Project Name: Federal NPS Permit - BLM lands

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

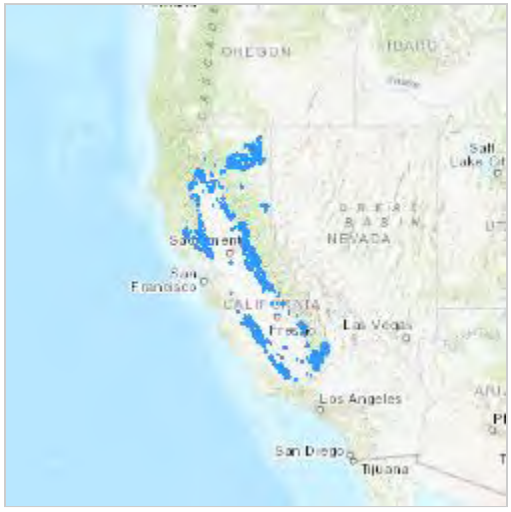
Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08ECAR00-2021-SLI-1356
Event Code: 08ECAR00-2021-E-03068
Project Name: Federal NPS Permit - BLM lands
Project Type: ** OTHER **
Project Description: BLM lands within Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.94367390000005,-121.37320941764483,14z



Counties: California

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: SSN DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Endangered
Sierra Nevada Bighorn Sheep *Ovis canadensis sierrae* Population: Sierra Nevada There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3646	Endangered

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Desert Tortoise *Gopherus agassizii*	Threatened

Population: Wherever found, except AZ south and east of Colorado R., and Mexico
There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/4481

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/2891

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/321

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
Phone: (541) 885-8481 Fax: (541) 885-7837

In Reply Refer To: August 13, 2021
Consultation Code: 08EKLA00-2021-SLI-0091
Event Code: 08EKLA00-2021-E-00239
Project Name: Federal NPS Permit - BLM lands

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as designated and proposed critical habitat that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). For anadromous fish species (i.e., salmon), please contact the National Marine Fisheries Service at http://www.westcoast.fisheries.noaa.gov/protected_species/species_list/species_lists.html.

Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat. These provisions apply to non-Federal lands when there is a Federal nexus (e.g., funding or permits).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally threatened, endangered, proposed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.;* http://www.fws.gov/midwest/eagle/protect/laws.html). The Service developed the National Bald Eagle Management Guidelines (http://www.fws.gov/northeast/ecologicalservices/eaglenationalguide.html) to provide guidance on measures that may be used to avoid and minimize adverse impacts to bald eagles. Projects affecting bald or golden eagles may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds, including bald and golden eagles, and bats.

The Migratory Bird Treaty Act (16 U.S.C. 703-712; http://www.fws.gov/midwest/eagle/protect/laws.html) implements protections for migratory birds. Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any correspondence about your project that you submit to our office.

For projects in California, the office shown in the letterhead may not be the lead office for your project. Table 1 below provides lead Service field offices by county and land ownership/project type for northern California. Please refer to this table when you are ready to contact the field office corresponding to your project; a map and contact information for the Pacific Southwest Region field offices is located here: http://www.fws.gov/cno/es/.

Table 1: Lead Service offices by County and Ownership/Program in Northern California

County	Ownership/Program	Office Lead*
Lassen	Modoc National Forest	KFFWO
	Lassen National Forest	SFWO
	Toiyabe National Forest	RFWO
	BLM Surprise and Eagle Lake Resource Areas	RFWO
	BLM Alturas Resource Area	KFFWO
	Lassen Volcanic National Park	SFWO
	All other ownerships	By jurisdiction (see map)
Modoc	Modoc National Forest	KFFWO

	BLM Alturas Resource Area	KFFWO
	Klamath Basin National Wildlife Refuge Complex	KFFWO
	BLM Surprise and Eagle Lake Resource Areas	RFWO
	All other ownerships	By jurisdiction (see map)
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	YFWO
	Hat Creek Ranger District	SFWO
	Whiskeytown National Recreation Area	YFWO
	BLM Alturas Resource Area	KFFWO
	Caltrans	SFWO/ AFWO
	Ahjumawi Lava Springs State Park	SFWO
	All other ownerships	By jurisdiction (see map)
Siskiyou	Klamath National Forest (except Ukonom District)	YFWO
	Six Rivers National Forest and Ukonom District of Klamath National Forest	AFWO
	Shasta Trinity National Forest	YFWO
	Lassen National Forest	SFWO
	Modoc National Forest	KFFWO
	Lava Beds National Volcanic Monument	KFFWO
	BLM Alturas Resource Area	KFFWO
	Klamath Basin National Wildlife Refuge Complex	KFFWO
	All other ownerships	By jurisdiction (see map)

All	FERC-ESA	By jurisdiction (see map)

*Office Leads:

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

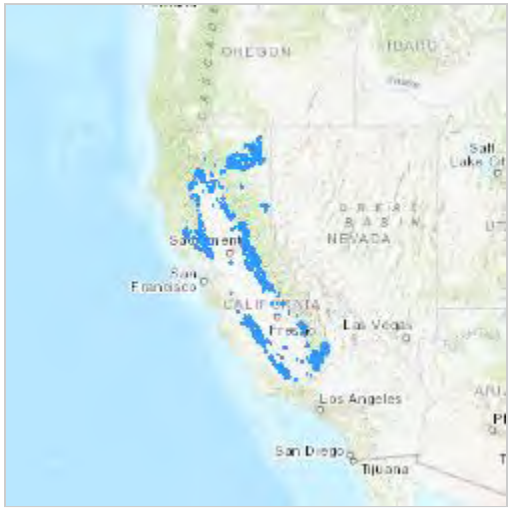
Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08EKLA00-2021-SLI-0091
Event Code: 08EKLA00-2021-E-00239
Project Name: Federal NPS Permit - BLM lands
Project Type: ** OTHER **
Project Description: BLM lands within Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.94367390000005,-121.37320941764483,14z



Counties: California

Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Shasta Crayfish *Pacifastacus fortis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8284	Endangered

Flowering Plants

NAME	STATUS
Greene's Tuctoria *Tuctoria greenei* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1573	Endangered
Slender Orcutt Grass *Orcuttia tenuis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1063	Threatened

Conifers and Cycads

NAME	STATUS
Whitebark Pine *Pinus albicaulis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1748	Proposed Threatened

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Slender Orcutt Grass *Orcuttia tenuis* https://ecos.fws.gov/ecp/species/1063#crithab	Final

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black Swift *Cypseloides niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10

NAME	BREEDING SEASON
Black Tern *Chlidonias niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Cassin's Finch *Carpodacus cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Franklin's Gull *Leucophaeus pipixcan* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Lewis's Woodpecker *Melanerpes lewis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Long-eared Owl *asio otus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Pinyon Jay *Gymnorhinus cyanocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9420	Breeds Feb 15 to Jul 15

NAME	BREEDING SEASON
Rufous Hummingbird *selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Sage Thrasher *Oreoscoptes montanus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9433	Breeds Apr 15 to Aug 10
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

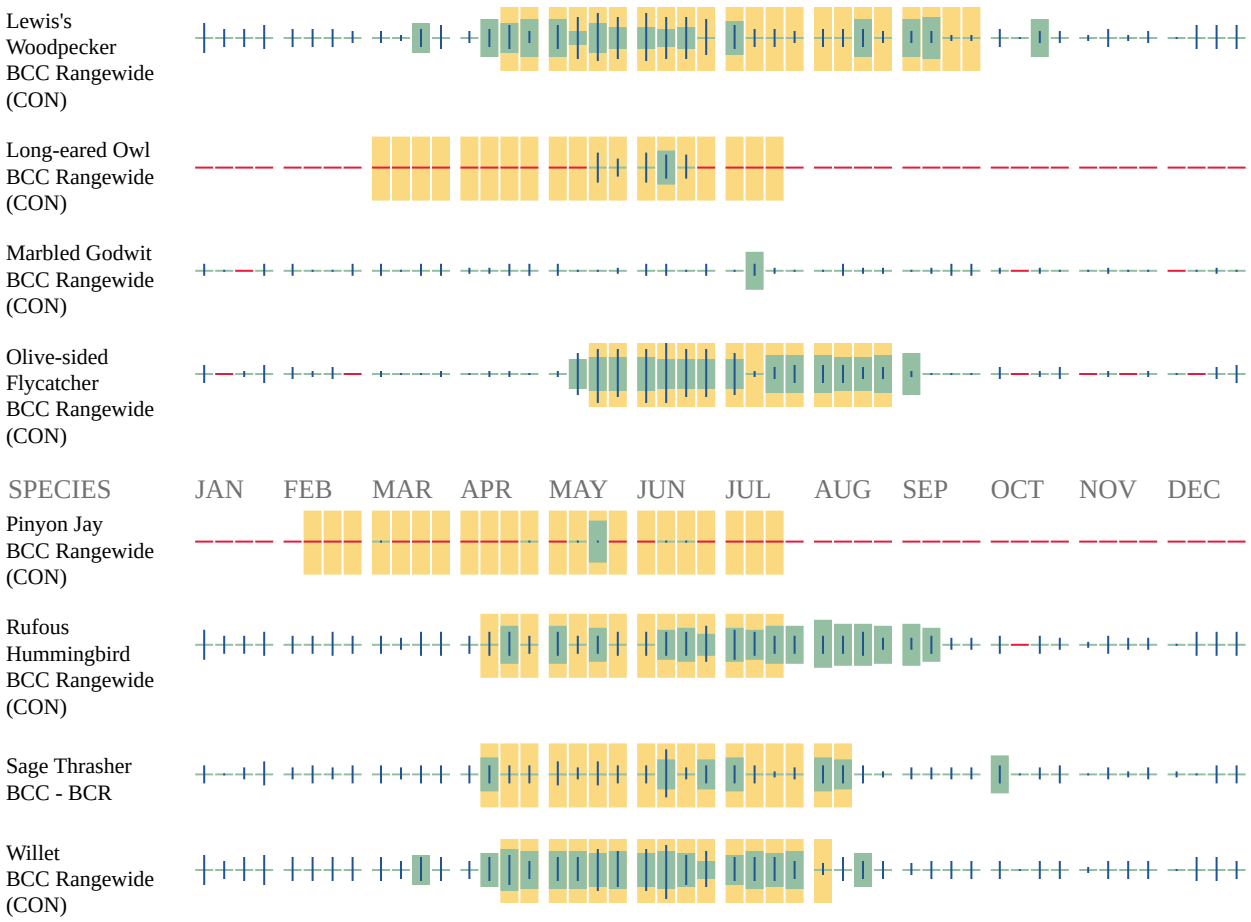
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits

may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);

2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities,

should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

Due to your project's size, the list below may be incomplete, or the acreages reported may be inaccurate. For a full list, please contact the local U.S. Fish and Wildlife office or visit https://www.fws.gov/wetlands/data/mapper.HTML

LAKE

- L1UBGh
- L1UBH
- L2ABF
- L1UBHh
- L2UBFh
- L2UBGh

FRESHWATER POND

- PABFh
- PABGh
- PUBFh
- PABF
- PABFx
- PUSCh
- PUSCx

FRESHWATER EMERGENT WETLAND

- PEM1A
- PEM1Ah
- PEM1C
- PEM1Ch
- PEM1Fh
- PEM1Cx
- PEM1F
- PEM1Fx

- PEM1Ax
- PEM1B

FRESHWATER FORESTED/SHRUB WETLAND

- PFOC
- PSSA
- PSSC
- PSSCh

RIVERINE

- R4SBC
- R4SBCx
- R5UBF
- R3UBH
- R4SBA
- R2ABF
- R2USC
- R5UBFx
- R2UBH

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
Phone: (775) 861-6300 Fax: (775) 861-6301
http://www.fws.gov/reno/

In Reply Refer To:
Consultation Code: 08ENVD00-2021-SLI-0518
Event Code: 08ENVD00-2021-E-01522
Project Name: Federal NPS Permit - BLM lands

August 13, 2021

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The attached species list indicates threatened, endangered, proposed, and candidate species and designated or proposed critical habitat that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act of 1973, as amended (ESA, 16 U.S.C. 1531 *et seq*.), for projects that are authorized, funded, or carried out by a Federal agency. Candidate species have no protection under the ESA but are included for consideration because they could be listed prior to the completion of your project. Consideration of these species during project planning may assist species conservation efforts and may prevent the need for future listing actions. For additional information regarding species that may be found in the proposed project area, visit http://www.fws.gov/nevada/es/ipac.html.

The purpose of the ESA is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 *et seq*.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or

designated or proposed critical habitat. Guidelines for preparing a Biological Assessment can be found at: http://www.fws.gov/midwest/endangered/section7/ba_guide.html.

If a Federal action agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this species list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally listed, proposed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally, as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation, for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the attached list.

The Nevada Fish and Wildlife Office (NFWO) no longer provides species of concern lists. Most of these species for which we have concern are also on the Animal and Plant At-Risk Tracking List for Nevada (At-Risk list) maintained by the State of Nevada’s Natural Heritage Program (Heritage). Instead of maintaining our own list, we adopted Heritage's At-Risk list and are partnering with them to provide distribution data and information on the conservation needs for at-risk species to agencies or project proponents. The mission of Heritage is to continually evaluate the conservation priorities of native plants, animals, and their habitats, particularly those most vulnerable to extinction or in serious decline. In addition, in order to avoid future conflicts, we ask that you consider these at-risk species early in your project planning and explore management alternatives that provide for their long-term conservation.

For a list of at-risk species by county, visit Heritage's website (http://heritage.nv.gov). For a specific list of at-risk species that may occur in the project area, you can obtain a data request form from the website (http://heritage.nv.gov/get_data) or by contacting the Administrator of Heritage at 901 South Stewart Street, Suite 5002, Carson City, Nevada 89701-5245, (775) 684-2900. Please indicate on the form that your request is being obtained as part of your coordination with the Service under the ESA. During your project analysis, if you obtain new information or data for any Nevada sensitive species, we request that you provide the information to Heritage at the above address.

Furthermore, certain species of fish and wildlife are classified as protected by the State of Nevada (http://www.leg.state.nv.us/NAC/NAC-503.html). You must first obtain the appropriate license, permit, or written authorization from the Nevada Department of Wildlife (NDOW) to

take, or possess any parts of protected fish and wildlife species. Please visit http://www.ndow.org or contact NDOW in northern Nevada (775) 688-1500, in southern Nevada (702) 486-5127, or in eastern Nevada (775) 777-2300.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq*.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Service's wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

The Service's Pacific Southwest Region developed the *Interim Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities* (Interim Guidelines). This document provides energy facility developers with a tool for assessing the risk of potential impacts to wildlife resources and delineates how best to design and operate a bird- and bat-friendly wind facility. These Interim Guidelines are available upon request from the NFWO. The intent of a Bird and Bat Conservation Strategy is to conserve wildlife resources while supporting project developers through: (1) establishing project development in an adaptive management framework; (2) identifying proper siting and project design strategies; (3) designing and implementing pre-construction surveys; (4) implementing appropriate conservation measures for each development phase; (5) designing and implementing appropriate post-construction monitoring strategies; (6) using post-construction studies to better understand the dynamics of mortality reduction (*e.g.*, changes in blade cut-in speed, assessments of blade "feathering" success, and studies on the effects of visual and acoustic deterrents) including efforts tied into Before-After/Control-Impact analysis; and (7) conducting a thorough risk assessment and validation leading to adjustments in management and mitigation actions.

The template and recommendations set forth in the Interim Guidelines were based upon the Avian Powerline Interaction Committee's Avian Protection Plan template (http://www.aplic.org/) developed for electric utilities and modified accordingly to address the unique concerns of wind energy facilities. These recommendations are also consistent with the Service's wind energy guidelines. We recommend contacting us as early as possible in the planning process to discuss the need and process for developing a site-specific Bird and Bat Conservation Strategy.

The Service has also developed guidance regarding wind power development in relation to prairie grouse leks (sage-grouse are included in this). This document can be found at: http://www.fws.gov/southwest/es/Oklahoma/documents/te_species/wind%20power/prairie%20grouse%20lek%205%20mile%20public.pdf.

Migratory Birds are a Service Trust Resource. Based on the Service's conservation responsibilities and management authority for migratory birds under the Migratory Bird Treaty Act of 1918, as amended (MBTA; 16 U.S.C. 703 *et seq*.), we recommend that any land clearing or other surface disturbance associated with proposed actions within the project area be timed to avoid potential destruction of bird nests or young, or birds that breed in the area. Such destruction may be in violation of the MBTA. Under the MBTA, nests with eggs or young of migratory birds may not be harmed, nor may migratory birds be killed. Therefore, we recommend land clearing be conducted outside the avian breeding season. If this is not feasible,

we recommend a qualified biologist survey the area prior to land clearing. If nests are located, or if other evidence of nesting (*i.e.*, mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active.

Guidance for minimizing impacts to migratory birds for projects involving communications towers (*e.g.*, cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

If wetlands, springs, or streams are are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit. For projects located in northern Nevada (Carson City, Churchill, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lander, Lyon, Mineral, Pershing, Storey, and Washoe Counties) contact the Reno Regulatory Office at 300 Booth Street, Room 3060, Reno, Nevada 89509, (775) 784-5304; in southern Nevada (Clark, Lincoln, Nye, and White Pine Counties) contact the St. George Regulatory Office at 321 North Mall Drive, Suite L-101, St. George, Utah 84790-7314, (435) 986-3979; or in California along the eastern Sierra contact the Sacramento Regulatory Office at 650 Capitol Mall, Suite 5-200, Sacramento, California 95814, (916) 557-5250.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

The table below outlines lead FWS field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project, and send any documentation regarding your project to that corresponding office. Therefore, the lead FWS field office may not be the office listed above in the letterhead.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO

Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO
Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO

Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)
Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO
Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
	All ownerships but tidal/estuarine	All	SFWO
Napa			
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)

Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO
Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO

Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO
Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO
Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)

Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO
Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

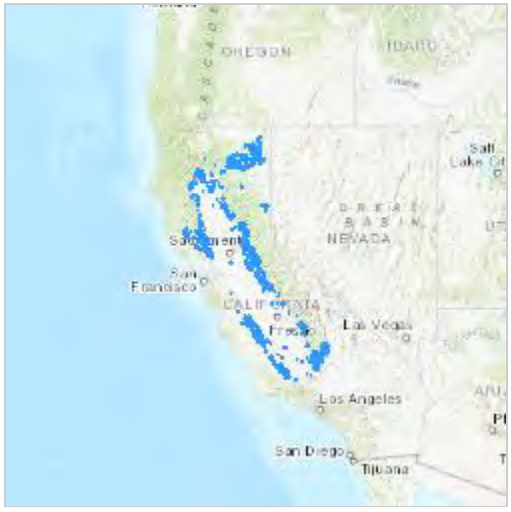
Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08ENVD00-2021-SLI-0518
Event Code: 08ENVD00-2021-E-01522
Project Name: Federal NPS Permit - BLM lands
Project Type: ** OTHER **
Project Description: BLM lands within Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.94367390000005,-121.37320941764483,14z



Counties: California

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Webber's Ivesia *Ivesia webberi*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/4682

Conifers and Cycads

NAME	STATUS
Whitebark Pine *Pinus albicaulis*	Proposed Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/1748

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Black-throated Gray Warbler *Dendroica nigrescens* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jul 20

NAME	BREEDING SEASON
Cassin's Finch *Carpodacus cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Dec 1 to Aug 31
Lewis's Woodpecker *Melanerpes lewis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Rufous Hummingbird *selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Sage Thrasher *Oreoscoptes montanus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9433	Breeds Apr 15 to Aug 10
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

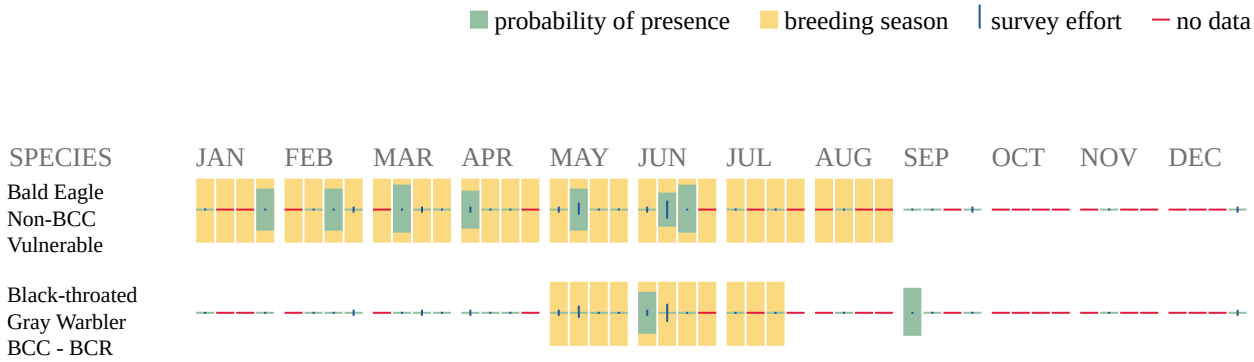
1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

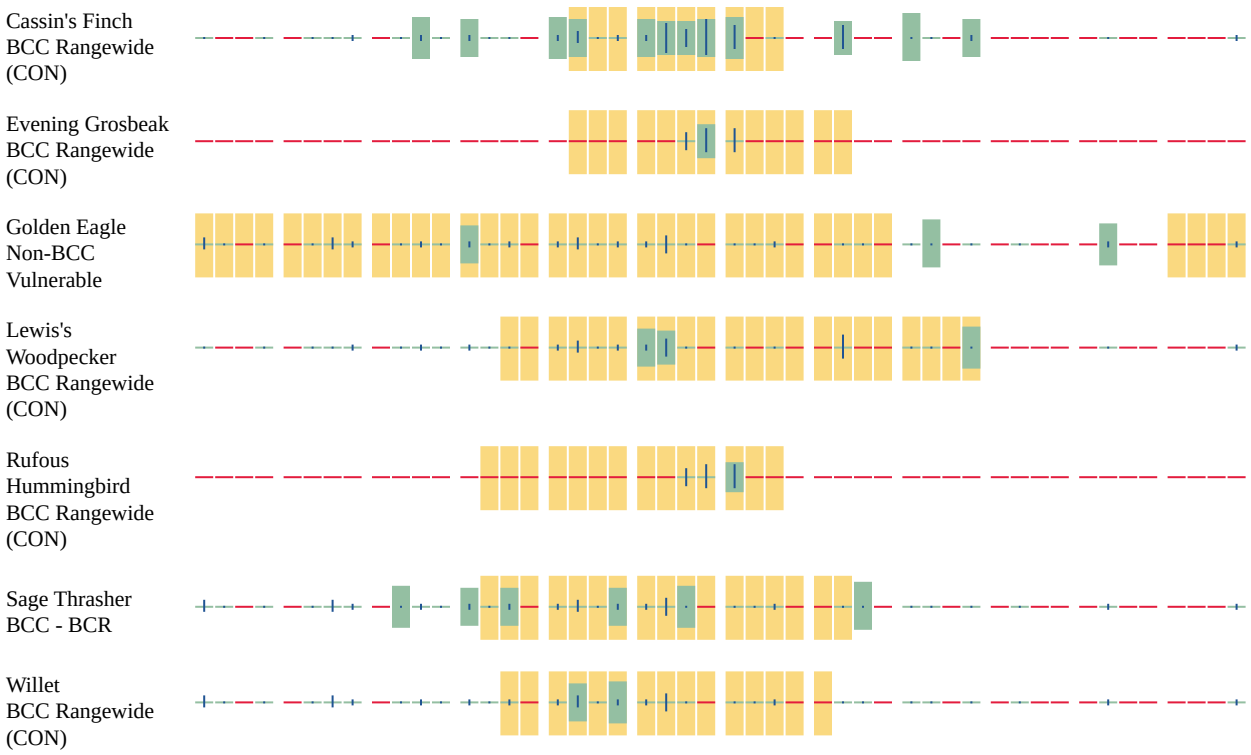
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and

3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell

me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- R4SBC

FRESHWATER EMERGENT WETLAND

- PEM1C
- PEM1A

FRESHWATER POND

- PABFh

FRESHWATER FORESTED/SHRUB WETLAND

- PFOC
- PSSC

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: August 13, 2021
Consultation Code: 08ESMF00-2021-SLI-2531
Event Code: 08ESMF00-2021-E-07321
Project Name: Federal NPS Permit - BLM lands

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

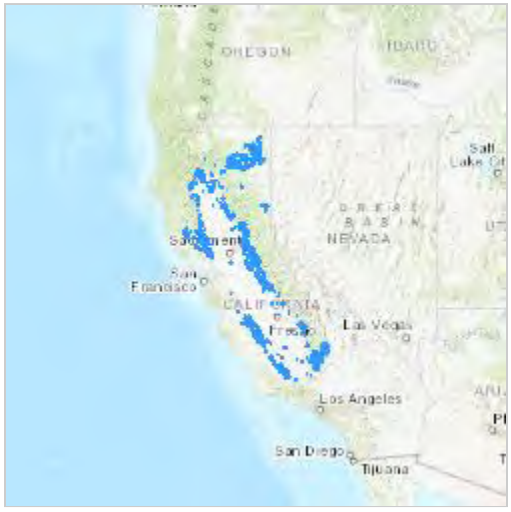
Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08ESMF00-2021-SLI-2531
Event Code: 08ESMF00-2021-E-07321
Project Name: Federal NPS Permit - BLM lands
Project Type: ** OTHER **
Project Description: BLM lands within Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.94367390000005,-121.37320941764483,14z



Counties: California

Endangered Species Act Species

There is a total of 73 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Buena Vista Lake Ornate Shrew *Sorex ornatus relictus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1610	Endangered
Fisher *Pekania pennanti* Population: SSN DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Endangered
Fresno Kangaroo Rat *Dipodomys nitratoides exilis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5150	Endangered
Giant Kangaroo Rat *Dipodomys ingens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6051	Endangered
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered
Sierra Nevada Bighorn Sheep *Ovis canadensis sierrae* Population: Sierra Nevada There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3646	Endangered
Tipton Kangaroo Rat *Dipodomys nitratoides nitratoides* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7247	Endangered

Birds

NAME	STATUS
California Clapper Rail *Rallus longirostris obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard *Gambelia silus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered
Desert Tortoise *Gopherus agassizii* Population: Wherever found, except AZ south and east of Colorado R., and Mexico There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4481	Threatened
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened
Mountain Yellow-legged Frog *Rana muscosa* Population: Northern California DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8037	Endangered
Sierra Nevada Yellow-legged Frog *Rana sierrae* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/9529	Endangered
Yosemite Toad *Anaxyrus canorus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7255	Threatened

Fishes

NAME — STATUS

Delta Smelt *Hypomesus transpacificus* — Threatened
There is **final** critical habitat for this species. Your location overlaps the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/321

Longfin Smelt *Spirinchus thaleichthys* — Candidate
Population: San Francisco Bay delta DPS
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9011

Insects

NAME — STATUS

Kern Primrose Sphinx Moth *Euproserpinus euterpe* — Threatened
There is **proposed** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/7881

Monarch Butterfly *Danaus plexippus* — Candidate
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* — Threatened
There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/7850

Crustaceans

NAME — STATUS

California Freshwater Shrimp *Syncaris pacifica* — Endangered
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/7903

Conservancy Fairy Shrimp *Branchinecta conservatio* — Endangered
There is **final** critical habitat for this species. Your location overlaps the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/8246

Shasta Crayfish *Pacifastacus fortis* — Endangered
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/8284

Vernal Pool Fairy Shrimp *Branchinecta lynchi* — Threatened
There is **final** critical habitat for this species. Your location overlaps the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp *Lepidurus packardi* — Endangered
There is **final** critical habitat for this species. Your location overlaps the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/2246

Flowering Plants

NAME	STATUS
Bakersfield Cactus *Opuntia treleasei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7799	Endangered
Burke's Goldfields *Lasthenia burkei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4338	Endangered
Butte County Meadowfoam *Limnanthes floccosa ssp. californica* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4223	Endangered
California Jewelflower *Caulanthus californicus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4599	Endangered
Chinese Camp Brodiaea *Brodiaea pallida* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8290	Threatened
Clara Hunt's Milk-vetch *Astragalus clarianus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3300	Endangered
Colusa Grass *Neostapfia colusana* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5690	Threatened
Contra Costa Goldfields *Lasthenia conjugens* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered
El Dorado Bedstraw *Galium californicum ssp. sierrae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5209	Endangered
Few-flowered Navarretia *Navarretia leucocephala ssp. pauciflora (=N. pauciflora)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8242	Endangered
Fleshy Owl's-clover *Castilleja campestris ssp. succulenta* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8095	Threatened
Greene's Tuctoria *Tuctoria greenei* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1573	Endangered
Hairy Orcutt Grass *Orcuttia pilosa* There is **final** critical habitat for this species. Your location overlaps the critical habitat.	Endangered

NAME	STATUS
Species profile: https://ecos.fws.gov/ecp/species/2262	
Hartweg's Golden Sunburst *Pseudobahia bahiifolia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1704	Endangered
Hoover's Spurge *Chamaesyce hooveri* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3019	Threatened
Ione (incl. Irish Hill) Buckwheat *Eriogonum apricum (incl. var. prostratum)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8301	Endangered
Ione Manzanita *Arctostaphylos myrtifolia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1806	Threatened
Keck's Checker-mallow *Sidalcea keckii* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5704	Endangered
Kenwood Marsh Checker-mallow *Sidalcea oregana ssp. valida* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1622	Endangered
Kern Mallow *Eremalche kernensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1731	Endangered
Lake County Stonecrop *Parvisedum leiocarpum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2263	Endangered
Large-flowered Fiddleneck *Amsinckia grandiflora* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5558	Endangered
Layne's Butterweed *Senecio layneae* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4062	Threatened
Loch Lomond Coyote Thistle *Eryngium constancei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5106	Endangered
Many-flowered Navarretia *Navarretia leucocephala ssp. plieantha* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2491	Endangered
Mariposa Pussypaws *Calyptridium pulchellum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2695	Threatened

NAME	STATUS
Marsh Sandwort *Arenaria paludicola* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2229	Endangered
Pine Hill Ceanothus *Ceanothus roderickii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3293	Endangered
Pine Hill Flannelbush *Fremontodendron californicum ssp. decumbens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4818	Endangered
Red Hills Vervain *Verbena californica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7344	Threatened
Sacramento Orcutt Grass *Orcuttia viscida* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5507	Endangered
San Benito Evening-primrose *Camissonia benitensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/806	Threatened
San Joaquin Adobe Sunburst *Pseudobahia peirsonii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2931	Threatened
San Joaquin Orcutt Grass *Orcuttia inaequalis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5506	Threatened
San Joaquin Wooly-threads *Monolopia (=Lembertia) congdonii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3746	Endangered
Sebastopol Meadowfoam *Limnanthes vinculans* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/404	Endangered
Showy Indian Clover *Trifolium amoenum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6459	Endangered
Slender Orcutt Grass *Orcuttia tenuis* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1063	Threatened
Springville Clarkia *Clarkia springvillensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8309	Threatened
Stebbins' Morning-glory *Calystegia stebbinsii*	Endangered

NAME	STATUS

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/3991

Critical habitats

There are 19 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
California Condor *Gymnogyps californianus* https://ecos.fws.gov/ecp/species/8193#crithab	Final
California Red-legged Frog *Rana draytonii* https://ecos.fws.gov/ecp/species/2891#crithab	Final
California Tiger Salamander *Ambystoma californiense* https://ecos.fws.gov/ecp/species/2076#crithab	Final
Colusa Grass *Neostapfia colusana* https://ecos.fws.gov/ecp/species/5690#crithab	Final
Conservancy Fairy Shrimp *Branchinecta conservatio* https://ecos.fws.gov/ecp/species/8246#crithab	Final
Delta Smelt *Hypomesus transpacificus* https://ecos.fws.gov/ecp/species/321#crithab	Final
Fleshy Owl's-clover *Castilleja campestris ssp. succulenta* https://ecos.fws.gov/ecp/species/8095#crithab	Final
Greene's Tuctoria *Tuctoria greenei* https://ecos.fws.gov/ecp/species/1573#crithab	Final
Hairy Orcutt Grass *Orcuttia pilosa* https://ecos.fws.gov/ecp/species/2262#crithab	Final
Hoover's Spurge *Chamaesyce hooveri* https://ecos.fws.gov/ecp/species/3019#crithab	Final
Keck's Checker-mallow *Sidalcea keckii* https://ecos.fws.gov/ecp/species/5704#crithab	Final
Northern Spotted Owl *Strix occidentalis caurina* https://ecos.fws.gov/ecp/species/1123#crithab	Final
San Joaquin Orcutt Grass *Orcuttia inaequalis* https://ecos.fws.gov/ecp/species/5506#crithab	Final
Slender Orcutt Grass *Orcuttia tenuis* https://ecos.fws.gov/ecp/species/1063#crithab	Final
Southwestern Willow Flycatcher *Empidonax traillii extimus* https://ecos.fws.gov/ecp/species/6749#crithab	Final

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* https://ecos.fws.gov/ecp/species/498#crithab	Final
Vernal Pool Tadpole Shrimp *Lepidurus packardi* https://ecos.fws.gov/ecp/species/2246#crithab	Final
Webber's Ivesia *Ivesia webberi* For information on why this critical habitat appears for your project, even though Webber's Ivesia is not on the list of potentially affected species at this location, contact the local field office. https://ecos.fws.gov/ecp/species/4682#crithab	Final
Yellow-billed Cuckoo *Coccyzus americanus* https://ecos.fws.gov/ecp/species/3911#crithab	Final

United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
Phone: (916) 930-5603 Fax: (916) 930-5654
http://kim_squires@fws.gov

In Reply Refer To: August 13, 2021
Consultation Code: 08FBDT00-2021-SLI-0246
Event Code: 08FBDT00-2021-E-00605
Project Name: Federal NPS Permit - BLM lands

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

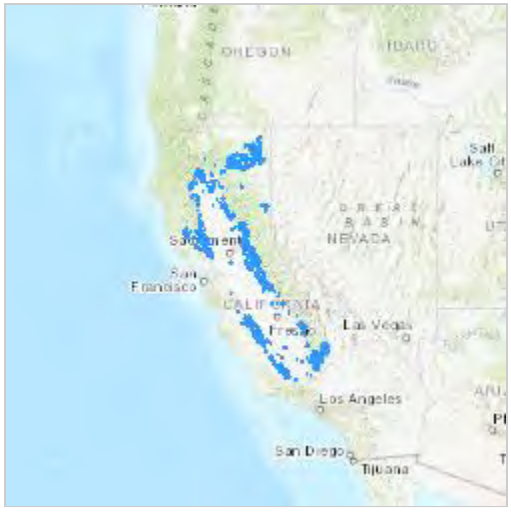
Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08FBDT00-2021-SLI-0246
Event Code: 08FBDT00-2021-E-00605
Project Name: Federal NPS Permit - BLM lands
Project Type: ** OTHER **
Project Description: BLM lands within Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.94367390000005,-121.37320941764483,14z



Counties: California

Endangered Species Act Species

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. Your location overlaps the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/7850

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp *Lepidurus packardi*	Endangered

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/2246

Flowering Plants

NAME	STATUS
Large-flowered Fiddleneck *Amsinckia grandiflora*	Endangered

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/5558

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Final

https://ecos.fws.gov/ecp/species/321#crithab

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
Phone: (805) 644-1766 Fax: (805) 644-3958

In Reply Refer To: August 13, 2021
Consultation Code: 08EVEN00-2021-SLI-0507
Event Code: 08EVEN00-2021-E-01618
Project Name: Federal NPS Permit - BLM lands

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed list identifies species listed as threatened and endangered, species proposed for listing as threatened or endangered, designated and proposed critical habitat, and species that are candidates for listing that may occur within the boundary of the area you have indicated using the U.S. Fish and Wildlife Service's (Service) Information Planning and Conservation System (IPaC). The species list fulfills the requirements under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the species list should be verified after 90 days. We recommend that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists following the same process you used to receive the enclosed list. Please include the Consultation Tracking Number in the header of this letter with any correspondence about the species list.

Due to staff shortages and excessive workload, we are unable to provide an official list more specific to your area. Numerous other sources of information are available for you to narrow the list to the habitats and conditions of the site in which you are interested. For example, we recommend conducting a biological site assessment or surveys for plants and animals that could help refine the list.

If a Federal agency is involved in the project, that agency has the responsibility to review its proposed activities and determine whether any listed species may be affected. If the project is a major construction project*, the Federal agency has the responsibility to prepare a biological assessment to make a determination of the effects of the action on the listed species or critical habitat. If the Federal agency determines that a listed species or critical habitat is likely to be adversely affected, it should request, in writing through our office, formal consultation pursuant to section 7 of the Act. Informal consultation may be used to exchange information and resolve conflicts with respect to threatened or endangered species or their critical habitat prior to a

written request for formal consultation. During this review process, the Federal agency may engage in planning efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act.

Federal agencies are required to confer with the Service, pursuant to section 7(a)(4) of the Act, when an agency action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10(a)). A request for formal conference must be in writing and should include the same information that would be provided for a request for formal consultation. Conferences can also include discussions between the Service and the Federal agency to identify and resolve potential conflicts between an action and proposed species or proposed critical habitat early in the decision-making process. The Service recommends ways to minimize or avoid adverse effects of the action. These recommendations are advisory because the jeopardy prohibition of section 7(a)(2) of the Act does not apply until the species is listed or the proposed critical habitat is designated. The conference process fulfills the need to inform Federal agencies of possible steps that an agency might take at an early stage to adjust its actions to avoid jeopardizing a proposed species.

When a proposed species or proposed critical habitat may be affected by an action, the lead Federal agency may elect to enter into formal conference with the Service even if the action is not likely to jeopardize or result in the destruction or adverse modification of proposed critical habitat. If the proposed species is listed or the proposed critical habitat is designated after completion of the conference, the Federal agency may ask the Service, in writing, to confirm the conference as a formal consultation. If the Service reviews the proposed action and finds that no significant changes in the action as planned or in the information used during the conference have occurred, the Service will confirm the conference as a formal consultation on the project and no further section 7 consultation will be necessary. Use of the formal conference process in this manner can prevent delays in the event the proposed species is listed or the proposed critical habitat is designated during project development or implementation.

Candidate species are those species presently under review by the Service for consideration for Federal listing. Candidate species should be considered in the planning process because they may become listed or proposed for listing prior to project completion. Preparation of a biological assessment, as described in section 7(c) of the Act, is not required for candidate species. If early evaluation of your project indicates that it is likely to affect a candidate species, you may wish to request technical assistance from this office.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Wildlife's Natural Diversity Data Base. You can contact the California Department of Fish and Wildlife at (916) 324-3812 for information on other sensitive species that may occur in this area.

[*A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.]

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

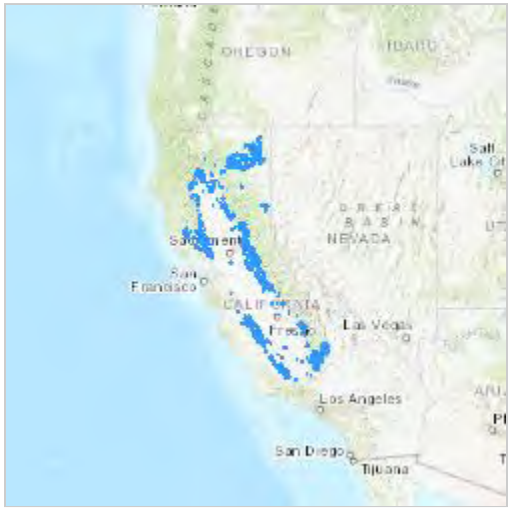
San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

Project Summary

Consultation Code: 08EVEN00-2021-SLI-0507
Event Code: 08EVEN00-2021-E-01618
Project Name: Federal NPS Permit - BLM lands
Project Type: ** OTHER **
Project Description: BLM lands within Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.94367390000005,-121.37320941764483,14z



Counties: California

Endangered Species Act Species

There is a total of 20 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fresno Kangaroo Rat *Dipodomys nitratoides exilis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5150	Endangered
Giant Kangaroo Rat *Dipodomys ingens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6051	Endangered
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
California Clapper Rail *Rallus longirostris obsoletus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240	Endangered
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard *Gambelia silus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened
Green Sea Turtle *Chelonia mydas* Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/321

Insects

NAME	STATUS
Kern Primrose Sphinx Moth *Euproserpinus euterpe*	Threatened

There is **proposed** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/7881

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/498

Flowering Plants

NAME	STATUS
California Jewelflower *Caulanthus californicus*	Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/4599

Marsh Sandwort *Arenaria paludicola*	Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/2229

San Benito Evening-primrose *Camissonia benitensis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/806

San Joaquin Wooly-threads *Monolopia (=Lembertia) congdonii*	Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/3746

Spreading Navarretia *Navarretia fossalis*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/1334

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
California Red-legged Frog *Rana draytonii* https://ecos.fws.gov/ecp/species/2891#crithab	Final

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
Phone: (530) 842-5763 Fax: (530) 842-4517

In Reply Refer To: August 13, 2021
Consultation Code: 08EYRE00-2021-SLI-0131
Event Code: 08EYRE00-2021-E-00416
Project Name: Federal NPS Permit - BLM lands

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies federally threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that this list does not reflect State listed species or fulfill requirements related to any California Department of Fish and Wildlife consultation. Additionally, this list does not include species covered by the National Marine Fisheries Service (NMFS). For NMFS species please see the related website at the following link:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

If your project does not involve Federal funding or permits and does not occur on Federal land, we recommend you review this list and determine if any of these species or critical habitat may be affected. If you determine that there will be no effects to federally listed or proposed species or critical habitat, there is no need to coordinate with the Service. If you think or know that there will be effects, please contact our office for further guidance. We can assist you in incorporating measures to avoid or minimize impacts, and discuss whether permits are needed.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential effects to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and

implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

If wetlands, springs, or streams are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html).

Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

The table below outlines lead Service field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project. Please send any documentation regarding your project to that office. Please note that the lead Service field office for your consultation may not be the office listed above in the letterhead. Please visit the following link to view a map of Service field office jurisdictional boundaries:

http://www.fws.gov/yreka/specieslist/JurisdictionalBoundaryES_R8_20150313.pdf

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of the letter you submit to our office along with any request for consultation or correspondence about your project.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO
Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO

El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)
Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO

Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO
Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO

San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO
Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO

Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)
Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO

Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Yreka Fish And Wildlife Office
1829 South Oregon Street
Yreka, CA 96097-3446
(530) 842-5763

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following offices, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Klamath Falls Fish And Wildlife Office
1936 California Avenue
Klamath Falls, OR 97601
(541) 885-8481

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

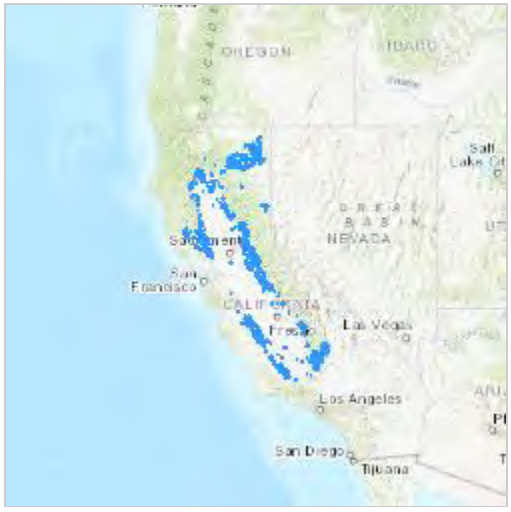
San Francisco Bay-Delta Fish And Wildlife
650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

Project Summary

Consultation Code: 08EYRE00-2021-SLI-0131
Event Code: 08EYRE00-2021-E-00416
Project Name: Federal NPS Permit - BLM lands
Project Type: ** OTHER **
Project Description: BLM lands within Central Valley RWQCB
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.94367390000005,-121.37320941764483,14z



Counties: California

Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
Oregon Spotted Frog *Rana pretiosa* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6633	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Longfin Smelt *Spirinchus thaleichthys* Population: San Francisco Bay delta DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9011	Candidate

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* https://ecos.fws.gov/ecp/species/1123#crithab	Final

NMFS Species List

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NMFS California Species List Limited to Central Valley Regional Water Quality Control Board

ESA Fish Species:

- Steelhead
    - CA Central Valley DPS (FT)
- Green sturgeon (Southern DPS) (FT)
- Chinook salmon
    - Sacramento River winter-run ESU (FE)
    - Central Valley spring-run ESU (FT)

ESA Fish Critical Habitat:

- Green sturgeon (Southern DPS)
- Central Valley spring-run salmon

NMFS California Species List queried on August 3, 2021.

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Appendix E

Tribal Consultation Materials

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Native American Heritage Commission Tribal Consultation List

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Native American Heritage Commission
Tribal Consultation List
Statewide County
5/4/2018

Agua Caliente Band of Cahuilla Indians
Jeff Grubbe, Chairperson
5401 Dinah Shore Drive — Cahuilla
Palm Springs, CA, 92264 — Luiseno
Phone: (760) 699 - 6800
Fax: (760) 699-6919

Amah MutsunTribal Band
Valentin Lopez, Chairperson
P.O. Box 5272 — Costanoan
Galt, CA, 95632 — Northern Valley
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Kitanemuk

The Ohlone Indian Tribe
Andrew Galvan,
P.O. Box 3152
Fremont, CA, 94539
Phone: (510) 882 - 0527
Fax: (510) 687-9393
chochenyo@AOL.com
Bay Miwok
Costanoan
Costanoan
Costanoan
Patwin
Plains Miwok

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This list is only applicable for consultation with Native American tribes under Government Code Sections 65352.3 and 65362.4 et seq for the proposed Statewide Tribal Contacts ist - By District Project, Statewide County.

Torres-Martinez Desert Cahuilla Indians
Thomas Tortez, Chairperson
P.O. Box 1160 — Cahuilla
Thermal, CA, 92274
Phone: (760) 397 - 0300
Fax: (760) 397-8146
tmchair@torresmartinez.org

Traditional Choinumni Tribe
David Alvarez, Chairperson
2415 E. Houston Avenue — Foothill Yokut
Fresno, CA, 93720
Phone: (559) 323 - 6231
Fax: (559) 292-5057
davealvarez@sbcglobal.net

Tsi Akim Maidu
Don Ryberg, Chairperson
P.O. Box 510 — Maidu
Browns Valley, CA, 95918
Phone: (530) 274 - 7497
tsi-akim-maidu@att.net

Tubatulabals of Kern Valley
Robert L. Gomez, Chairperson
P.O. Box 226 — Tubatulabal
Lake Isabella, CA, 93240
Phone: (760) 379 - 4590
Fax: (760) 379-4592

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589 — Yokut
Porterville, CA, 93258
Phone: (559) 781 - 4271
Fax: (559) 781-4610
neil.peyron@tulerivertribe-nsn.gov

Tuolumne Band of Me-Wuk
Kevin Day, Chairperson
P.O. Box 699 — Miwok
Tuolumne, CA, 95379
Phone: (209) 928 - 5300
Fax: (209) 928-1677
receptionist@mewuk.com

Twenty-Nine Palms Band of Mission Indians
Darrell Mike, Chairperson
46-200 Harrison Place — Chemehuevi
Coachella, CA, 92236
Phone: (760) 863 - 2444
Fax: (760) 863-2449
29chairman@29palmsbomi-nsn.gov

United Auburn Indian Community of the Auburn Rancheria
Gene Whitehouse, Chairperson
10720 Indian Hill Road — Maidu, Miwok
Auburn, CA, 95603
Phone: (530) 883 - 2390
Fax: (530) 883-2380
bguth@auburnrancheria.com

Walker River Reservation
Melanie McFalls, Chairperson
P.O. Box 220 — Northern Paiute
Schurz, NV, 89427
Phone: (775) 773 - 2306
Fax: (775) 773-2585

Washoe Tribe of Nevada and California
Neil Mortimer, Chairperson
919 Highway 395 South — Washoe
Gardnerville, NV, 89410
Phone: (775) 782 - 0014
ktrovato@washoetribe.us

Washoe Tribe of Nevada and California
Darrel Cruz, Cultural Resources Department
919 Highway 395 South — Washoe
Gardnerville, NV, 89410
Phone: (775) 265 - 8600
darrel.cruz@washoetribe.us

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This list is only applicable for consultation with Native American tribes under Government Code Sections 65352.3 and 65362.4 et seq for the proposed Statewide Tribal Contacts ist - By District Project, Statewide County.

Wilton Rancheria
Antonio Ruiz, Cultural Resources Officer
9728 Kent Street — Miwok
Elk Grove, CA, 95624
Phone: (916) 683 - 6000
aruiz@wiltonrancheria-nsn.gov

Wilton Rancheria
Raymond Hitchcock, Chairperson
9728 Kent Street — Miwok
Elk Grove, CA, 95624
Phone: (916) 683 - 6000
Fax: (916) 683-6015
rhitchcock@wiltonrancheria-nsn.gov

Winnemem Wintu Tribe
Caleen Sisk, Chief
14840 Bear Mountain Road — Wintu
Redding, CA, 96003
winnememwintutribe@gmail.com

Wintu Tribe of Northern California
Wade McMaster, Chairperson
P.O. Box 995 — Wintu
Shasta Lake, CA, 96019
Phone: (530) 605 - 1726
wintu.tribe@gmail.com

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct. — Foothill Yokut
Salinas, CA, 93906 — Mono
Phone: (831) 443 - 9702
kwood8934@aol.com

Yocha Dehe Wintun Nation
Anthony Roberts, Chairperson
P.O. Box 18 — Patwin
Brooks, CA, 95606
Phone: (530) 796 - 3400
Fax: (530) 796-2143
aroberts@yochadehe-nsn.gov

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This list is only applicable for consultation with Native American tribes under Government Code Sections 65352.3 and 65362.4 et seq for the proposed Statewide Tribal Contacts ist - By District Project, Statewide County.

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List of Tribes Requesting to be Notified of California Water Boards' CEQA Lead Projects

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CALIFORNIA Water Boards

Gavin Newsom
Governor

Jared Blumenfeld
Secretary for
Environmental Protection

State Water Resources Control Board

Tribes Requesting to be Notified of California Water Boards' CEQA Lead Projects

UPDATED: March 2, 2020

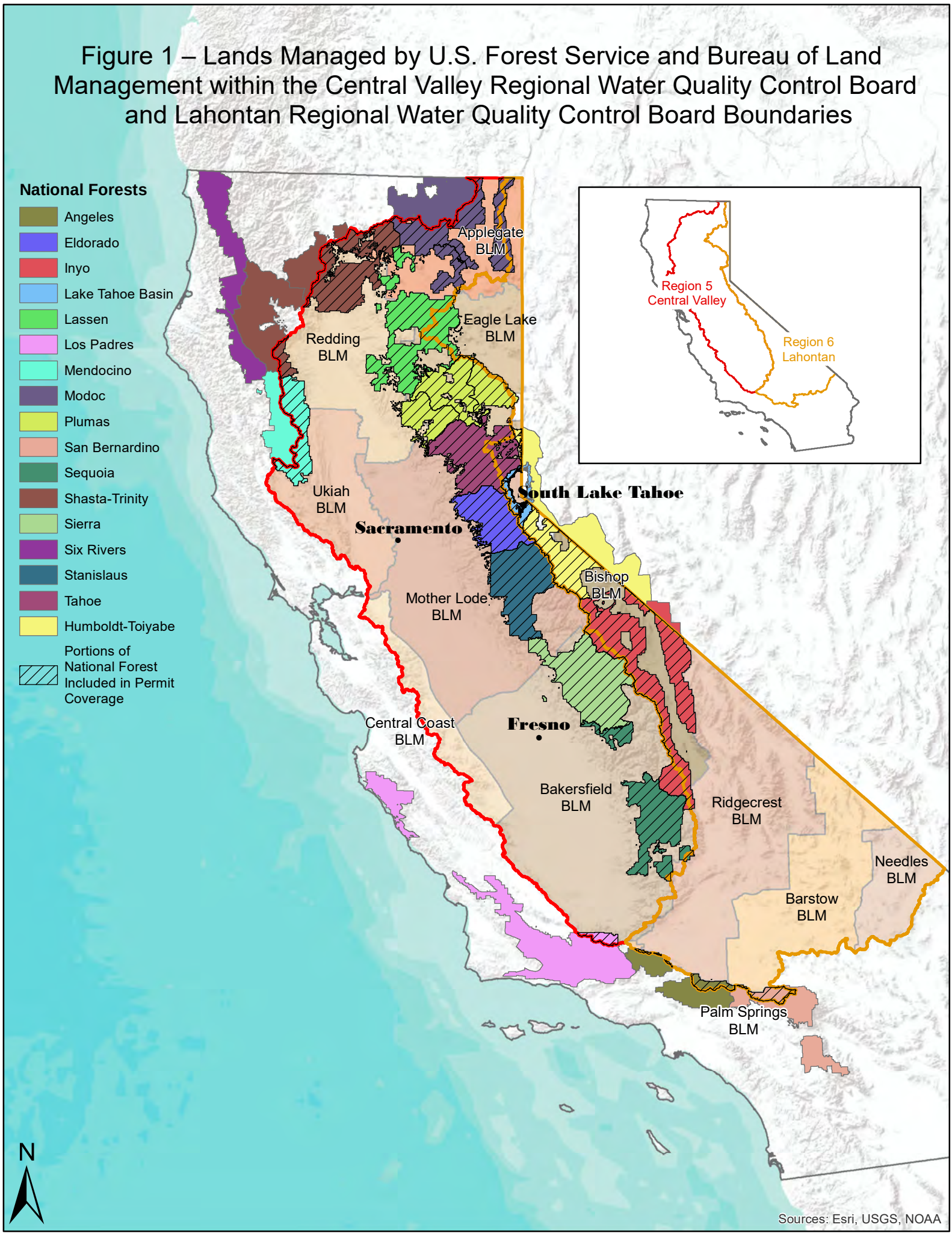
TRIBE	Area Affiliation by County
Mishewal Wappo Tribe of Alexander Valley	Napa, Sonoma
Wilton Rancheria	Sacramento, San Joaquin, Amador, Calaveras, Contra Costa, El Dorado
Colorado River Indian Tribes	Imperial, Riverside, San Bernardino
Elk Valley Rancheria	Del Norte
Ohlone/Costanoan-Esselen Nation	Monterey
Wiyot Tribe	Humboldt
Federated Indians of Graton Rancheria	Marin, Sonoma
Winnemem Wintu Tribe	Shasta, Siskyou
United Auburn Indian Community	Amador, El Dorado, Nevada, Placer, Sutter and Yuba. Portions of Butte, Plumas, San Joaquin, Sierra, Solano and Yolo.
San Luis Rey Band of Mission Indians	San Diego, Riverside
Yurok Tribe	Del Norte, Humboldt
Torres Martinez Desert Cahuilla Indians	Riverside, Imperial, San Diego

Cher-Ae Heights Indian Community of the Trinidad Rancheria	Humboldt County
Middletown Rancheria	Lake
Barona Band of Mission Indians	San Diego
Gabrieleño Band of Mission Indians-Kizh Nation	Los Angeles, Orange
Santa Rosa Rancheria Tachi Tribe	Kings, Fresno, Tulare & Kern
Shasta Indian Nation	Siskiyou, Shasta
Gabrieleno Tongva San Gabriel Band of Mission Indian	Los Angeles, Orange
Blue Lake Rancheria	Humboldt
Big Pine Paiute Tribe of the Owens Valley	Inyo, Mono, Northern San Bernardino, Northeast Kern
San Manuel Band of Mission Indians	San Bernardino, southeast Kern, eastern Los Angeles, northwestern Riverside County
Pit River Tribe	Modoc, Siskiyou, Shasta and Lassen
Viejas Band of Kumeyaay Indians	San Diego and Imperial Counties
Karuk Tribe	Siskiyou, Del Norte, Humboldt
Buena Vista Rancheria Me-Wuk Indians	Amador, Calaveras, El Dorado, Placer, Sacramento, and San Joaquin Counties
Tolowa Dee-ni' Nation	Del Norte

Map of Lands Managed by the United States Forest Service and Bureau of Land Management in Relation to Water Board Boundaries

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Figure 1 – Lands Managed by U.S. Forest Service and Bureau of Land Management within the Central Valley Regional Water Quality Control Board and Lahontan Regional Water Quality Control Board Boundaries



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Tribal Communication Tracking Sheet

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Tribe	AB52 or B-10-11?	Date Hard Copy Sent?	Hard copy return?	Date EPC/Admin Email sent?	EPC/Admin Email bounce back?	Response? C=consultation; NC= no consultation requested; NR=no response	Date WB Received Response	Response type Letter/Email	Date WB Acknowledged Request (Initial Response)	Specific Tribal Contact	NOTES
Buena Vista Rancheria of Me-Wuk Indians	AB52	5/21/2020		5/21/2020		NR					
Middletown Rancheria	AB52	5/21/2020		5/21/2020	Chair email return						
Pit River Tribe of California	AB52	5/21/2020		5/21/2020		NR					
Santa Rosa Rancheria Tachi Yokut Tribe	AB52	5/21/2020		5/21/2020	*contact info update email	NR					
United Auburn Indian Community of the Auburn Rancheria	AB52	5/21/2020		no email avail		NR					
Wilton Rancheria	AB52	5/21/2020		5/21/2020		NR					Responded to R6, tribal lands cross regions.
Shasta Indian Nation	AB52	5/21/2020		5/21/2020		NR					
Winnemem Wintu Tribe	AB52	5/21/2020		5/21/2020		NR					
Alturas Rancheria of Pit River Indians (a.k.a Alturas Indian Rancheria)	B-10-11	5/21/2020		no email avail		NR					
Berry Creek Rancheria of Maidu Indians	B-10-11	5/21/2020		5/21/2020		NR					
Big Sandy Rancheria of Western Mono Indians	B-10-11	5/21/2020		5/21/2020		NR					
Big Valley Band of Pomo Indians	B-10-11	5/21/2020		5/21/2020		NR					
Cachil DeHe Band of Wintun Indian (a.k.a Colusa Indian Community)	B-10-11	5/21/2020		5/21/2020		NR					
California Valley Miwok Tribe (a.k.a Sheep Rancheria of Me-Wuk Indians of CA)	B-10-11	5/21/2020		no email avail		NR					
Chicken Ranch Rancheria of Me-Wuk Indians	B-10-11	5/21/2020		5/21/2020		NR					
Cold Springs Rancheria	B-10-11	5/21/2020		5/21/2020		NR					
Cortina Rancheria - Kletsel Dehe Band of Wintun Indians	B-10-11	5/21/2020		5/21/2020		NR					
Elem Indian Colony Pomo Tribe	B-10-11	5/21/2020		5/21/2020		NR					
Estom Yumeka Maidu Tribe of the Enterprise Rancheria	B-10-11	5/21/2020		5/21/2020		NR					
Greenville Rancheria	B-10-11	5/21/2020		5/21/2020		NR					
Grindstone Indian Rancheria of Wintun-Wailaki	B-10-11	5/21/2020		5/21/2020		NR					
Habematolel Pomo of Upper Lake	B-10-11	5/21/2020		5/21/2020		NR					
Ione Band of Miwok Indians	B-10-11	5/21/2020		5/21/2020		NR					
Jackson Rancheria Band of Me-Wuk Indians	B-10-11	5/21/2020		5/21/2020		C (receive info)	6/26/2020	Phone call	7/22/2020	Raleigh Fillmore 209-304-4694 RFillmore@jacksoncasino.com	Tribe left voicemail for AW, AW left voicemail for Tribe, Tribe called and talked with Patrick directly. AW spoke with Raleigh Fillmore, primarily concerned with grazing, but interested in keeping in touch on the project. 17 February 2021 - AW sent email touching base on the project and notifying Mr. Fillmore of the upcoming CEQA scoping meeting. Offered to schedule a time for further discussion. Mr. Fillmore responded asking for a reminder of the project, AW responded with information and a link to the project webpage. No further response received.
Mechoopda Indian Tribe	B-10-11	5/21/2020		5/21/2020		NR					
Mooretown Rancheria of Maidu Indians	B-10-11	5/21/2020		5/21/2020		NC	5/21/2020	Email	7/23/2020	Mr. Matthew Hatcher (530-533-3625x1016) Matthew.Hatcher@mooretown.org	Mr. Hatcher indicated the tribe would like to be privy to more iformation but had no further comment at the time (July 2020). AW had a phone call with Mr. Hatcher in July 2020. The tribe is interested in the project and wish to stay in touch through development. They are interested in attending workshops, etc. February 2021 - AW sent email touching base on the project and notifying Mr. Hatcher of the upcoming CEQA scoping meetings. Offered to schedule a time for further discussion. No response received.
North Fork Rancheria of Mono Indians	B-10-11	5/21/2020		5/21/2020	EPC email return	NR					
Paskenta Band of Nomlaki Indians	B-10-11	5/21/2020		5/21/2020		NR					
Picayune Rancheria of Chukchansi Indians	B-10-11	5/21/2020		5/21/2020		NR					
Redding Rancheria	B-10-11	5/21/2020		no email avail		NR					
Robinson Rancheria Band of Pomo Indians	B-10-11	5/21/2020		5/21/2020		NR					
Scotts Valley Band of Pomo Indians	B-10-11	5/21/2020		5/21/2020		NR					
Shingle Springs Band of Miwok Indians	B-10-11	5/21/2020		5/21/2020		NR					
Table Mountain Rancheria	B-10-11	5/21/2020		5/21/2020		NR					
Tejon Indian Tribe	B-10-11	5/21/2020		5/21/2020		NR					
Tule River Indian Tribe	B-10-11	5/21/2020		5/21/2020		NR					
Tuolumne Band of Me-Wuk Indians	B-10-11	5/21/2020		5/21/2020	EPC email return	NR					
Yocha Dehe Wintun Nation	B-10-11	5/21/2020		5/21/2020		C (receive info)	5/26/2020	letter	7/23/2020	Kristin Jensen kjensen@yochadehe-nsn.gov or www.yochadehe.org 530-796-0105	Scheduling emails exchanged in February 2021. Meeting scheduled on 3/9/21. Meeting held on 3/9 with Laverne Bill and Isaac Bojorquez. This tribe only has overlap with BLM lands. Interested in the RBs using ACOE 404 language for encouraging consultation and sensitivity training. Second meeting scheduled for late May 2021. 5/27/21 meeting with Laverne Bill. Continues to be interested in sensitivity training and consultation for BLM and USFS projects. Requested another meeting in Sept 2021 when we are further along.
Amah Mutsun Tribal Band	B-10-11	5/21/2020		5/21/2020		NR					
Calaveras Band of Mi-Wuk Indians (Grimes)	B-10-11	5/21/2020		5/21/2020		NR					
Calaveras Band of Mi-Wuk Indians (Wilson)	B-10-11	5/21/2020		5/21/2020		NR					
Colfax-Todds Valley Consolidated Tribe	B-10-11	5/21/2020		5/21/2020		NR					
Dunlap Band of Mono Indians	B-10-11	5/21/2020		5/21/2020		NR					
Kern Valley Indian Community	B-10-11	5/21/2020		5/21/2020		NR					
Kings River Choinumni Farm Tribe	B-10-11	5/21/2020		no email avail		NR					
Kitanemuk & Yowlumne Tejon Indians	B-10-11	5/21/2020		5/21/2020		NR					
KonKow Valley Band of Maidu	B-10-11	5/21/2020		5/21/2020		C	5/21/2020	email	6/4/2020	Jessica Lopez, Tribal Chair 530-777-8094	Scheduling emails exchanged in February 2021. Meeting scheduled on 2/16/21. Meeting held. Tribe is interested in: erosion and sediment controls, pesticide use and impacts to water, encouraging meadow restoration, encouraging us of Rx fire. Tribe does its own WQ sampling. Prefers email, Teams, text and scheduling meetings via Teams. AW will reach back out in late summer 2021.
Nashville-Enterprise Miwok-Maidu-Nishinam Tribe	B-10-11	5/21/2020		5/21/2020		NR					
North Fork Mono Tribe	B-10-11	5/21/2020		5/21/2020		NR					
North Valley Yokuts Tribe	B-10-11	5/21/2020		5/21/2020		NR					
Southern Sierra Miwuk Nation	B-10-11	5/21/2020	hard copy return	no email avail		NR					
Strawberry Valley Rancheria	B-10-11	5/21/2020	hard copy return	5/21/2020		NR					
Traditional Choinumni Tribe	B-10-11	5/21/2020		5/21/2020	Chair email return	NR					
Tsi Akim Maidu	B-10-11	5/21/2020	hard copy return	5/21/2020		NR					
Tubatulabals of Kern Valley	B-10-11	5/21/2020		no email avail		NR					
Wintu Tribe of Northern California	B-10-11	5/21/2020		5/21/2020		NR					
Dunma Wo-Wah Tribal Government	B-10-11	5/21/2020		5/21/2020		NR					

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Sample Assembly Bill 52 Letter

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21 May 2020

Rhonda Morningstar Pope
1418 20th Street, Suite 200
Sacramento, CA.,95811

Tribal Cultural Resources under the California Environmental Quality Act AB 52 (Gatto, 2014). Notification of Consultation Opportunity Pursuant to Public Resources Code § 21080.3.1

Honorable Chair Rhonda Morningstar Pope,

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) is developing a new permit to regulate nonpoint source discharges from activities conducted on federal lands managed by the United States Forest Service (USFS) and Bureau of Land Management (BLM) throughout the Central Water Board region. This permit is being developed in collaboration with the Lahontan Regional Water Quality Control Board with the goal of adopting similar but separate permits for each Water Board region. The intent of this communication is to notify you of your opportunity to request consultation with the Central Valley Water Board pursuant to Public Resources Code section 21080.3.1. Included within this letter is a brief description of the proposed project, the project location, and contact information for the Central Valley Water Board's project point of contact. A location map of the project area is included as an attachment to this letter.

Proposed Project:
The proposed project is the development of a permit (Proposed Permit) to regulate real and threatened nonpoint source discharges of waste originated from certain land management activities conducted on USFS and BLM managed lands. While the legal definition of waste can be found in California Water Code section 13050, examples of waste applicable to this Proposed Permit include sediment, pesticides, nutrients and bacteriological substances. The main purpose of the Proposed Permit is to ensure the maintenance, protection and restoration of the quality and beneficial uses of water on federally managed lands and to ensure federal agency compliance with water quality requirements, including the State Water Resources Control Board's 2004 Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program. The Proposed Permit will be in the form of Waste Discharge Requirements and likely include Clean Water Act section 401 Water Quality Certification provisions.

The Proposed Permit will require implementation of best management practices and federal agency guidance, as well as compliance with permit conditions including monitoring and reporting requirements. The proposed permit and accompanying environmental analysis under the California Environmental Quality Act will not supersede existing federal requirements, including those required under the National Environmental Policy Act or tribal coordination under the National Historic Preservation Act.

Example activities being considered for the Proposed Permit include:

1) **Vegetation Management**: Management of vegetation can improve forest health, reduce fuel loading, and allow harvest of commercial timber. Such activities can result in soil disturbance, modification of hillslope drainage patterns, and erosion.

2) **Transportation Management:** Without proper design and maintenance, all phases of road and trail management—including construction, road use, maintenance, reconstruction, upgrades, and decommissioning—can lead to sediment-related nonpoint source pollution. Roads and trails can cause disruptions in hillslope drainage patterns, slope instability, and erosion.

3) **Recreational Facilities Management:** Recreation activities can generate potential discharges of sediment, nutrients, and bacteria to watercourses, as well as result in the alteration of aquatic or riparian habitat. Facilities of concern include areas such as campgrounds, trail heads and staging areas, high use recreation sites, recreational event locations, and shooting areas.

4) **Wildfire Management & Recovery:** Activities conducted as part of fire suppression repair, emergency post-fire recovery, and long-term post-fire recovery may include erosion control, timber salvage, hazard tree removal, revegetation activities and related pesticide application.

5) **Restoration Activities**: Restoration activities are often designed to improve habitat, prevent water quality and/or instream habitat degradation, and reduce legacy or chronic erosion and sedimentation. Restoration projects may include watercourse crossing improvement, channel and bank stabilization, stream channel and floodplain habitat enhancement, and meadow restoration.

Project Location:
The Proposed Permit will cover activities that occur on lands managed by the USFS and BLM throughout the Central Valley Water Board region. The project area is shown on Figure 1 as the federal land management areas within the Central Valley Water Board's jurisdictional boundary.

Lands managed by the USFS and BLM in the Central Valley Water Board region are located in: Modoc, Siskiyou, Shasta, Lassen, Tehama, Plumas, Glenn, Butte, Sierra, Colusa, Sutter, Yuba, Nevada, Placer, El Dorado, Yolo, Solano, Sacramento, Amador, Calaveras, Contra Costa, San Joaquin, Alameda, Stanislaus, Tuolumne, Mariposa,

Merced, Madera, Fresno, San Benito, Kings, Tulare, San Luis Obispo, and Kern counties.

USFS National Forests wholly or partially within the Central Valley Water Board region include the Modoc, Shasta-Trinity, Lassen, Plumas, Mendocino, Tahoe, El Dorado, Inyo, Stanislaus, Sierra, Sequoia, and Los Padres.

BLM Field Office management areas wholly or partially within the Central Valley Water Board region include Applegate, Eagle Lake, Redding, Central Coast, Mother Lode, Bakersfield, Ukiah, and Ridgecrest.

Additional information about the Proposed Permit can be found at the Federal NPS Permit development webpage:
https://www.waterboards.ca.gov/lahontan/water_issues/programs/nps/federal_lands

Central Valley Water Board Project Lead:
Gretchen Woessner, Environmental Scientist, (530) 224-3249 or Gretchen.woessner@waterboards.ca.gov

Requesting Consultation:
Pursuant to Public Resources Code section 21080.3.1, subdivision(b), and Governor Newsom's 22 April 2020 Executive Order N-54-20, you have until 22 July 2020 to request consultation, in writing, with the Central Valley Water Board. Responses via email to the point of contact provided above will allow us to capture all responses in one place.

If the geographic area that is traditionally and culturally affiliated with your tribe extends into both the Central Valley and Lahontan Water Board regions, you will receive a similar letter from the Lahontan Water Board. Should you request consultation, we will coordinate with the Lahontan Water Board for consultation activities.

If you have any questions or would like additional information, please do not hesitate to contact me at (916) 464-4818, (Patrick.pulupa@waterboards.ca.gov), or Angela Wilson, Division Chief at (530) 224-4856, (Angela.wilson@waterboards.ca.gov).

Very Respectfully,

Patrick Pulupa
Executive Officer

Enclosure: Map of Proposed Project Location (Figure 1)

cc: Moises Moreno-Rivera, Tribal Liaison, State Water Resources Control Board

Robert L'Heureux, Tribal Coordinator, Central Valley Regional Water Quality Control Board

Bayley Toft-Dupuy, Office of Chief Counsel, State Water Resources Control Board

Angela Wilson, Supervising Engineering Geologist, Central Valley Regional Water Quality Control Board

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Central Valley Regional Water Quality Control Board

23 July 2020

The Honorable Jessica Lopez
Chairperson, Konkow Valley Band of Maidu Indians
2086 North Villa Street
Palermo, CA 95968

Confirmation of Receipt of B-10-11 Notification Request and Initiation of Consultation for Development of a Nonpoint Source Permit for Federal Lands

Dear Chairperson Lopez:

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) received an email on May 21, 2020 from the Konkow Valley Band of Maidu Indians (Tribe). The Tribe's email requested consultation on the development of a new permit to regulate nonpoint source discharges from activities conducted on federal lands managed by the United States Forest Service and Bureau of Land Management throughout the Central Valley Water Board region.

According to the Tribe's correspondence, the Tribe has designated the following persons as lead contact for notification and consultation:

Name: Jessica Lopez; Chair
Address: 2086 North Villa Street, Palermo, CA 95968
Phone: (971) 404-8263
Email: jessica@konkowmaidu.org

Name: Wallace Clark-Wilson; Treasurer
Address: 2086 North Villa Street, Palermo, CA 95968
Phone: (971) 404-8263
Email: konkowvalley@yahoo.com

Please notify the Central Valley Water Board's below contact at your earliest convenience if any of the above information is incorrect or changes in the future.

The following individual will serve as the Central Valley Water Board's contact person for the project:

Name: Angela Wilson
Title: Forest Activities Program Manager
Address: 364 Knollcrest Dr. Ste 205, Redding, CA 96002
Phone: (530) 224-4856
Fax: (530) 224-4857
Email: Angela.wilson@waterboards.ca.gov

The Central Valley Water Board proposes to meet with the Tribe's representatives to provide an overview of the Project and discuss any additional consultation topics the Tribe requests. Alternatively, the Tribe may request to forego a meeting and conduct consultation in writing, either via regular or electronic mail. Central Valley Water Board staff will reach out to your designated contact person via email or phone to address any initial questions you may have and to facilitate consultation. In consideration of current COVID-19 circumstances, every effort will be taken to follow safety precautions, including conducting meetings remotely when possible. The Central Valley Water Board looks forward to working with Konkow Valley Band of Maidu Indians.

Sincerely,

(for) Patrick Pulupa
Executive Officer

cc: Gretchen Woessner, Central Valley Regional Quality Control Board, Redding
Bayley Toft-Dupuy, State Water Resources Control Board, Sacramento

From: Jessica Lopez
To: Wilson, Angela@Waterboards
Subject: RE: Consultation follow-up
Date: Thursday, February 18, 2021 8:19:43 AM
Attachments: 6F7767E905454378A994F3CF866FE975.png
A2801A102D374F4BB6A205B3A6414712.png
44EB6C2550704D7EB3D50F545E3D11CB.png
traditional areas map pdf[16241].pdf

EXTERNAL:

Thank you for the call yesterday. Attached is our tribal map broken into sections of neighboring tribes. We are defined in red under correct spelling. Konkau Band.

Respectfully,

Jessica Lopez
Tribal Chair
Konkow Valley Band of Maidu

Sent from Mail for Windows 10

From: Wilson, Angela@Waterboards
Sent: Wednesday, February 17, 2021 8:49 AM
To: Jessica Lopez
Subject: RE: Consultation follow-up

Ok, see you then!

From: Jessica Lopez <jessica@konkowmaidu.org>
Sent: Wednesday, February 17, 2021 8:49 AM
To: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Subject: Re: Consultation follow-up

EXTERNAL:

No I just had a last minute Tribal meeting this morning. Perfect see you at noon.

Jessica Lopez
Tribal Chair
Konkow Valley Band of Maidu
2136 Myers St.

Oroville, CA 95966
(530)777-8094

From: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Sent: Wednesday, February 17, 2021 8:45:52 AM
To: Jessica Lopez <jessica@konkowmaidu.org>
Subject: RE: Consultation follow-up

Yes, of course. Would another day be better?

From: Jessica Lopez <jessica@konkowmaidu.org>
Sent: Wednesday, February 17, 2021 8:44 AM
To: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Subject: Re: Consultation follow-up

EXTERNAL:

Angela can I push it back to 12 today will that be okay

Jessica Lopez
Tribal Chair
Konkow Valley Band of Maidu
2136 Myers St.
Oroville, CA 95966
(530)777-8094

From: Jessica Lopez <jessica@konkowmaidu.org>
Sent: Wednesday, February 17, 2021 8:43:36 AM
To: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Subject: Re: Consultation follow-up

Yes, I do.

Jessica Lopez
Tribal Chair
Konkow Valley Band of Maidu
2136 Myers St.
Oroville, CA 95966
(530)777-8094

From: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Sent: Wednesday, February 17, 2021 8:42:51 AM
To: Jessica Lopez <jessica@konkowmaidu.org>

Subject: RE: Consultation follow-up

Hi Jessica,

Do you have access to MS Teams? I was just thinking that if you did, and you have a camera, we could at least see each other. Let me know, otherwise I'll call you at 9.

Regards,
Angela

From: Jessica Lopez <jessica@konkowmaidu.org>
Sent: Thursday, February 11, 2021 2:31 PM
To: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Subject: RE: Consultation follow-up

EXTERNAL:

OK sounds great.

Thanks,

Jessica

Sent from Mail for Windows 10

From: Wilson, Angela@Waterboards
Sent: Thursday, February 11, 2021 9:51 AM
To: Jessica Lopez
Subject: RE: Consultation follow-up

Hi Jessica,

Thank you for the quick response! How does the 17th at 9am sound? I'll call you at the number under your title.

Regards,
Angela

From: Jessica Lopez <jessica@konkowmaidu.org>
Sent: Thursday, February 11, 2021 9:47 AM
To: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Subject: Re: Consultation follow-up

EXTERNAL:

Perfect thank you, I completely understand o do get quit busy as well. I'm available best times are from 8-10 everyday.

Thanks,

Jessica Lopez
Tribal Chair
Konkow Valley Band of Maidu
2136 Myers St.
Oroville, CA 95966
(530)777-8094

From: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Sent: Thursday, February 11, 2021 9:35:28 AM
To: Jessica Lopez <jessica@konkowmaidu.org>
Subject: Consultation follow-up

Hello Ms. Lopez,

My name is Angela Wilson and I am the contact person for the California Central Valley Regional Water Quality Control Board's project to develop a permit for the U.S. Forest Service and Bureau of Land Management. The proposed permit will address nonpoint source discharges of waste to waters of the state within the Central Valley region. We sent a letter in May 2020 describing the project and offering to consult with the Konkow Valley Band of Maidu Indians (Tribe) on the proposed project, and later that month received a response requesting consultation and identifying you as the appropriate contact.

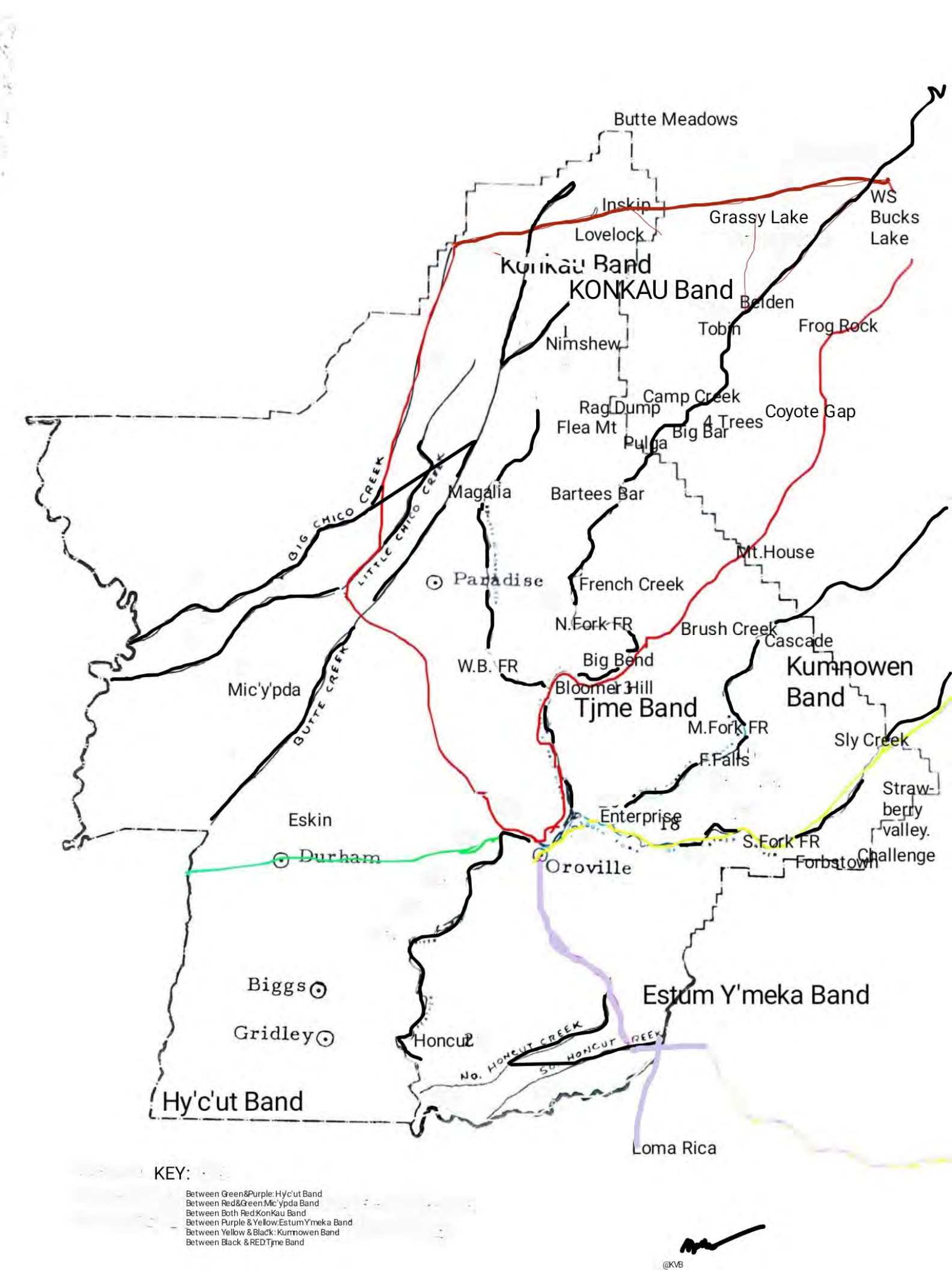
I apologize for the delay in reaching out to you, and would like to schedule a time to walk you through the project, answer any questions you may have, and gain a better understanding of any concerns the Tribe may have with activities on USFS and BLM lands that may be covered by the proposed permit.

Feel free to call me at the number below at your convenience, or respond to this email with dates and times you are available for a call.

Thank you!
Angela

Angela K. Wilson, P.G.
Division Chief

Forest Activities Program Manager
California Central Valley Water Quality Control Board
364 Knollcrest Dr. Ste 205
Redding, CA 96002
530-224-4856


Butte Meadows
Inskip
Grassy Lake
WS
Bucks
Lake
Lovelock
Konkau Band
KONKAU Band
Belden
Tobin
Frog Rock
Nimshew
Camp Creek
Rag Dump
Coyote Gap
Flea Mt
4 Trees
Big Bar
Pulga
BIG CHICO CREEK
LITTLE CHICO CREEK
Magalia
Bartees Bar
Mt.House
Paradise
French Creek
N.Fork FR
Brush Creek
Cascade
Kunnowen
Band
W.B. FR
Big Bend
Bloomer Hill
Mic'y'pda
BUTTE CREEK
Tjme Band
M.Fork FR
Sly Creek
F.Falls
Straw-
berry
valley.
Challenge
Eskin
Enterprise
18
S.Fork FR
Durham
Oroville
Forbstown
Biggs
Estum Y'meka Band
Gridley
Honcut
No. HONCUT CREEK
So. HONCUT CREEK
Hy'c'ut Band
Loma Rica
KEY:
Between Green&Purple: Hy'c'ut Band
Between Red&Green:Mic'y'pda Band
Between Both Red:KonKau Band
Between Purple & Yellow:Estum Y'meka Band
Between Yellow & Black: Kunnowen Band
Between Black & RED:Tjme Band
@KVB

Central Valley Regional Water Quality Control Board

22 July 2020

Rolland Fillmore
Cultural Preservation Representative
Jackson Rancheria Band of Miwuk Indians
P.O. Box 1090
Jackson, CA 95642

Confirmation of Receipt of B-10-11 Notification Request and Initiation of Consultation for Development of a Nonpoint Source Permit for Federal Lands

Dear Mr. Fillmore:

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) received a phone call on June 26, 2020 from you representing the Jackson Rancheria Band of Miwuk Indians (Tribe). The discussion was regarding the development of a new permit to regulate nonpoint source discharges from activities conducted on federal lands managed by the United States Forest Service and Bureau of Land Management throughout the Central Valley Water Board region.

According to the Tribe's communication, the Tribe has designated the following persons as lead contact for notification and consultation:

Name: Rolland Fillmore
Title: Cultural Preservation Representative
Address: P.O. Box 1090, Jackson, CA 95642
Phone: (209) 223-8370
Email: no email address on file, please provide

Please notify the Central Valley Water Board's below contact at your earliest convenience if any of the above information is incorrect or changes in the future.

The following individual will serve as the Central Valley Water Board's contact person for the project:

Name: Angela Wilson
Title: Forest Activities Program Manager
Address: 364 Knollcrest Dr. Ste 205, Redding, CA 96002
Phone: (530) 224-4856
Fax: (530) 224-4857
Email: Angela.wilson@waterboards.ca.gov

The Central Valley Water Board proposes to meet with the Tribe's representatives to provide an overview of the Project and discuss any additional consultation topics the Tribe requests. Alternatively, the Tribe may request to forego a meeting and conduct consultation in writing, either via regular or electronic mail. Central Valley Water Board staff will reach out to your designated contact person via email or phone to address any initial questions you may have and to facilitate consultation. In consideration of current COVID-19 circumstances, every effort will be taken to follow safety precautions, including conducting meetings remotely when possible. The Central Valley Water Board looks forward to working with the Jackson Rancheria Bank of Miwuk Indians.

Sincerely,

(for) Patrick Pulupa
Executive Officer

cc electronically: Gretchen Woessner, Nonpoint Source Unit, Central Valley Regional Water Quality Control Board, Redding
Bayley Toft-Dupuy, Office of Chief Counsel, State Water Resources Control Board, Sacramento

From: Pulupa, Patrick@Waterboards
To: rfillmore@JacksonCasino.com
Cc: Wilson, Angela@Waterboards
Subject: BLM/US Forest Service Permit
Date: Friday, June 26, 2020 2:36:04 PM

Hi Mr. Filmore,

Thanks for having the conversation today. The permitting action that you are referring to is the joint Region 5/Region 6 Federal Permit. The Lahontan Region has some information up on its website describing some of the efforts taken to-date:
https://www.waterboards.ca.gov/lahontan/water_issues/programs/nps/federal_lands/

Angela Wilson, in our Redding Office, is the point person for this permitting effort, and she or one of her staff can talk to you about where we are currently in the permit development process, and how we can hear your concerns.

Yours,

Patrick

Patrick Pulupa
Executive Officer
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670
Phone: (916) 464-4818
Email: Patrick.Pulupa@waterboards.ca.gov

Central Valley Regional Water Quality Control Board

21 May 2020

Andrew Alejandre
P.O. Box 709
Corning, CA 96021

Notification of Consultation Opportunity

Honorable Chair Andrew Alejandre,

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) is developing a new permit to regulate nonpoint source discharges from activities conducted on federal lands managed by the United States Forest Service (USFS) and Bureau of Land Management (BLM) throughout the Central Valley Water Board region. This permit is being developed in collaboration with the Lahontan Regional Water Quality Control Board with the goal of adopting similar but separate permits for each Water Board region. The intent of this communication is to notify you of your opportunity to request consultation with the Central Valley Water Board. Included within this letter is a brief description of the proposed project, the project location, and contact information for the Central Valley Water Board's project point of contact. A location map of the project area is included as an attachment to this letter.

Proposed Project:
The proposed project is the development of a permit (Proposed Permit) to regulate real and threatened nonpoint source discharges of waste originating from certain land management activities conducted on USFS and BLM managed lands. While the legal definition of waste can be found in California Water Code section 13050, examples of waste applicable to this Proposed Permit include sediment, pesticides, nutrients and bacteriological substances. The main purpose of the Proposed Permit is to ensure the maintenance, protection and restoration of the quality and beneficial uses of water on federally managed lands and to ensure federal agency compliance with water quality requirements, including the State Water Resources Control Board's 2004 Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program. The Proposed Permit will be in the form of Waste Discharge Requirements and likely include Clean Water Act section 401 Water Quality Certification provisions.

The Proposed Permit will require implementation of best management practices and federal agency guidance, as well as compliance with permit conditions including monitoring and reporting requirements. The proposed permit and accompanying

environmental analysis under the California Environmental Quality Act will not supersede existing federal requirements, including those required under the National Environmental Policy Act or tribal coordination under the National Historic Preservation Act.

Example activities being considered for the Proposed Permit include:

1) **Vegetation Management**: Management of vegetation can improve forest health, reduce fuel loading, and allow harvest of commercial timber. Such activities can result in soil disturbance, modification of hillslope drainage patterns, and erosion.

2) **Transportation Management:** Without proper design and maintenance, all phases of road and trail management—including construction, road use, maintenance, reconstruction, upgrades, and decommissioning—can lead to sediment-related nonpoint source pollution. Roads and trails can cause disruptions in hillslope drainage patterns, slope instability, and erosion.

3) **Recreational Facilities Management:** Recreation activities can generate potential discharges of sediment, nutrients, and bacteria to watercourses, as well as result in the alteration of aquatic or riparian habitat. Facilities of concern include areas such as campgrounds, trail heads and staging areas, high use recreation sites, recreational event locations, and shooting areas.

4) **Wildfire Management & Recovery:** Activities conducted as part of fire suppression repair, emergency post-fire recovery, and long-term post-fire recovery may include erosion control, timber salvage, hazard tree removal, revegetation activities and related pesticide application.

5) **Restoration Activities**: Restoration activities are often designed to improve habitat, prevent water quality and/or instream habitat degradation, and reduce legacy or chronic erosion and sedimentation. Restoration projects may include watercourse crossing improvement, channel and bank stabilization, stream channel and floodplain habitat enhancement, and meadow restoration.

Project Location:
The Proposed Permit will cover activities that occur on lands managed by the USFS and BLM throughout the Central Valley Water Board region. The project area is shown on Figure 1 as the federal land management areas within the Central Valley Water Board's jurisdictional boundary.

Lands managed by the USFS and BLM in the Central Valley Water Board region are located in: Modoc, Siskiyou, Shasta, Lassen, Tehama, Plumas, Glenn, Butte, Sierra, Colusa, Sutter, Yuba, Nevada, Placer, El Dorado, Yolo, Solano, Sacramento, Amador, Calaveras, Contra Costa, San Joaquin, Alameda, Stanislaus, Tuolumne, Mariposa, Merced, Madera, Fresno, San Benito, Kings, Tulare, San Luis Obispo, and Kern counties.

USFS National Forests wholly or partially within the Central Valley Water Board region include the Modoc, Shasta-Trinity, Lassen, Plumas, Mendocino, Tahoe, El Dorado, Inyo, Stanislaus, Sierra, Sequoia, and Los Padres.

BLM Field Office management areas wholly or partially within the Central Valley Water Board region include Applegate, Eagle Lake, Redding, Central Coast, Mother Lode, Bakersfield, Ukiah, and Ridgecrest.

Additional information about the Proposed Permit can be found at the Federal NPS Permit development webpage:
https://www.waterboards.ca.gov/lahontan/water_issues/programs/nps/federal_lands

Central Valley Water Board Project Lead:
Gretchen Woessner, Environmental Scientist, (530) 224-3249 or
Gretchen.woessner@waterboards.ca.gov

Requesting Consultation:
Pursuant to Public Resources Code section 21080.3.1, subdivision(b), and Governor Newsom's 22 April 2020 Executive Order N-54-20, you have until 22 July 2020 to request consultation, in writing, with the Central Valley Water Board. Responses via email to the point of contact provided above will allow us to capture all responses in one place.

If the geographic area that is traditionally and culturally affiliated with your tribe extends into both the Central Valley and Lahontan Water Board regions, you will receive a similar letter from the Lahontan Water Board. Should you request consultation, we will coordinate with the Lahontan Water Board for consultation activities.

If you have any questions or would like additional information, please do not hesitate to contact me at (916) 464-4818, (Patrick.pulupa@waterboards.ca.gov), or Angela Wilson, Division Chief at (530) 224-4856, (Angela.wilson@waterboards.ca.gov).

Very Respectfully,

Patrick Pulupa

Patrick Pulupa
Executive Officer

Enclosure: Map of Proposed Project Location (Figure 1)

cc: Moises Moreno-Rivera, Tribal Liaison, State Water Resources Control Board

Robert L'Heureux, Tribal Coordinator, Central Valley Regional Water Quality Control Board

Bayley Toft-Dupuy, Office of Chief Counsel, State Water Resources Control Board

Angela Wilson, Supervising Engineering Geologist, Central Valley Regional Water Quality Control Board

Central Valley Regional Water Quality Control Board

23 July 2020

Matthew Hatcher
Tribal Historic Preservation Officer
Mooretown Rancheria
#1 Alverda Drive
Oroville, CA 95966

Confirmation of Receipt of B-10-11 Notification Request and Initiation of Consultation for Development of a Nonpoint Source Permit for Federal Lands

Dear Mr. Hatcher:

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) received a letter on May 25, 2020 from the Mooretown Rancheria (Tribe). The Tribe's letter was dated May 21, 2020 and requested information on the development of a new permit to regulate nonpoint source discharges from activities conducted on federal lands managed by the United States Forest Service and Bureau of Land Management throughout the Central Valley Water Board region.

According to the Tribe's correspondence, the Tribe has designated the following persons as lead contact for notification and consultation:

Name: Matthew Hatcher
Title: Tribal Historic Preservation Officer
Address: #1 Alverda Drive, Oroville, CA 95966
Phone: (530) 533-3625
Fax: (530) 533-3680
Email: matthew.hatcher@mooretown.org

Please notify the Central Valley Water Board's below contact at your earliest convenience if any of the above information is incorrect or changes in the future.

The following individual will serve as the Central Valley Water Board's contact person for the project:

Name: Angela Wilson
Title: Forest Activities Program Manager
Address: 364 Knollcrest Dr. Ste 205, Redding, CA 96002
Phone: (530) 224-4856
Fax: (530) 224-4857
Email: Angela.wilson@waterboards.ca.gov

The Central Valley Water Board proposes to meet with the Tribe's representatives to provide an overview of the Project and discuss any additional consultation topics the Tribe requests. Alternatively, the Tribe may request to forego a meeting and conduct consultation in writing, either via regular or electronic mail. Central Valley Water Board staff will reach out to your designated contact person via email or phone to address any initial questions you may have and to facilitate consultation. In consideration of current COVID-19 circumstances, every effort will be taken to follow safety precautions, including conducting meetings remotely when possible. The Central Valley Water Board looks forward to working with Mooretown Rancheria.

Sincerely,

(for) Patrick Pulupa
Executive Officer

cc: Gretchen Woessner, Central Valley Regional Quality Water Control Board, Redding
Bayley Toft-Dupuy, State Water Resources Control Board, Sacramento

From: Wilson, Angela@Waterboards
To: Matthew Hatcher
Subject: RE: conformation on correspondence for point of contact with Mooretown Rancheria
Date: Tuesday, August 4, 2020 9:57:00 AM

Hello Matthew,

It was a pleasure speaking with you today about the federal nonpoint source permit that the Central Valley and Lahontan Regional Water Quality Control Boards are working on. I appreciate your interest and willingness to engage in further discussions as the permit is developed.

This is the project link that I mentioned and you'll find an email list to sign up for project updates: https://www.waterboards.ca.gov/lahontan/water_issues/programs/nps/federal_lands

Please keep my contact information handy and we will be in touch as the permit development progresses.

Regards,
Angela

Angela K. Wilson, P.G.
Division Manager
Forest Activities Program Manager
California Central Valley Water Quality Control Board
364 Knollcrest Dr. Ste 205
Redding, CA 96002
530-224-4856

From: Matthew Hatcher <Matthew.Hatcher@mooretown.org>
Sent: Tuesday, August 4, 2020 9:16 AM
To: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Subject: RE: conformation on correspondence for point of contact with Mooretown Rancheria

EXTERNAL:

My apologies, I made a mistake. My number is 530-533-3625 ext 1016 matthew.

From: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Sent: Tuesday, August 04, 2020 9:08 AM
To: Matthew Hatcher <Matthew.Hatcher@mooretown.org>
Subject: RE: conformation on correspondence for point of contact with Mooretown Rancheria

Hi Matthew,
I've been trying the number you gave me and it says it is disconnected?

Angela K. Wilson, P.G.
Division Chief
Forest Activities Program Manager
California Central Valley Water Quality Control Board
364 Knollcrest Dr. Ste 205
Redding, CA 96002
530-224-4856

From: Matthew Hatcher <Matthew.Hatcher@mooretown.org>
Sent: Monday, July 27, 2020 2:02 PM
To: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Subject: RE: conformation on correspondence for point of contact with Mooretown Rancheria

EXTERNAL:

My phone number is 530-533-3525 ext. 1016

From: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Sent: Monday, July 27, 2020 1:55 PM
To: Matthew Hatcher <Matthew.Hatcher@mooretown.org>
Subject: RE: conformation on correspondence for point of contact with Mooretown Rancheria

Excellent!

I have the following availability:
July 29th between 9-12
July 31st between 9-12
August 3rd between 1-3:30
August 4th between 9-12
August 5th between 11-12
August 6th between 9-2
Let me know what works for you and I'll hold that time.

Regards,
Angela

Angela K. Wilson, P.G.

Division Manager
Forest Activities Program Manager
California Central Valley Water Quality Control Board
364 Knollcrest Dr. Ste 205
Redding, CA 96002
530-224-4856

From: Matthew Hatcher <Matthew.Hatcher@mooretown.org>
Sent: Monday, July 27, 2020 1:51 PM
To: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Subject: RE: conformation on correspondence for point of contact with Mooretown Rancheria

EXTERNAL:

Yes that would be great . Let's schedule a phone call and get introduced and then Mooretown can learn more about the project. Pretty flexible on this end . let me know when is god for you

---

From: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Sent: Monday, July 27, 2020 1:47 PM
To: Matthew Hatcher <Matthew.Hatcher@mooretown.org>
Subject: RE: conformation on correspondence for point of contact with Mooretown Rancheria

Hello Matthew,

Thank you for the email. Is the Mooretown Rancheria interested in having a meeting to discuss the project further at this point? I would be happy to schedule a phone call or Team/Zoom meeting to introduce myself, provide an overview of the project and learn more about the Mooretown Rancheria's interests.

Regards,
Angela

Angela K. Wilson, P.G.
Division Manager
Forest Activities Program Manager
California Central Valley Water Quality Control Board
364 Knollcrest Dr. Ste 205
Redding, CA 96002
530-224-4856

From: Matthew Hatcher <Matthew.Hatcher@mooretown.org>
Sent: Monday, July 27, 2020 1:29 PM
To: Wilson, Angela@Waterboards <Angela.Wilson@waterboards.ca.gov>
Subject: conformation on correspondence for point of contact with Mooretown Rancheria

EXTERNAL:

Received your letter from the Central Valley Regional Water Control Board naming you Angela Wilson as Mooretown Rancheria's point of contact for the Consultation for Development of a Nonpoint Source Permit for Federal Lands. Mooretown appreciates the notification

Sincerely , Matthew Hatcher

Tribal Historic Preservation Officer

Central Valley Regional Water Quality Control Board

23 July 2020

Kristin Jensen
CRD Administrative Assistant
Yocha Dehe Wintun Nation
PO Box 18
Brooks, CA 95606

Confirmation of Receipt of B-10-11 Notification Request and Initiation of Consultation for Development of a Nonpoint Source Permit for Federal Lands

Dear Ms. Jensen:

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) received a letter on June 4, 2020 from Mr. Leland Kinter, Tribal Historic Preservation Officer for the Yocha Dehe Wintun Nation (Tribe). The Tribe's letter was dated May 26, 2020 and requested consultation on the development of a new permit to regulate nonpoint source discharges from activities conducted on federal lands managed by the United States Forest Service and Bureau of Land Management throughout the Central Valley Water Board region. The tribe asked to refer to identification number YD-05212020-01 for any correspondence on this project.

According to the Tribe's correspondence, the following person has been designated as lead contact for notification and consultation:

Name: Kristin Jensen
Title: CRD Administrative Assistant
Address: PO Box 18, Brooks, CA 95606
Phone: (530) 796-0105
Fax: (530) 796-2143
Email: kjensen@yochadehe-nsn.gov

Please notify the Central Valley Water Board's below contact at your earliest convenience if any of the above information is incorrect or changes in the future.

The following individual will serve as the Central Valley Water Board's contact person for the project:

Name: Angela Wilson
Title: Forest Activities Program Manager
Address: 364 Knollcrest Dr. Ste 205, Redding, CA 96002
Phone: (530) 224-4856
Fax: (530) 224-4857
Email: Angela.wilson@waterboards.ca.gov

The Central Valley Water Board proposes to meet with the Tribe's representatives to provide an overview of the Project and discuss any additional consultation topics the Tribe requests. Alternatively, the Tribe may request to forego a meeting and conduct consultation in writing, either via regular or electronic mail. Central Valley Water Board staff will reach out to your designated contact person via email or phone to address any initial questions you may have and to facilitate consultation. In consideration of current COVID-19 circumstances, every effort will be taken to follow safety precautions, including conducting meetings remotely when possible. The Central Valley Water Board looks forward to working with the Yocha Dehe Wintun Nation.

Sincerely,

AEO

(for) Patrick Pulupa
Executive Officer

cc: Gretchen Woessner, Central Valley Regional Quality Control Board, Redding
Bayley Toft-Dupuy, State Water Resources Control Board, Sacramento

From: Laverne Bill
To: Wilson, Angela@Waterboards
Subject: Suggested Verbiage
Date: Wednesday, March 10, 2021 1:54:38 PM

EXTERNAL:

Good afternoon, Angela. Here is some of the suggested verbiage we are suggested agencies that issue permits and are not involved in projects directly. We look forward to working with you and your team. Thanks and have a great day.

1. You shall arrange for a tribal representative or qualified archaeologist to conduct a cultural sensitivity training for all employees who will be working at the site. If additional employees are hired for the project, the permittee shall contact the archaeologist or tribal representative one week prior to these employees' first day at the project site to arrange additional cultural sensitivity training for the new employees. Cultural sensitivity training shall include information on how to identify cultural resources and high-sensitivity soils and the appropriate protocol for stopping work within 100 feet of the find and notifying the (AGENCY), a qualified archaeologist, and the appropriate tribal representative.

2. Should any buried archaeological materials be uncovered during project activities, such activities shall cease within 100 feet of the find. Prehistoric archaeological indicators include: obsidian and chert flakes, and chipped stone tools; bedrock outcrops and boulders with mortar cups; ground stone implements (grinding slabs, mortars, and pestles) and locally darkened midden soils containing some of the previously listed items plus fragments of bone and fire affected stones. Historic period site indicators generally include: fragments of glass, ceramic, and metal objects; milled and split lumber; and structure and feature remains such as building foundations, privy pits, wells and dumps, and old trails. The (AGENCY) and Mr. Laverne Bill of the Yocha Dehe Wintun Nation (530-723-3891, LBill@yochadehe-nsn.gov) shall be notified of the discovery and a professional archaeologist shall be retained by the permittee to evaluate the find and recommend appropriate mitigation measures. Proposed mitigation measures shall be submitted to the (AGENCY) for approval, and project-related activities shall not resume within 100 feet of the find until all approved mitigation measures have been completed to the satisfaction of the Corps.

3. To minimize potential impacts to cultural resources, you shall contact and work with the Yocha Dehe Wintun Nation to establish a Tribal Monitoring Agreement. A copy of this agreement, signed by both the applicant and Yocha Dehe Wintun Nation, shall be provided to the Corps prior to the start of any ground disturbing activities. You shall comply with all conditions of the Tribal Monitoring Agreement, and the agreement shall be incorporated by reference into this permit.

Laverne Bill
Cultural Resource Manager

Yocha Dehe Wintun Nation
PO Box 18 | Brooks, CA 95606
p 530.796.3400 | c 530.723.3891
f 530.796.2143
lbill@yochadehe-nsn.gov
www.yochadehe.org

From:	Laverne Bill
To:	Wilson, Angela@Waterboards
Subject:	Aboriginal Territory Map
Date:	Monday, March 8, 2021 4:21:16 PM
Attachments:	Patwin Traditional Territory map 12.10.19 updated.pdf

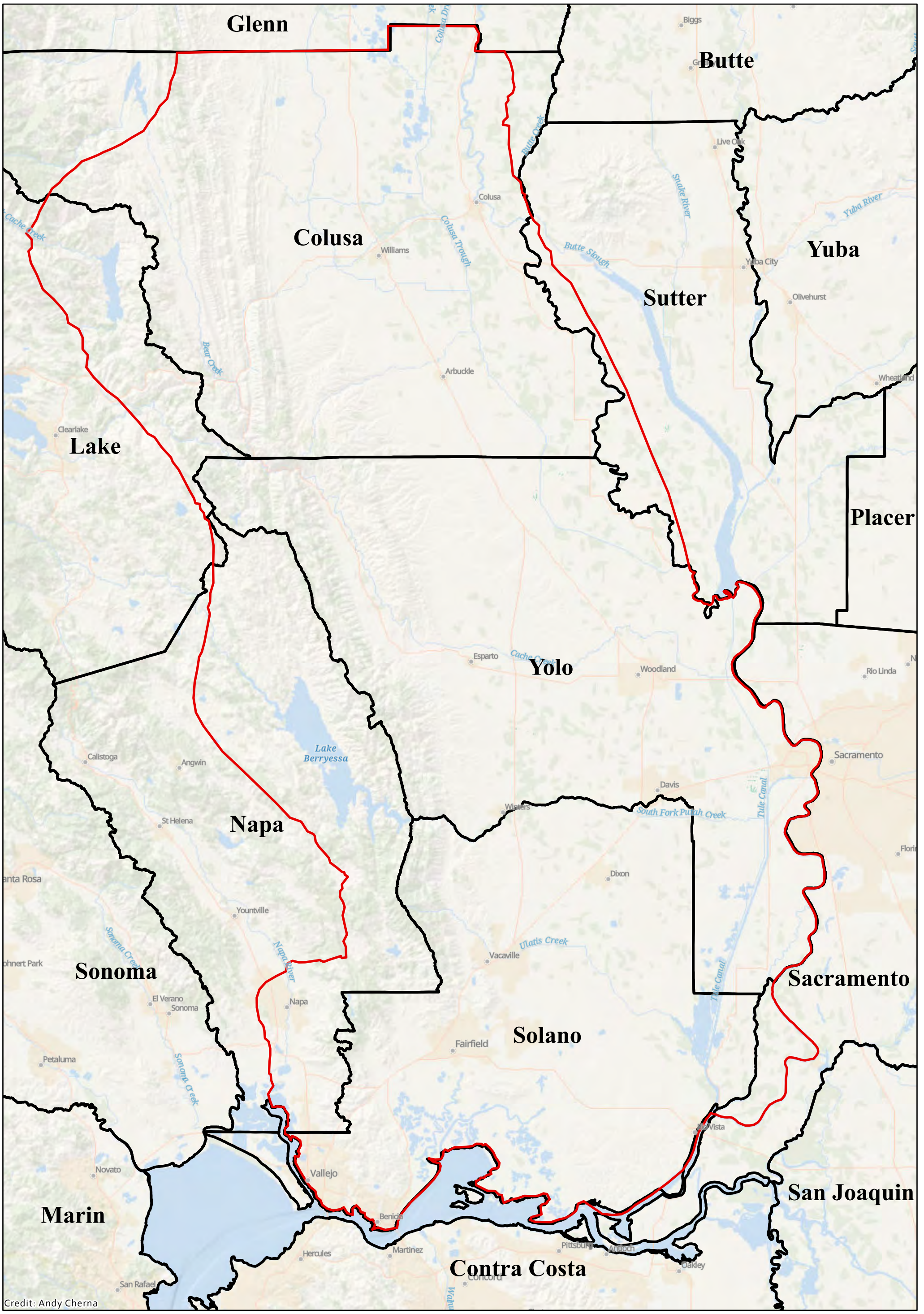
EXTERNAL:

Good afternoon, Angela. It was great talking to you and we look forward to working with you. I have attached the Aboriginal Territory map as we discussed and if you need any further information please give me a call. Thanks and have a great evening.

Laverne Bill
Cultural Resource Manager

Yocha Dehe Wintun Nation
PO Box 18 | Brooks, CA 95606
p 530.796.3400 | c 530.723.3891
f 530.796.2143
lbill@yochadehe-nsn.gov
www.yochadehe.org

Patwin Traditional Territory



1:550,000

0 10 20

Miles

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Appendix F

Mitigation Monitoring and Reporting Program

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MITIGATION MONITORING AND REPORTING PROGRAM SUMMARY TABLE

The following mitigation monitoring and reporting program (MMRP) summary table includes the mitigation measures identified in the California Regional Water Quality Control Board, Central Valley Region's (CVWB) draft environmental impact report (DEIR) for the proposed Waste Discharge Requirements for Nonpoint Source (NPS) Discharges Related to Certain Activities Conducted by the United States Forest Service (USFS) and Bureau of Land Management (BLM) on Federal Lands (Proposed Project or Federal NPS Permit). For each mitigation measure, this table identifies monitoring and reporting actions that must be carried out and the monitoring schedule.

The USFS, BLM, and/or their contractors are responsible for complying with all mitigation measures in the DEIR and this MMRP summary table. The USFS, BLM, and/or their contractors must determine whether their proposed activities (e.g., management measures) are subject to individual mitigation measures and, if applicable, take the necessary actions to ensure the mitigation measures are fully implemented. In some cases, this may involve hiring a professional (e.g., biologist, archaeologist) and becoming familiar with applicable laws and regulations.

The USFS and BLM must report their compliance with mitigation measures in summary reports, which are to be submitted or maintained as part of their overall compliance reporting for the proposed Federal NPS Permit. As the CEQA Lead Agency, CVWB is ultimately responsible for ensuring compliance with the mitigation measures identified in the EIR. CVWB will accomplish this through review of summary reports to confirm that USFS' and BLM's reported actions fully meet the requirements of the applicable mitigation measures. CVWB may also confirm mitigation measure compliance during periodic inspections of individual activity sites.

The MMRP will be made available to the USFS and BLM and they may use the checklist to help document their compliance with applicable mitigation measures. CVWB may also use the MMRP checklist to confirm and document compliance.

ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
CEQA	California Environmental Quality Act
CVWB	California Regional Water Quality Control Board, Central Valley Region
DEIR	draft environmental impact report
EIR	environmental impact report
MMRP	mitigation monitoring and reporting program
NPS	nonpoint source
Proposed Project	Waste Discharge Requirements for Nonpoint Source Discharges Related to Certain Activities Conducted by Bureau of Land Management and United States Forest Service on Federal Lands
USFS	United States Forest Service

Table F-1. Mitigation Monitoring and Reporting Summary

Mitigation Measure		Monitoring and Reporting Action (Responsible Party)	Monitoring Schedule	Completion Date and Initials
Biological Resources				
BIO-1	**Avoid and Minimize Impacts on Sensitive Biological Resources.** To address potential impacts to California special-status species, as defined and listed in Section 3.4.3 and Appendix D, and sensitive vegetation communities within riparian habitat, waterways, or wetlands, USFS and BLM must complete a desktop analysis of all such areas where management measures will be implemented prior to implementation of any management measure(s). Where construction/installation of management measures could result in impacts to such species and habitat, USFS and BLM must consult a qualified biologist[1] and use the least impactful effective management measure (based on the recommendation of the biologist), to avoid or minimize impacts. Where implementation of management measures cannot be achieved without incurring potentially significant effects to such species and habitat, USFS and BLM must implement the following measures to reduce those effects to levels that are less than significant. ▪ Avoid and minimize disturbance of riparian and other sensitive vegetation communities.	1. If not available through in-house resources, retain a qualified biologist[1]. (Federal Agency)	1. During design and planning phase.	
		2. Ensure that the least impactful effective management measure is selected to avoid impacts to biological resources, based on the recommendation of the qualified biologist. (Federal Agency)	2. During design of management measure(s).	
		3. Where areas potentially containing sensitive biological resources cannot be avoided, ensure completion of a habitat and species assessment by the qualified biologist. (Federal Agency)	3. Prior to construction / installation of management measure(s).	
		4. Ensure that management measures will not disturb any special-status species. (Federal Agency)	4. Prior to undertaking proposed activity.	

Mitigation Measure		Monitoring and Reporting Action (Responsible Party)	Monitoring Schedule	Completion Date and Initials
	▪ Avoid and minimize disturbance to areas containing California special-status plant or animal species. ▪ Where construction in areas that may contain sensitive biological resources cannot be avoided through the use of management measures, conduct an assessment of habitat conditions and the potential for presence of sensitive vegetation communities or special-status plant and animal species prior to construction. This may include the hiring of a qualified biologist if one is not available through the federal agency's in-house resources to identify riparian and other sensitive vegetation communities and/or habitat for California special-status plant and animal species. ▪ When constructing/installing management measures, ensure that such activities will not disturb any California special-status species that may be present. If installing/constructing management measures during the nesting season (generally February 1 to August 31), the qualified biologist shall inspect the surrounding trees, vegetation, and ground to ensure that nesting birds are not present within or adjacent to areas where such management measures will occur. If nests or young are identified in such areas,	5. For activities proposed during nesting season, ensure completion of survey for nesting birds and avoidance of nests / young. (Federal Agency)	5. Prior to undertaking proposed activity.	

Mitigation Measure		Monitoring and Reporting Action (Responsible Party)	Monitoring Schedule	Completion Date and Initials
	construct/install the management measures outside of the nesting season. ▪ If substantial adverse effects on sensitive biological resources cannot be avoided or reduced to a less-than-significant level, the activity will not be eligible for coverage under the Federal NPS Permit and the USFS or BLM will need to seek an individual permit from the Central Valley Water Board.			

Notes:

[1] A qualified biologist is defined as an individual with at least a four-year degree in biological sciences, natural history, environmental science, or a related field and at least three years of experience performing field work and impact analysis for species protected under the Federal and California Endangered Species Act and/or related laws. This would include conducting surveys for the presence of special-status plant and animal species, as well as developing and implementing impact avoidance and minimization measures. A qualified biologist shall be knowledgeable and experienced in the biology and natural history of plant and wildlife species and habitats that could be present in the area.