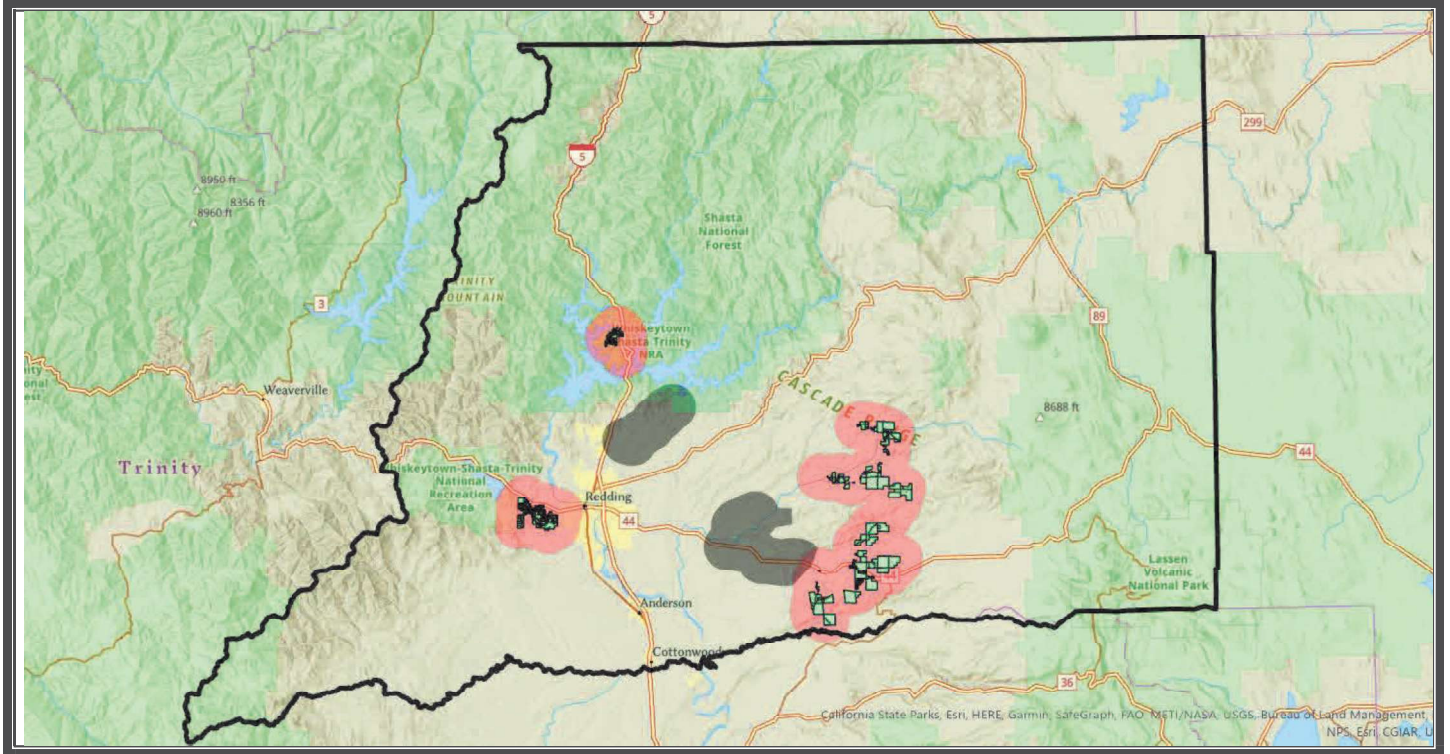


**Initial Study-Mitigated Negative Declaration
for the proposed
Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project
Shasta County, California
Under Grant #4382**



prepared by:

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for The McConnell Foundation
Under Grant # 4382_PJ0178

August 17, 2023

Contents

| | |
|---|-----------|
| MITIGATED NEGATIVE DECLARATION..... | 1 |
| Introduction and Regulatory Context..... | 1 |
| Stage of CEQA Document Development | 1 |
| Introduction..... | 1 |
| Regulatory Guidance | 1 |
| Purpose of the Initial Study..... | 2 |
| Project Location | 3 |
| Background and Need for the Project..... | 4 |
| Project Objectives | 4 |
| Project Start Date | 5 |
| Project Description..... | 5 |
| Hazard Fuel Reduction | 5 |
| Biomass Disposal..... | 6 |
| Site Restoration..... | 9 |
| Project Schedule..... | 9 |
| Best Management Practices | 9 |
| ENVIRONMENTAL SETTING OF THE PROJECT REGION | 9 |
| O’Brien Estates | 11 |
| Whitmore Road 1 | 12 |
| Fern Road..... | 13 |
| Ponderosa Way | 14 |
| Shingletown Ridge Road | 15 |
| Black Butte Road | 16 |
| Highway 44/Dersch Road West..... | 17 |
| Whitmore Road 2..... | 18 |
| Special-Status Wildlife Species | 19 |
| Special-Status Plant Species | 19 |
| Archeology..... | 33 |
| Current Land Use and Previous Impacts | 33 |
| Conclusion of the Mitigated Negative Declaration | 34 |
| Environmental Permits..... | 34 |
| Mitigation Measures | 34 |
| Summary of Findings..... | 38 |
| Initial Study-Environmental Checklist | 40 |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Environmental Factors Potentially Affected40

Determination.....41

Environmental Checklist and Discussion42

 Aesthetics 42

 Agricultural Resources..... 43

 Air Quality 44

BIOLOGICAL RESOURCES 47

 Cultural Resources 58

 Energy..... 61

 Geology and Soils 61

 Greenhouse Gas Emissions..... 65

 Hazards and Hazardous Materials 67

 Hydrology and Water Quality..... 70

 Land Use and Planning 74

 Mineral Resources 74

 Noise 75

 Population and Housing..... 76

 Public Services..... 77

 Recreation 79

 Transportation 79

 Tribal Cultural Resources 80

 Utilities and Service Systems..... 82

 Wildfire..... 83

 Mandatory Findings of Significance..... 85

PREPARERS OF THIS DOCUMENT87

EXPERTS CONSULTED87

Mitigation Monitoring and Reporting Plan89

 Potentially Significant Effects and Mitigation Measures 89

REFERENCES CITED.....96

TABLES

1 Project Activity Area (PAA) Summary..... 3

2 Potentially Occurring Special-Status Wildlife Species.....20

3 Potentially Occurring Special-Status Plant Species25

4 Greenhouse Gas Emissions.....63

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

FIGURES (included in Attachment A)

- 1 Project Location
- 2 Bear Mountain Road PAA
- 3 O'Brien Estates PAA
- 4 Whitmore Road 1 PAA
- 5 Fern Road PAA
- 6 Ponderosa Way PAA
- 7 Shingletown Ridge Road PAA
- 8 Black Butte Road PAA
- 9 Highway 44-Dersh West PAA
- 10 Whitmore Road 2 PAA
- 11 Land Use Designation
- 12 Zoning
- 13 USGS Topographic Maps
- 14 Hydrology
- 15 FEMA Flood Hazard Zones
- 16 USFWS Wetlands
- 17 Vegetation Types
- 18 Commercial Timberland
- 19 CNDDDB Occurrences
- 20 Important Farmland

ATTACHMENTS

- A Figures
- B NRCS Soils Report
- C Tribal Consultation and Cultural Records Search Documentation

MITIGATED NEGATIVE DECLARATION

Introduction and Regulatory Context

STAGE OF CEQA DOCUMENT DEVELOPMENT

- Administrative Draft.** This California Environmental Quality Act (CEQA) document is in preparation by California Department of Forestry and Fire Protection (CAL FIRE) staff.
- Public Document.** This completed CEQA document has been filed by CAL FIRE at the State Clearinghouse on 2/6/2024, and is being circulated for a 30-day state agency and public review period. The review period ends on 3/8/2024.
- Final CEQA Document.** This final CEQA document contains the changes made by the Department following consideration of comments received during the public and agency review period. The CEQA administrative record supporting this document is on file, and available for review, at CAL FIRE’s Sacramento Headquarters, Environmental Protection Program.

INTRODUCTION

This initial study-mitigated negative declaration (IS-MND) describes the environmental impact analysis conducted for the proposed project. This document was prepared for CAL FIRE staff utilizing information gathered from a number of sources including research, field review of the proposed project area and consultation with environmental planners and other experts on staff at other public agencies. Pursuant to § 21082.1 of CEQA, the lead agency, CAL FIRE, has prepared, reviewed, and analyzed the IS-MND and declares that the statements made in this document reflect CAL FIRE’s independent judgment as lead agency pursuant to CEQA. CAL FIRE further finds that the proposed project, which includes revised activities and mitigation measures designed to minimize environmental impacts, will not result in a significant effect on the environment.

REGULATORY GUIDANCE

This IS-MND has been prepared for CAL FIRE to evaluate potential environmental effects that could result following approval and implementation of the proposed project. This document has been prepared in accordance with current CEQA Statutes (Public Resources Code §21000 *et seq.*) and current CEQA Guidelines (California Code of Regulations [CCR] §15000 *et seq.*)

An initial study is prepared by a lead agency to determine if a project may have a significant effect on the environment (14 CCR § 15063(a), and thus, to determine the appropriate environmental document. In accordance with CEQA Guidelines §15070, a “public agency shall prepare...a proposed negative declaration or mitigated negative declaration...when: (a) The initial study shows that there is no substantial evidence...that the project may have a significant impact upon the environment, or (b) The initial study identifies potentially significant effects but revisions to the project plans or proposal are agreed to by the applicant and such revisions will reduce potentially significant effects to a less-than-significant level.” In this circumstance, the lead agency prepares a written statement describing its reasons for concluding that the proposed project will not have a significant effect on the environment and, therefore, does not require the preparation of

an environmental impact report. This IS-MND conforms to these requirements and to the content requirements of CEQA Guidelines § 15071.

PURPOSE OF THE INITIAL STUDY

CAL FIRE has primary authority for oversight of the proposed project and is the lead agency under CEQA. The purpose of this IS-MND is to present to the public and reviewing agencies the environmental consequences of implementing the proposed project and to describe the adjustments made to the project to avoid significant effects or reduce them to a less-than-significant level. This disclosure document is being made available to the public and reviewing agencies for review and comment. The IS-MND is being circulated for public and state agency review and comment for a review period of 30 days as indicated on the *Notice of Intent to Adopt a Mitigated Negative Declaration* (NOI). The 30-day public review period for this project begins on 2/6/2024, period ends on 3/8/2024.

The requirements for providing an NOI are found in CEQA Guidelines §15072. These guidelines require CAL FIRE to notify the general public by providing the NOI to the State Clearing House for posting, sending the NOI to those who have requested it, and utilizing at least one of the following three procedures:

- Publication in a newspaper of general circulation in the area affected by the proposed project,
- Posting the NOI on- and off-site in the area where the project is to be located, or
- Direct mailing to the owners and occupants of property contiguous to the project.

CAL FIRE will post the NOI on- and off-site at:

- Millville Post Office 24127 Old 44 Dr, Millville, CA 96062 (4381)
- Shingletown Post Office 31268 State Highway 44 Ste B, Shingletown, CA 96088
- Whitmore Post Office 30544 Whitmore Rd, Whitmore, CA 96096
- CAL FIRE Shasta-Trinity Unit Headquarters, 875 Cypress Ave., Redding, CA 96001
- Lakehead Post office 20856 Antlers Rd Lakehead, CA 9605
- Shasta Lake Post Office 1985 Cascade Blvd Shasta Lake, CA 96019Bella Vista Post Office 22515 Old Alturas Rd Bella Vista, CA 96008

If submitted prior to the close of public comment, views and comments are welcomed from reviewing agencies or any member of the public on how the proposed project may affect the environment. Written comments must be postmarked or submitted on or prior to the date the public review period will close (as indicated on the NOI) for CAL FIRE's consideration. Written comments may also be submitted via email (using the email address that appears below), but comments sent via email must also be received on or prior to the close of the 30-day public comment period. Comments should be addressed to:

Ben Rowe
Shasta-Trinity Unit Forester
RPF No.
CAL FIRE
875 Cypress Ave.
Redding, CA 96002
Phone: (530) 225-2432

Email: SacramentoPublicComment@fire.ca.gov

After comments are received from the public and reviewing agencies, CAL FIRE will consider those comments and may (1) adopt the mitigated negative declaration and approve the proposed project; (2) undertake additional environmental studies; or (3) abandon the project.

Project Description and Environmental Setting

PROJECT LOCATION

The project includes hazardous fuel reduction on private property within Wildland Urban Interface (WUI) areas in Shasta County. The project site includes nine Project Activity Areas (PAAs) throughout Shasta County adjacent to public roadways. The general location of each PAA within Shasta County is included in Figure 1 of Attachment A. Individual PAAs are shown in Figures 2 through 10. Maximum potential acreage, number of parcels, and landowners for each PAA are included in Table 1. The final acreage and number of parcels included in the project will be determined based on landowner participation and the environmental, operational, or physical constraints of each parcel. The maximum potential acreage to be treated would be 8,451 acres. The number of acres that will receive treatment and number of participating landowners will be less than the maximum extent of the PAAs. PAAs may be removed from the project if too few landowners choose to participate. At the time of preparation of this document, the acreage on which landowner participation was obtained was 6,496 acres.

| Project Activity Area | Maximum Potential Acres | Maximum Number of Parcels | Maximum Number of Landowners |
|------------------------------|--------------------------------|----------------------------------|-------------------------------------|
| Bear Mountain Road | 413 | 174 | 149 |
| O'Brien Estates | 519 | 126 | 86 |
| Whitmore Road 1 | 520 | 119 | 96 |
| Fern Road | 727 | 85 | 70 |
| Ponderosa Way | 3,737 | 125 | 72 |
| Shingletown Ridge Road | 1,331 | 109 | 33 |
| Black Butte Road | 507 | 97 | 74 |
| Highway 44 Dersch West | 487 | 87 | 79 |
| Whitmore Road 2 | 210 | 19 | 13 |

The project will not include work in areas with slopes over 65 percent or in areas with highly erosive soils on slopes greater than 50 percent. In addition, the project will include a 75-foot setback from perennial streams and wetlands and a 50-foot setback from intermittent and ephemeral streams. Prior to project implementation, special treatment zones (STZ) will be identified for known cultural resources within the project area. Dredge tailings, and areas treated previously by another party will not be included in the project. These constraint areas will be identified and treatment prescription (TP) for each individual parcel within the PAAs modified prior to project implementation.

BACKGROUND AND NEED FOR THE PROJECT

The McConnell Foundation (TMF) has been awarded a Fire Prevention Grant funded with Cap-and-Trade auction proceeds appropriated by the California Department of Forestry and Fire Protection (Cal Fire) and a wildfire mitigation grant by the California Governor's Office of Emergency Services (Cal OES) to manage hazardous vegetation under the Hazard Mitigation Grant Program (HMGP). The grants will be used to perform hazardous fuel treatments in 9 Project Activity Areas (PAAs) of widths varying between 100 and 400 feet from the roadway centerline on each side, and select landscape areas. The PAAS include critical transportation routes for ingress and egress during emergencies within high-priority Wildland Urban Interface (WUI) areas in Shasta County.

The geographic scope of the project was determined by prioritizing the areas where fire prevention activities would have the greatest impact on community safety. Work elements included in the project either are contained in *Shasta County's Community Wildfire Protection Plan* or have been identified by the CAL FIRE Unit battalion chief as projects that would protect rural communities or that are essential to evacuation routes for a large number of people. Project selection criteria were based on operational need, communities at risk, ingress and egress routes, fire history and risk of ignition.

PROJECT OBJECTIVES

The objective of the project is to reduce hazardous fuel along critical transportation routes within high -priority Wildland Urban Interface (WUI) areas in Shasta County. Through hazardous fuel reduction and roadside fuel treatment, the project will lessen the probability of moderate-to-high-severity wildfires spreading into and through WUI areas. Reducing the probability of WUI wildfires will reduce loss of life and personal injury, increase effective ingress and egress, and protect critical facilities, essential services, infrastructure, continuity of government operations, and public and private property.

The goals identified for the project include:

- Reduce the number and intensity of wildfires and suppression costs
- Increase public safety
- Increase safe ingress and egress for public and firefighters
- Increase water quantity and maintain water quality from managed watersheds
- Decrease the potential for damage from flooding, siltation, and landslides
- Protect and improve soil productivity and decrease erosion over the long term
- Improve wildlife and fisheries habitat
- Improve woodlands through fire management and regeneration
- Establish and maintain desired plant communities
- Improve air quality over the long-term
- Decrease the risk to firefighters and other responders during wildland fires

Other benefits include the following:

- Protection of cultural resources
- Protection of ecosystem services such as water quality, flood control, green infrastructure, wildlife habitat, soil structure and carbon sequestration

- Provision of a safer working environment for firefighters by reducing fire severity, intensity, and rate of spread, allowing them to more effectively combat catastrophic wildfires

PROJECT START DATE

Spring 2024

PROJECT DESCRIPTION

The proposed action consists of removing ground and ladder fuels up to 400 feet from each side of the PAA roadway centerlines, thinning trees to reduce crown closure, removing dead and dying trees within 100 to 200 feet of serviceable roadways or within landscape areas, and after removal activities, applying herbicide at regular intervals to control the future regrowth of unwanted vegetation and maintain an understory canopy without fire-prone fuels.

Work will focus on improving forest health, including vegetation management, forest undergrowth reduction and biomass utilization. Treatment will focus on reducing vertical and horizontal continuity of fuels; removing competition from small, closely spaced, fire-vulnerable species; and promoting a smaller number of resilient larger trees. Generally, living trees will be spaced to a distance of greater than 30 feet. These fuel reduction treatments will allow roadways to serve as areas where fire intensity decreases and can act as strategic locations to deploy firefighting resources in the event of fire, hampering fire's ability to jump roadways. Both mechanized and manual techniques will be deployed for the removal of fuels. Areas that would be heavily disturbed by equipment or stacked logs would be reseeded with sterile cover crops or mulched with certified weed-free rice straw or wheat straw. Fuel reduction, biomass disposal, herbicide treatment and site restoration activities are described in greater detail below.

The treatment contractor will conduct the hazardous fuel reduction techniques appropriate for each individual parcel. A Preliminary Site Assessment (PSA) will be conducted on each eligible parcel to identify water courses, special-status species and habitat, cultural resources, or any other obstacles to be avoided. An individual Treatment Prescription (TP) will be developed for each parcel based on the Preliminary Site Assessment.

Commercial sized trees will be included in the thinning operations. Commercial sized logs may be left for the property owner of each parcel to sell appropriately or will be sold by the treatment contractor to offset project costs. Property owners who elect to sell commercial sized logs will be required to submit and receive approval of an appropriate Timber Harvest Document per the California Forest Practice Rules prior to any timber operations, pursuant to Title 14 California Code of Regulations.

HAZARD FUEL REDUCTION

Fuel reduction will use mechanized or manual techniques. The mechanized technique will involve the use of heavy machinery and equipment such as track hoes, track chippers, track equipment with masticator heads, and logging equipment. The manual technique will involve the use of hand crews equipped with chainsaws and other field-deployable equipment. The mechanized technique may cover more acreage per day, but its use is limited by slope, access, seasonal consideration, and similar limitations that do not apply to the manual technique. Mechanical treatment will not

occur on slopes of 65% or greater or whenever site conditions require handwork. The general contractor(s) or subcontractors will determine which technique or combination of techniques will be appropriate for each PAA following the Preliminary Site Assessment.

Mechanical Treatment

Mechanical treatment is effective for removing dense stands of vegetation and is typically used in shrub and tree fuel-removal operations. Mechanical treatments are generally the most cost effective and are the preferred treatments under the project. Mechanical treatments that may be used during the project include:

- Mastication (track, rubber tire or skid steer mounted)
- Logging and skidding
- Bucket and boom
- Chipping and grinding

Manual Treatment

Manual treatment would involve the use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. Activities could include the following:

- Removing trees and undesirable species with chainsaws, lopper, or pruners
- Pulling, grubbing, or digging out root systems of undesired plants to prevent sprouting and regrowth
- Placing mulch around desired vegetation to limit competitive growth
- Hand piling for burning

Ground disturbance from manual treatments is typically less than mechanical treatment within an equivalent area. Manual treatments will be used in sensitive habitats such as riparian areas, on steeper slopes, within constrained areas (biological or archeological), and in areas that are inaccessible to vehicles and around structures.

BIOMASS DISPOSAL

Biomass waste generated is anticipated to include:

- Removal of woody debris up to 6 inches in diameter, woody debris, commercial and non-commercial trees at an undesired density as determined by a registered professional forester, or supervised designee.
- Green plant material from thinning and brush residuals
- Cut shrubs, branches, and saplings.
- Branches and logs from dead or mortally diseased trees.
- Felled trees.

On-Site Disposal

Some residual biomass from treatment activities may be left in place for habitat, erosion control or other purposes. Biomass that is of a size and constitution suitable for chipping will be disposed of on-site to the extent that it is feasible to do so without compromising the objective of reducing fire risk and fuel load. Such biomass will be handled in the following manner:

- Green waste will be cut or chipped
- Logs and large branches, free of smaller branches and leaves., will be cut into pieces and material will be masticated, chipped or lopped and scattered per Forest Practice hazard reduction requirements.

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

- Chipped waste will be disposed where appropriate in a manner that suppresses invasive plant and weed growth and helps stabilize soil in steep terrain. In no case will chipped material be spread greater than 2 inches.
- Green waste piles will not be placed in Defensible Space Zones (they will be moved to other areas within open lands).
- Green waste from branches and logs from dead or mortally diseased trees, particularly those that might be infected with sudden oak death, will not be chipped. But will be left to decompose in place help prevent spread of disease.

Key points for the above parameters include spreading to a depth of 2 inches and avoiding piling around remaining trees.

Off-Site Disposal

Strategic use of biomass that is removed from the site can divert material from decay and open-pile burning that landowners currently do; this will produce greenhouse gas reduction benefits outside of the forest. Use of this material can provide renewable electricity and potentially biofuels, offsetting consumption of fossil fuels. The project will use biomass facilities as a first option for the disposal of woody biomass generated by project activities. Several biomass facilities are located in Shasta County in the Anderson and Burney areas. Biomass will be delivered to the nearest facility where economically and contractually feasible to reduce transportation-related emissions. Delivery of biomass material (chips and or/logs) is estimated at a rate of 0.5 loads per acre on 40 percent of the acreage. Any income generated from Off-Site Biomass operations will be reported and used to offset project costs.

Herbicide Treatment

Most or all treatment areas will need some level of pre-treatment with herbicide prior or post biomass removal. A secondary herbicide treatment prescription will be applied where fuel reduction work has been completed. The treatment prescription will be determined by a California Licensed Pest Control Advisor (PCA) and will target the control of fire-prone and invasive vegetation. Treatments will be prescribed by a PCA during periods of the year when species are most vulnerable and will promote restoration of native or desired plant communities that reduce the potential for accumulating excessive fuel loads and increased wildfire hazards.

All herbicide applications for this project will be conducted using hand-backpack equipment. Only the following herbicides will be used onsite (unless otherwise specified by a PCA):

- Glyphosate (Rodeo/ Roundup)
- Triclopyr (Garlon 4/Vastlan)
- Imazapyr (Arsenal/Chopper)
- Aminopyralid (Milestone)

For work between 50 and 200 feet of a wetland or waterbody, herbicides will be restricted to glyphosate-based herbicides that are approved by the EPA for use around water (e.g., Rodeo), per FEMA Best Management Practices.

The use of cut stump treatment is allowed, but is discouraged around residential properties where

non-target vegetation may be affected through root-to-root contact.

All work will be conducted by Licensed Pest Applicators. Due to the nature of the project, licensed applicators must have either a *right-of-way* or *landscape certification* (i.e. forestry alone is insufficient).

Glyphosate

Glyphosate, known by the common name of Roundup or Rodeo, is the most commonly used broad-spectrum, non-selective systemic herbicide in the United States. It is categorized as a phosphonomethyl amino acid. Some varieties are also used to control aquatic plants. It kills both broadleaf plants and grasses and works by preventing plants from making certain proteins that they need for plant growth. It is absorbed through the leaves and is translocated throughout the plant. Glyphosate concentrates in the meristem tissue where it stunts growth, malforms and discolors leaves, and causes death. It has very low toxicity to birds and mammals. It is moderately toxic to fish. The typical half-life of glyphosate in soil is 47 days. It is relatively unaffected by light. Surfactants can help improve the efficacy of glyphosate. Colorants and dyes that are agriculturally approved may be added to this product.

Triclopyr

Triclopyr, known by the common names of Garlon 4 and Vastlan, is one of the most commonly used selective systemic herbicides. It is used to control woody and herbaceous broadleaf plants with little to no impact on grasses. It works by mimicking the plant growth hormone auxin and causes uncontrolled and disorganized plant growth and allows the cell walls to separate causing vascular tissue destruction and death. Triclopyr is slightly toxic to fish, birds, and mammals. The typical half-life of Triclopyr is 30 days. It degrades readily in the sunlight. The Garlon formulation can be highly volatile and must be applied in cool temperatures with no wind. The Vastlan formulation is more stable and may be used at higher temperatures. A surfactant should be added to increase efficacy.

Imazapyr

Imazapyr, known by the common names of Arsenal and Chopper, is a non-selective herbicide which can control grasses, broadleaves, vines, brambles, shrubs, trees, and riparian emergent species. It is categorized in the herbicide family as Imidazolinone and works by inhibiting plant growth by preventing synthesis of branched-chain amino acids. It translocates in the xylem and phloem to meristematic tissues where it inhibits the enzyme that is required for plant growth. Imazapyr has a low toxicity to mammals, birds, fish, or invertebrates but can cause damage if gotten in the eye. The typical half-life of Imazapyr is one to five months. It rapidly degrades in sunlight. Imazapyr is not readily volatile; however, in increased temperature, the potential for volatility increases. A surfactant should be added to increase efficacy.

Aminopyralid

Aminopyralid, also known as Milestone, is a broad-spectrum herbicide used to control noxious, poisonous, and invasive broadleaf weeds – especially thistle and clovers. It is intended for rangeland pastures and non-cropland areas. It is categorized as a pyridine carboxylic acid and provides residual weed control. It works by affecting the growth process by causing uneven cell division when it mimics the plant growth hormone auxin. It disfigures and cracks stems and leaves, killing the plant. Aminopyralid is virtually non-

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

toxic to birds, fish, mammals, and aquatic invertebrates but can cause eye damage if exposure occurs. There are no grazing restrictions with this herbicide. The average half-life of Aminopyralid in soil is 40 days. It is highly water soluble and the half-life in water is 15 hours. It is not significantly degraded by sunlight. A surfactant should be added to increase efficacy. Aminopyralid is non-volatile and is considered a *reduced risk* herbicide by the EPA.

Surfactants

Surfactants are added to herbicides to improve performance and reduce application problems. Surfactants are surface-active agents and they aid by increasing the spreading and wetting properties of herbicide liquids. They improve retention and penetration and generally work by reducing surface tensions and increasing the amount of herbicide that reaches the target site. Nonionic surfactants work well with glyphosate, while petroleum oil-based surfactants inhibit glyphosate performance. Surfactants that are oil based are more effective for annual grasses or weeds with waxy cuticles. It is important to select the proper surfactant for the proper herbicide. All surfactants are good dispersing agents and have low toxicity to plants and animals.

SITE RESTORATION

Some degree of ground disturbance will be caused by the machinery and equipment that will be used with any mechanized techniques. Disturbance will be addressed to ensure that additional risks (erosion and slope destabilization) do not occur. Grass seeding, slash packing or other appropriate erosion control or slope stabilization techniques will be deployed on any site where site inspection determines that disturbance would likely lead to an increased risk of erosion or slope stabilization. The technique to be used will be site-specific and will be implemented by hand crews in areas that are sensitive to soil stabilization issues. The determination of risk will be based on:

- Exposure of the disturbance
- Soil type disturbed
- The capability of the soil to support germination of grass seeding
- Timeframe (proximity to the rainy season)
- Proximity of the disturbance to a water course

PROJECT SCHEDULE

Project activities will be limited to the hours of 7:00 a.m. to 7:00 p.m. during weekdays and 8:00 a.m. to 5:00 p.m. on Saturday and Sunday.

BEST MANAGEMENT PRACTICES

Applicable Best Management Practices (BMPs) included in the FEMA *Programmatic Environmental Assessment, Recurring Actions in Arizona, California, and Nevada* (December 2014). The BMPs included in EA document applicable to the project are listed in Checklist and Discussion section of this document. The treatment contractor will be required to adhere to these BMPs during project implementation.

ENVIRONMENTAL SETTING OF THE PROJECT REGION

The project site includes areas adjacent to critical transportation routes for rural communities located throughout Shasta County in the wildland urban interface (WUI).

DESCRIPTION OF THE LOCAL ENVIRONMENT

The project includes 9 Project Activity Areas (PAAs) located throughout Shasta County. The location of each PAA within the County is included in shown in Figure 1. A Description of the Local Environment within each PAA is described in this section. Individual PAAs area shown in Figures 2 through 10. PAAs included in this grant project include: Bear Mountain Road, Black Butte Road, Fern Road, Highway 44/Dersch West, O'Brien Estates, Ponderosa Way, Shingletown Ridge Road, Whitmore Road 1, and Whitmore Road 2.

BEAR MOUNTAIN ROAD

The Bear Mountain Road PAA is located north of the City of Redding and east of Interstate 5. The Bear Mountain Road PAA is shown in Figure 2. The PAA includes areas adjacent to the length of Bear Mountain Road between Old Oregon Trail and Dry Creek Road. The PAA contains dense vegetation encroachment immediately adjacent to the road and contains a high density of single-family residences. Bear Mountain Road is the primary emergency access route and evacuation route for the Bear Mountain area.

Shasta County General Plan land use designations within the PAA include RA: Rural Residential A, RB: Rural Residential B, and MU: Mixed Use (Shasta County 2022). Zoning designations for parcels within the PAA include: R-R-T-BSM: Rural Residential-Mobile Home District-Building Site Minimum, MU: Mixed Use District, U: Unclassified, OS: Open Space, RL: Limited Residential, EA-AP: Exclusive Agricultural District-Agricultural Preserve District, C-R: Commercial Recreation, R-R: Rural Residential, R-R-T: Rural Residential—Mobile Home District, R-R-BSM: Rural Residential -Building Site Minimum, R-R-BA-7: Rural Residential-7-Acre Minimum, and PD: Planned Development (Shasta County 2022). General Plan designations and Zoning designations for each PAA are shown on Figure 11 and Figure 12 respectively.

The PAA is located primarily within the Clear Creek- Sacramento River Watershed (HUC8 18020154) and enters the Cow Creek Watershed (HUC8 18020151) within the eastern most 0.75 mile of the PAA (CDFW 2022a). The western side of the PAA is partially within the Redding Area-Enterprise Groundwater Basin (GBN: 5-006.4) (CDWR 2022). Slopes within the PAA are generally under 30 percent, with a steeper area just south of Marti Lane. Topography generally slopes southwest toward the Sacramento River. Elevations range from 680 to 1120 feet above mean sea level (MLS) as shown on Figure 13A (USGS 2010).

Within the Cow Creek watershed section of the PAA, the project crosses Dry Creek an intermittent tributary to Little Cow Creek and two of its unnamed tributaries. Within the Clear Creek-Sacramento River Watershed, the project crosses or includes five streams. East Valley Creek and Deep Hole Creek, intermittent tributaries to East Fork Stillwater Creek. East Fork Stillwater Creek an intermittent tributary to Stillwater Creek and one of its unnamed tributaries (CDFW 2022a, USGS 2022). Hydrology within the PAA is shown on Figure 14A. The PAA crosses the 100-year flood plains associated with East Fork Stillwater Creek and Deep Hole Creek. These areas are mapped as Zone A by FEMA's National Flood Hazard Layer Viewer (FEMA 2020), the rest of the PAA is Zone X (Figure 15A).

Other waterbodies within the PAA includes three ponds. The largest of the ponds is to the south of Bear Mountain Road at the intersection with Spring Lake Street. The next being south of the Bear Mountain Road and Ferine Way intersection along edge of the PAA. The smallest exists north

of Bear Mountain Road between Kitty Hawk Lane and Gloria Terrace. According to U.S. Fish and Wildlife Service Wetlands Mapper, no wetlands occur within the PAA (Figure 16A).

The Bear Mountain Road PAA contains a variety of vegetation types the most common of which is Blue Oak Woodland. There is also large portions Montane Hardwood, Blue Oak-Foothill Pine, Mixed Chaparral, and some limited instances of Montane Hardwood-Conifer, Sierra Mixed Conifer, Pondarosa Pine, Annual Grassland, and Pasture (CDFW 2022b). Mapped CWHR vegetation types are shown on Figure 17A. Areas with potential commercial timber are limited to Montane Hardwood, Montane Hardwood-Conifer, Sierra Mixed Conifer, and Pondarosa Pine habitats (Figure 18A).

Soils in the Bear Mountain Road PAA are often well drained and vary in runoff class from medium to high, with few instances of runoff class varying up to very high or very low. Soils in this area often have gravel and clay components. Gravelly loam, clay loam, gravelly clay loam, are common profiles of the soils in this area. Loam, clay, very stony loam, gravelly fine sandy loam, occur but are less common. Soil parent materials vary and include alluvium, alluvium derived from igneous, metamorphic, and sedimentary rock, or residuum weathered from shale, sedimentary rock metavolcanics, or greenstone (NRCS 2022). A custom soils inventory report for the entire project area including all PAAs is included in Attachment B.

O'BRIEN ESTATES

The O'Brien Estates PAA is located north of Shasta Lake on the west side of Interstate 5. The O'Brien Estates PAA is shown in Figure 3. The PAA includes areas adjacent to multiple roadways within and in the vicinity of the O'Brien Mountains Estates community. The PAA is located in a subdivision with dense vegetation encroachment immediately adjacent to the only access roads within the subdivision.

General Plan designations within the PAA are N-R: Recreation Resource, and PUB: Public Land (Shasta County 2022). Zoning designations for parcels within the PAA include: NRA-S: National Recreation Area-Shasta Unit District, NRA-S-T-BSM: National Recreation Area-Shasta Unit - Mobile Home District- Building Site Minimum, R-R-BA-2.5-NRA-S: Rural Residential-2.5-Acre Minimum- National Recreation Area-Shasta Unit District, and R-L-NRA-S: Limited Residential-National Recreation Area-Shasta Unit District (Shasta County 2022). General Plan designations and Zoning designations for the PAA are shown on Figure 11 and Figure 12, respectively.

The PAA is located primarily within the Sacramento Headwaters Watershed (HUC8 18020005), excluding the southernmost section of the project which is within the McCloud Watershed (HUC8 18020004) (CDFW 2022a). The PAA is adjacent to the O'Brien Creek inlet of the Sacramento River Arm of Lake Shasta (USGS 2022). The PAA is not located within a 100-year floodplain or a groundwater basin (FEMA 2022, CDFW 2022a). Slopes in the PAA range from under 30 percent to steeper slopes reaching over 65 percent on O'Brien Mountain. Topography in the vicinity generally slopes west and southwest. Elevations range from 1060 to 2640 feet above MLS. Topography for the PAA is shown on Figure 13A.

There are six intermittent streams and one perennial stream that cross or exist within the O'Brien Mountain Estates PAA (CDFW 2022a, USGS 2022). All streams within the PAA flow downhill to the, west and southwest into Lake Shasta (USGS 2010). Hydrology within the PAA is shown on Figure 14A. According to U.S. Fish and Wildlife Service Wetlands Mapper, no wetlands exist within the PAA (Figure 16A).

The vegetation within the O'Brien Estates PAA is somewhat variable with the PAA being an even

mix of Montane Hardwood, Montane Hardwood-Conifer, Sierra Mixed Conifer, and Ponderosa Pine. Small patches of Blue Oak-Foothill Pine, Annual Grassland, Mixed Chaparral, Montane Chaparral, and Closed-Cone Pine-Cypress are also present (CDFW 2022b). Mapped CWHR vegetation types are shown on Figure 17A. Areas with potential commercial timber include Montane Hardwood, Montane Hardwood-Conifer, Sierra Mixed Conifer, and Ponderosa Pine habitats. Potential commercial timber covers the vast majority of the PAA (Figure 18A).

Soils in the O'Brien Estates PAA are well drained, with a very high runoff class. Soils are commonly comprised of gravelly loam, gravelly clay loam, very gravelly clay loam, extremely cobbly and clay loam. Parent materials of these soils is residuum weathered from metamorphic rock, metasedimentary, metavolcanics, granite, or sedimentary rock (NRCS 2022).

WHITMORE ROAD 1

The Whitmore Road 1 PAA includes areas adjacent to Whitmore Road between Fern Road and Ponderosa Way including the community of Whitmore. The Whitmore Road 1 PAA is shown in Figure 4. The PAA includes dense vegetation encroachment immediately adjacent to the county road. Whitmore Road is a primary emergency access and evacuation route for the area.

General Plan designations within the PAA include RB: Rural Residential B, MU: Mixed Use, N-H-40: Habitat Resources 40-Acre Density, N-H-80 Habitat Resource 80-Acre Density, and T: Timber (Shasta County 2022). Zoning designations for parcels within the PAA include U: Unclassified, R-L: Limited Residential, PF: Public Facilities, TP: Timber Production, MU: Mixed Use District, R-L-T: Limited Residential- Mobile Home District, HP-BA-40: Habitat Protection District- 40-Acre Minimum, R-L-BSM: Limited Residential- Building Site Minimum, HP-BA-80: Habitat Protection District- 80-Acre Minimum, and EA-AP: Exclusive Agricultural District-Agricultural Preserve District (Shasta County 2022). General Plan designations and Zoning designations for the PAA are shown on Figure 11 and Figure 12 respectively.

The Whitmore Road 1 PAA is located within the Cow Creek Watershed (HUC8 18020151) (CDFW 2022a). The PAA does not have any mapped 100-year flood plains and is not within a groundwater basin (FEMA 2022, CDFW 2022a). Slopes within the PAA are generally under 30 percent. Topography in the vicinity generally slopes west and southwest toward the Sacramento River. Elevations range from 1320 to 2340 feet above MSL (USGS 2010). Topography for the PAA is shown on Figure 13B.

The PAA crosses or includes four streams including two unnamed tributaries to Mill Creek, an unnamed spring fed tributary to Old Cow Creek, and Old Cow Creek a perennial tributary to Cow Creek (CDFW 2022a, USGS 2022). Hydrology within the PAA is shown on Figure 14B. According to U.S. Fish and Wildlife Service Wetlands Mapper, Freshwater Emergent Wetlands and Freshwater Forested/Shrub Wetland may be found along the streams onsite. The largest potential wetland areas exist between the two Mill Creek tributaries southwest of the Bosworth Lane and Whitmore Road intersection, and between Whitmore Road and Big Spring Road where the spring fed tributary to Old Cow Creek originates (Figure 16B).

The western half of the Whitmore Road 1 PAA is dominated by Blue Oak Woodland and Mixed Chaparral habitat interspersed with areas of Pasture, Annual Grassland, Montane Hardwood habitats. The eastern half of the PAA is Mixed Chaparral, and Montane Hardwood which becomes more common before giving way to Ponderosa Pine intermixed with Montane Harwood-Conifer, Montane Hardwood and Mixed Chaparral (CDFW 2022b). Mapped CWHR vegetation types are shown on Figure 17B. Commercial timber species are limited to the Ponderosa Pine, Montane

Hardwood and Montane Hardwood-Conifer habitat. Potential timberlands dominate the eastern side of the project but are sparse on the western side (Figure 18B).

Soils in the Whitmore Road 1 PAA vary somewhat and can range from excessively drained to moderately well drained, with most being well drained. Soils in this area have a runoff class that range widely from very low to very high, however most soils are classified as medium or high. Soils have high occurrences of stone and clay with most common soil profiles being stony loam, clay loam, stony clay loam, and clay. Other less common profiles occurring in the area include sandy clay loam, very cobbly sand, very cobbly loam, slightly decomposed plant material, and loam. Many soils in this PAA are volcanic, and parent materials for these soils include residuum weathered from volcanic rock, colluvium over residuum weathered from andesitic tuff breccia, residuum weathered from tuff breccia, and colluvium derived from volcanic rock. Parent materials for nonvolcanic soils in this area included: gravelly alluvium, and residuum weathered from sedimentary rock (NRCS 2022).

FERN ROAD

The Fern Road PAA includes areas adjacent to Fern Road and a portion of Whitmore Road north of the community of Whitmore. The Fern Road PAA is shown in Figure 5. The PAA includes dense vegetation encroachment immediately adjacent to the county road. Fern Road is a primary emergency access and evacuation route for the area.

General Plan designations within the PAA include A-G Agricultural Grazing, N-H-40: Habitat Resource 40-Acre Density, N-H-80: Habitat Resource 80-Acre Density, and T: Timber (Shasta County 2022). Zoning designations for parcels within the PAA include TL: Timberland, HP-BA-80: Habitat Protection District- 80-Acre Minimum, TP: Timber Production, U: Unclassified, HP-BA-40: Habitat Protection District- 40-Acre Minimum, HP-BSM: Habitat Protection District-Building Site Minimum, A-1-BA-4: Limited Agriculture - 4-Acre Minimum, EA-AP: Exclusive Agricultural District-Agricultural Preserve District, PD: Planned Development, R-L: Limited Residential (Shasta County 2022). General Plan designations and Zoning designations for the PAA are shown on Figure 11 and Figure 12 respectively.

The PAA is located within the Cow Creek Watershed (HUC8 18020151) (CDFW 2022a). The PAA does not have any mapped 100-year floodplains and is not within a groundwater basin (FEMA 2022, CDFW 2022a). Slope onsite are generally under 30 percent except for some steep areas along the canyon where Old Cow Creek flows. Topography in the vicinity generally slopes west and southwest. Elevations range from 2280 to 3120 feet above MSL (USGS 2010). Topography for the PAA is shown on Figure 13B.

The Fern Road PAA crosses Dry Clover Creek, a perennial tributary to Clover Creek, and one intermittent tributary, Old Cow Creek a perennial tributary to Cow Creek, and two of its unnamed intermittent tributaries, Glendenning Creek two of its unnamed intermittent tributaries, and one of its unnamed perennial tributaries. Glendenning Creek flows into Old Cow Creek west of the PAA (CDFW 2022a, USGS 2022). Hydrology within the PAA is shown on Figure 14B.

Several ponds exist within the project boundaries. The northern most is north of Fern Road near the intersection of Loy Lane and Fern Road. One pond exists just northwest of the Fern Road, and Backachers Way intersection. A small collection of four ponds exists around the intersection of Fern Road and Two Ponds Lane, two of which exist within the PAA. According to U.S. Fish and Wildlife Service Wetlands Mapper, Freshwater Emergent Wetlands and Freshwater Forested/Shrub Wetland may be found along the streams and ponds within the PAA (Figure 16B).

The northern sections of the Fern Road PAA is most commonly Ponderosa Pine habitat commonly intermixed with, Montane Hardwood, Montane Hardwood-Conifer, Mixed Chaparral and Blue Oak Woodland. The southern end of the project is primarily Mixed Chaparral and Blue Oak Woodland (CDFW 2022b). Mapped CWHR vegetation types are shown on Figure 17B. Potential timberlands consist of the Montane Hardwood-Conifer, Montane Hardwood and Ponderosa Pine habitats. Timberland species are found throughout the project, but in much higher densities in the northern section of the PAA (Figure 18B).

Soils in the Fern Road PAA are diverse and vary from modestly well drained to excessively drained and have run off classes ranging from very low to very high. Soils in this area have high occurrences of clay, gravel, or stone with more limited occurrences of sandy soils. Typical soil profiles range widely but commonly include clay, stony loam, clay loam, gravelly loam, stony clay, stony clay loam. Parent materials for these soils are alluvium derived from volcanic rock, colluvium derived from volcanic rock, residuum weathered from: sedimentary rock, tuff breccia, volcanic rock, or metasedimentary rock (NRCS 2022).

PONDEROSA WAY

The Ponderosa Way PAA includes areas adjacent to Ponderosa Way between Whitmore Road and Highway 44 south of the community of Whitmore and landscape areas along Highway 44 and north of Shingletown. The Ponderosa Way PAA is shown in Figure 6. The Ponderosa Way PAA is mapped within *Shasta County's Community Wildfire Protection Plan* in the Cow Creek and Shingletown Planning Units. The PAA contains variable hazardous fuel density.

General Plan designations within the PAA include A-G: Agricultural Grazing, N-H-40: Habitat Resource 40-Acre Density, N-H-80: Habitat Resource 80-Acre Density, RA: Rural Residential A, RB: Rural Residential B, and T: Timber (Shasta County 2022). Zoning designations for parcels within the PAA include U: Unclassified, TP: Timber Production, TL: Timberland, EA-AP: Exclusive Agricultural District-Agricultural Preserve District, EA: Exclusive Agriculture District, R-L: Limited Residential, R-L-T: Limited Residential- Mobile Home District, PF: Public Facilities (Shasta County 2022). General Plan designations and Zoning designations for the PAA are shown on Figure 11 and Figure 12 respectively.

The northern section of the Ponderosa Way PAA between Whitmore Road and Alamine Peak is within the Cow Creek Watershed (HUC 8: 18020151), south of Alamine Peak until the PAA's southern terminus at State Route 44 is within the Clear Creek-Sacramento River Watershed (HUC8 18020154) (CDFW 2022a). The PAA does not have any mapped 100-year flood plains and is not within a groundwater basin (CDFW 2022a, FEMA 2022). Slopes within the PAA are generally under 30 percent with steeper slopes along South Cow Creek and North Fork Bear Creek. Topography in the vicinity generally slopes west and southwest toward the Sacramento River. Elevations range from 1900 to 3600 feet above MSL (USGS 2010). Topography for the PAA is shown on Figure 13B.

Within the Cow Creek Watershed area, the project crosses South Cow Creek a perennial tributary to Cow Creek, Hamp Creek a perennial tributary to South Cow Creek, and an unnamed intermittent tributary to South Cow Creek. Within the Clear Creek-Sacramento River Watershed the project crosses North Fork Bear Creek, a perennial tributary to Bear Creek, Snow Creek a perennial tributary to North Fork Bear Creek and four unnamed intermittent tributaries. Further south the project crosses South Fork Bear Creek a perennial tributary to Bear Creek, one of its unnamed intermittent tributaries, and an unnamed intermittent tributary to Sheridan Creek. The landscape area of the PAA includes South Fork Bear Creek and fourteen of its intermittent tributaries.

(CDFW 2022a, USGS 2022). Hydrology within the PAA is shown on Figure 14B. Several small ponds exist in the vicinity of this project area, but area not found within the project bounds. According to U.S. Fish and Wildlife Service Wetlands Mapper, Freshwater Emergent Wetlands and Freshwater Forested/Shrub Wetland may be found along the streams and ponds within the PAA (Figure 16B).

The Ponderosa Way PAA is comprised of mostly Ponderosa Pine in this northern most section which then transitions to mix of Mixed Chaparral, Blue Oak Woodland, and Montane Hardwood-Conifer. Further south the PAA becomes dominated by Montane Hardwood, and Blue Oak Woodland interspersed with Annual Grasslands, Ponderosa Pine and Mixed Chaparral. The PAA then transitions back to predominantly Ponderosa Pine habitat in its far southern reaches, with Mixed Chaparral Ponderosa Pine, Montane Hardwood, Blue Oak Woodland, Sierran Mixed Conifer, Montane Hardwood-Conifer, Wet Meadow, and Annual Grassland in the Landscape area (CDFW 2022b). Mapped CWHR vegetation types are shown on Figure 17B.

Soils in the Ponderosa Way PAA are primarily well drained, with some variation in soils from poorly drained to excessively drained. Run off classes for these soils range from low to very high. Soil profiles vary widely between the map units within the PAA. Most soils in the area have a significant gravel or stone component but range widely in the sand, clay, and loam makeup of the typical profiles. Common parent materials for soils in this PAA are colluvium over residuum weathered from andesitic tuff breccia, alluvium, alluvium derived from volcanic rock, residuum weathered from volcanic rock, sandstone, metasedimentary rock, metamorphic rock, greenstone, and tuff breccia (NRCS 2022).

SHINGLETOWN RIDGE ROAD

The Shingletown Ridge Road PAA includes areas adjacent to the length of Shingletown Road between Highway 44 and Black Butte Road, with landscape areas west of Shingletown Ridge Road and Highway 44. The PAA is southwest of the community of Shingletown. The Shingletown Ridge Road PAA is shown in Figure 7. The PAA contains lower density hazardous fuels than typical PAAs.

General Plan designations within the PAA include T: Timber, N-H-40: Habitat Resource 40-Acre Density, RA: Rural Residential A, RB: Rural Residential B, and MR: Mineral Resource (Shasta County 2022). Zoning designations for parcels within the PAA include: R-R-T-BA-5 Rural Residential-Mobile Home District- 5-Acre Minimum, TP: Timber Production, TL: Timberland, U: Unclassified, R-L-BSM: Limited Residential- Building Site Minimum, R-L-BA-30: Limited Residential 30-acre minimum, EA: Exclusive Agriculture District, R-L: Limited Residential, EA-BA-40: Exclusive Agriculture District- 40-Acre Minimum, EA-BA-40-MRB: Exclusive Agriculture District- 40-Acre Minimum-Mineral Resource Buffer, MR: Mineral Resource District. General Plan designations and Zoning designations for the PAA are shown on Figure 11 and Figure 12 respectively.

The PAA is almost entirely within the Battle Creek Watershed (HUC8 18020153), except the farthest southwest corner of the project which briefly crosses into the Clear Creek-Sacramento River Watershed (HUC8 18020154) (CDFW 2022a). The PAA does not have any mapped 100-year flood plains and is not within a groundwater basin (CDFW 2022a, FEMA 2022). Slope within the PAA are generally under 30 percent with steeper slopes along Ash Creek and Shingle Creek. Topography in the vicinity generally slopes west and southwest toward the Sacramento River. Elevations range from 2040 to 3400 feet above MSL (USGS 2010). Topography for the PAA is shown on Figure 13B.

The project includes Shingletown Creek a perennial stream and one of its intermittent tributaries, Lack Creek a perennial Ash Creek a perennial tributary to the Sacramento River which enters the PAA and runs along the road for about 3.2 miles crossing multiple times. A section of an intermittent tributary to Baldwin Creek flows out of a pond to the south of Shingletown Ridge Road near the PAA's southwestern terminus east of Black Butte and enters the PAA briefly before flowing south towards Baldwin Creek (CDFW 2022a, USGS 2022). Hydrology within the PAA is shown on Figure 14B. According to U.S. Fish and Wildlife Service Wetlands Mapper, Freshwater Emergent Wetlands and Freshwater Forested/Shrub Wetland may be found along Ash Creek and Lack Creek within the PAA (Figure 16B).

In the Shingletown Ridge Road PAA, the northern most PAA is exclusively Ponderosa Pine habitat it then transitions to a mix of Mixed Chaparral, Annual Grassland, Montane Hardwood-Conifer, Blue Oak Woodland. The southern half of the PAA is dominated by Blue Oak Woodland, and Annual Grassland with limited distribution of Ponderosa Pine, Blue Oak -Foothill Pine, Mixed Chaparral, Montane Hardwood, and Montane Hardwood-Conifer (CDFW 2022b). Mapped CWHR vegetation types are shown on Figure 17B. Potential timberlands consist of the Montane Hardwood-Conifer, Montane Hardwood and Ponderosa Pine habitats. Potential Commercial timber species are found throughout the PAA (Figure 18B).

Soils within the Shingletown Ridge Road PAA are well drained, and range widely in run off class from very low to very high. Common soil profiles for the map units within the PAA include loam, stony loam, clay loam, stony clay, gravelly loam stony clay loam, and very paragravelly cinders. These soils are primarily volcanic with parent materials including alluvium, colluvium derived from volcanic rock, residuum weathered from volcanic rock or tuff breccia (NRCS 2022).

BLACK BUTTE ROAD

The Black Butte Road PAA includes areas adjacent to Black Butte Road and portions of Wildcat Road south of Highway 44 and north of Battle Creek Bottom Road. Black Butte Road PAA is shown in Figure 8. The PAA contains dense vegetation encroachment immediately adjacent to the County Road. Black Butte Road is a primary emergency access and evacuation route for the area.

General Plan designations within the PAA include A-G: Agricultural Grazing, N-H-40: Habitat Resource 40-Acre Density, MR: Mineral Resource, RB: Rural Residential B, and MU: Mixed Use (Shasta County 2022). Zoning designations for parcels within the PAA include: R-R-T-BA-5: Rural Residential-Mobile Home District- 5-Acre Minimum, MU: Mixed Use District, R-L-BSM: Limited Residential- Building Site Minimum, U: Unclassified, R-R-T-BSM: Rural Residential-Mobile Home District-Building Site Minimum, A-1-BSM: Limited Agriculture- Building Site Minimum, R-L: Limited Residential, MR: Mineral Resource District, U-MRB: Unclassified Mineral Resource Buffer, EA-AP-MRB: Exclusive Agriculture District- Agricultural Preserve District-Mineral Resource Buffer, and EA-AP: Exclusive Agricultural District-Agricultural Preserve District (Shasta County 2022). General Plan designations and Zoning designations for the PAA are shown on Figure 11 and Figure 12, respectively.

The PAA is predominantly within the Clear Creek-Sacramento River Watershed (HUC8 18020154) except the farthest southern section of the project which crosses into the Battle Creek Watershed (HUC8 18020153) (CDFW 2022a). The PAA does not have any mapped 100-year flood plains and is not within a groundwater basin (CDFW 2022a, FEMA 2022). Slopes within the PAA are generally under 30 percent with steeper slopes along Wildcat Road south of Black Butte. Topography in the vicinity generally slopes west toward the Sacramento River with the southern portion sloping south toward Battle Creek. Elevations range from 1060 to 2040 feet above

MSL (USGS 2010). Topography for the PAA is shown on Figure 13B.

South of the Black Butte Road PAA's northern terminus the PAA crosses Lack Creek an intermittent tributary to Bear Creek, and an unnamed intermittent tributary to Lack Creek. Further south the PAA crosses Ash Creek a perennial tributary to the Sacramento River, Baldwin Creek an intermittent Tributary to Battle Creek, and an unnamed intermittent tributary to Baldwin Creek enters the PAA but does not cross Wildcat Road (CDFW 2022a, USGS 2022). Hydrology within the PAA is shown on Figure 14B. One pond exists within the PAA between pine Meadows Drive and Alpine Way directly east of Black Butte Road. According to U.S. Fish and Wildlife Service Wetlands Mapper, Freshwater Emergent Wetlands and Freshwater Forested/Shrub Wetland may be found along the streams within the PAA (Figure 16B).

The Black Butte Road PAA is a mix of Mixed Chaparral, Blue Oak Woodland, Montane Hardwood, interspersed with Montane Hardwood-Conifer, Pasture, Ponderosa Pine, and Annual Grassland. The southern section of the PAA has more common occurrences of Ponderosa Pine mixed in with the Mixed Chaparral, Blue Oak Woodland with some Blue Oak-Foothill Pine habitat, before transitioning to exclusive Blue Oak Woodland in the far southern section (CDFW 2022b). Mapped CWHR vegetation types are shown on Figure 17B. Potential timberlands consist of the Montane Hardwood-Conifer, Montane Hardwood and Ponderosa Pine habitats. Timber species are found throughout the PAA (Figure 18B).

Soils in the Black Butte Road PAA range from well drained to excessively drained, and range in run off classification from low to very high. Common soil profiles include gravelly loam, clay loam, very stony loam, and very paragravelly cinders. Soils are exclusively volcanic in nature with parent materials being either residuum from volcanic rocks or tuff breccia (NRCS 2022).

HIGHWAY 44/DERSCH ROAD WEST

The Highway 44/Dersch Road West PAA includes areas adjacent to Highway 44 east of Redding between Flint Ridge Road and Dersch Road. The Highway 44/Dersch Road West PAA is shown in Figure 9. The PAA connects with a CAL FIRE and Caltrans project that goes east for 24 miles from the Dersch Road/Hwy 44 intersection.

General Plan designations within the PAA Rural Residential B, A-G: Agricultural Grazing, and PUB: Public Land (Shasta County 2022). Zoning designations for parcels within the PAA include: EA-AP: Exclusive Agricultural District-Agricultural Preserve District, U: Unclassified, R-L: Limited Residential, R-L-T: Limited Residential- Mobile Home District, R-L-BA-15: Limited Residential – 15-Acre Minimum, R-L-BA-10: Limited Residential – 10-Acre Minimum, A-1-T-BA-40: Limited Agriculture-Mobile Home District-40-Acre Minimum, A-1-T-BA-10: Limited Agriculture-Mobile Home District-10-Acre Minimum, A1-BA-10: Limited Agriculture -10-Acre Minimum, and EA: Exclusive Agriculture District (Shasta County 2022). General Plan designations and Zoning designations for the PAA are shown on Figure 11 and Figure 12 respectively.

The PAA is located within the Clear Creek-Sacramento River Watershed (HUC8 18020154) (CDFW 2022a). The PAA does not have any mapped 100-year floodplains and is not within a groundwater basin (CDFW 2022a, FEMA 2022). Slopes are generally under 30 percent except along the Bear Creek canyon. Topography in the vicinity generally slopes west and southwest toward the Sacramento River. Elevations range from 560 to 1580 feet above MSL (USGS 2010). Topography for the PAA is shown on Figure 13B.

The PAA includes Bear Creek that runs along the majority of the PAA, and an unnamed

intermittent stream near the western terminus of the PAA (CDFW 2022a, USGS 2022). Hydrology within the PAA is shown on Figure 14B. There are two ponds within this PAA, one located south of Highway 44 West of Dersch Road, and one west of Bascom Road. According to U.S. Fish and Wildlife Service Wetlands Mapper, Freshwater Emergent Wetlands and Freshwater Forested/Shrub Wetland may be found along the streams and ponds within the PAA (Figure 16B).

The Highway 44/Dersch Road West PAA is a mix of Mixed Chaparral, Montane Hardwood, and Blue Oak Woodland on the eastern side. On the west side of the PAA the Blue Oak Woodland becomes the predominant habitat type interspersed with limited Mixed Chaparral and Annual Grassland (CDFW 2022b). Mapped CWHR vegetation types are shown on Figure 17B. Potential commercial timber species are limited to the Montane Hardwood habitats and are found mostly on the eastern end of the PAA (Figure 18B).

Soils in the Highway 44/ Dersch West PAA are well drained or excessively drained, with run off classes ranging from medium to very high. Common soil profiles within the PAA includes gravelly loam, clay loam, cobbly loam, stony loam, and very cobbly clay loam. Soils in this area are primarily volcanic with parent materials including residuum weathered from volcanic rock or tuff breccia or alluvium derived from volcanic rock (NRCS 2022).

WHITMORE ROAD 2

The Whitmore Road 2 PAA includes areas adjacent to Whitmore Road east of the community of Millville. The Whitmore Road 2 PAA is shown in Figure 10. The PAA includes dense vegetation encroachment immediately adjacent to the county road. Whitmore road is a primary emergency access and evacuation route for the area.

General Plan designations within the PAA RB: Rural Residential B, A-G: Agricultural Grazing, and PUB: Public Land (Shasta County 2022). Zoning designations for parcels within the PAA include EA-AP: Exclusive Agricultural District-Agricultural Preserve District, EA: Exclusive Agriculture District, R-L: Limited Residential, R-L-BA-20: Limited Residential-20-Acre Minimum (Shasta County 2022). General Plan designations and Zoning designations for the PAA are shown on Figure 11 and Figure 12, respectively.

The PAA is located within the Cow Creek Watershed (HUC8 18020151) (CDFW 2022a). The PAA does not have any mapped 100-year flood plains and is not within a groundwater basin (CDFW 2022a, FEMA 2022). Slopes onsite are generally under 30 percent. Topography in the vicinity generally slopes west and southwest toward the Sacramento River. Elevations range from 680 to 840 feet above MSL (USGS 2010). Topography for the PAA is shown on Figure 13B.

Basin Hollow Creek, a perennial tributary to Cow Creek, runs to the south of the PAA for most of its length. An unnamed intermittent tributary to Clover Creek flows north from the PAA and does not cross Whitmore Road. However, this stream has been dammed in several location creating a series of small ponds within the PAA and directly adjacent to it (CDFW 2022a, USGS 2022). Hydrology within the PAA is shown on Figure 14B. According to U.S. Fish and Wildlife Service Wetlands Mapper, Freshwater Emergent Wetlands and Freshwater Forested/Shrub Wetland may be found along the streams and ponds within the PAA (Figure 16B).

Whitmore Road 2 PAA is a mix of Pasture, Annual Grasslands and Blue Oak Woodland, with a small section of Mixed Chaparral (CDFW 2022b). Mapped CWHR vegetation types are shown on Figure 17B. There is no potential commercial timberland within this PAA.

Soils in the Whitmore Road 2 PAA are well drained to excessively well drained and have a run off classification ranging from medium to very high. Common soil profiles in this PAA include silty

clay, clay, sandy loam, gravelly loam, and cobbly loam. The gravelly or cobbly soils within the PAA tend to have volcanic parent materials such as residuum weathered from volcanic rock or alluvium derived from volcanic rock. The silty and clay soils are primarily derived from residuum weathered from sandstone or sedimentary rock (NRCS 2022).

SPECIAL-STATUS WILDLIFE SPECIES

Special-status animal species include species that are (1) listed as threatened or endangered under the CESA or the ESA; (2) proposed for federal listing as threatened or endangered; (3) identified as state or federal candidates for listing as threatened or endangered; and/or (4) identified by the CDFW as Species of Special Concern or California Fully Protected Species.

A list of regionally occurring special-status wildlife species in the project site was compiled based on a review of pertinent literature and consultations with the USFWS Information for Planning and Consultation (iPAC) database, CNDDDB database records, California Wildlife Habitats Relationship (CWHR) and Vegetation Classification and Mapping Program (VegCAMP) maps.

For each special-status wildlife species, habitat and other ecological requirements were evaluated and compared to the habitats in the study area and immediate vicinity to assess the presence of potential habitat in the project area. The habitat assessments for special-status species wildlife species are provided in Table 2.

Of the 33 special-status wildlife species evaluated, 26 were determined to have a potential to occur within the project area, while the rest were determined to have no potential or unlikely to occur in the project area. Potential project impacts to special-status wildlife species with potential to occur within the project area are discussed in the Biological Resources section of the Environmental Checklist and Discussion.

SPECIAL-STATUS PLANT SPECIES

Special-status plant species include plants that are (1) designated as rare by CDFW or USFWS or are listed as threatened or endangered under the California Endangered Species Act (CESA) or ESA; (2) proposed for designation as rare or listing as threatened or endangered; (3) designated as state or federal candidate species for listing as threatened or endangered; and/or (4) ranked as California Rare Plant Rank (RPR) 1A, 1B, 2A, or 2B. A list of regionally occurring special-status plant species was compiled based on a review of pertinent literature, a review of the USFWS species list, CNDDDB database records, and a quad search for each PAA of CNPS database records. The California Rare Plant Ranking (CRPR) results are included in Table 3.

For each special-status plant species, habitat and other ecological requirements were evaluated and compared to the habitats in the project and immediate vicinity to assess the presence of potential habitat. The habitat assessments for special-status species are provided in Table 3. Project impacts to special-status plant species with potential to occur within the project area are discussed in the Biological Resources section of the Environmental Checklist and Discussion.

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Table 2
POTENTIALLY OCCURRING SPECIAL-STATUS WILDLIFE SPECIES

| Common Name | Scientific Name | Conservation Status (CDFW/State/Fed) | Habitat Description | Potential to Occur in Project Area |
|---------------------------|-----------------------------------|---|---|---|
| Birds | | | | |
| American peregrine falcon | <i>Falco peregrinus anatum</i> | FP/SD/FD | Frequents bodies of water in open areas with cliffs and canyons nearby for cover and nesting. | Potential to occur in: Fern Road (Observed 1995), O'Brien Estates, Ponderosa Way, and Whitmore Road 1. Where the following exists: Cliffs, Canyons, Open water |
| Bald eagle | <i>Haliaeetus leucocephalus</i> | FP/SE/FD | Near open water, nesting habitat consists of large trees usually within riparian forest | Potential to occur in O'Brien Estates. Where the following exists: Open water, Riparian habitat |
| California spotted owl | <i>Strix occidentalis</i> | SSC/--/-- | Breeds and roosts in old growth forests and woodlands, high basal areas of trees and snags, dense canopies ($\geq 70\%$ canopy closure), multiple canopy layers, and downed woody debris breeds. | No potential to occur in any PAAs |
| Northern goshawk | <i>Accipiter gentilis</i> | SSC/--/-- | Dense, mature conifer and deciduous forest, interspersed with meadows, other openings, and riparian areas required. Nesting habitat includes north-facing slopes near water. | Potential to occur in Shingletown Ridge Road. Where the following exists: Mature conifer, North facing slopes |
| Northern spotted owl | <i>Strix occidentalis caurina</i> | --/ST/FT | North coast coniferous forest, old growth, redwood. High, multistory canopy dominated by big trees. | No potential to occur in any PAAs |
| Osprey | <i>Pandion haliaetus</i> | WL/--/-- | Fish-bearing water bodies; flat or broken tops of native conifer trees, snags, or power poles. | Potential to occur in: Black Butte Road and Ponderosa Way. Where the following exists: Water bodies, isolated perch trees |
| Purple martin | <i>Progne subis</i> | SSC/--/-- | For breeding, prefers moist, shady coniferous forest, oak woodland, or riparian woodland near forest openings, and usually near water. Often forages in forest openings and along forest edges. | Potential to occur in: Bear Mountain Road. Where the following exists: Riparian habitat, forest openings |
| Tricolored blackbird | <i>Agelaius tricolor</i> | SSC/ST/-- | Freshwater marshes in dense cattail stands. Forages in field, pastures. | Potential to occur in: Highway 44/ Dersch West, and Whitmore Road 2. Where the following exists: Freshwater marshes |
| Yellow-billed Cuckoo | <i>Coccyzus americanus</i> | --/ST/FT | Wooded habitat with dense cover and water nearby, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland, and dense thickets along streams and marshes | Potential to occur in: Bear Mountain Road, and O'Brien Estates. Where the following exists: Wooded riparian habitat, marshes |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Table 2
POTENTIALLY OCCURRING SPECIAL-STATUS WILDLIFE SPECIES

| Common Name | Scientific Name | Conservation Status (CDFW/State/Fed) | Habitat Description | Potential to Occur in Project Area |
|----------------------------------|--------------------------------|---|---|---|
| Mammals | | | | |
| Fisher | <i>Pekania pennanti</i> | SSC/--/-- | North Coast coniferous forest, old growth, Riparian forest | Potential to occur in: Fern Road, O'Brien Estates, and Ponderosa Way. Where the following exists: Old growth, riparian habitat |
| Pallid bat | <i>Antrozous pallidus</i> | SSC/--/-- | Prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging | Potential to occur in: Highway 44/ Dersch West, and Whitmore Road 2. Where the following exists: Rock outcrops, cliffs, caves |
| Spotted bat | <i>Euderma maculatum</i> | SSC/--/-- | Prefers sites with adequate roosting habitat, such as cliffs. Feeds over water and along washes. May move from forests to lowlands in autumn | Potential to occur in: Highway 44/ Dersch West, and Whitmore Road 2. Where the following exists: Rock outcrops, cliffs, caves near open water. |
| Townsend's big-eared bat | <i>Corynorhinus townsendii</i> | SSC/--/-- | Requires caves, mines, tunnels, buildings, or other human-made structures for roosting. Prefers mesic habitats. Gleans from brush or trees or feeds along habitat edges. | Potential to occur in: Bear Mountain Road, and O'Brien Estates. Where the following exists: Caves, mines, tunnels, buildings |
| Wolverine | <i>Gulo</i> | FP/ST/-- | Alpine, Moist forested areas, North coast conifer forests | Potential to occur in: Ponderosa Way, and Shingletown Ridge Road. Where the following exists: High elevation moist forest |
| Reptiles & Amphibians | | | | |
| Cascades frog | <i>Rana cascadae</i> | SSC/CS/-- | Found primarily in montane aquatic habitats during warm, moist periods. | Potential to occur in in: Fern Road, Ponderosa Way, and Whitmore Road 1. Where the following exists: Aquatic habitat with cascade morphology Habitat will be avoided with implementation of wetland and stream buffers |
| Foothill yellow-legged frog | <i>Rana boylei</i> | SSC/SE/-- | Found in or near rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types. | Potential to occur in: Bear Mountain Road, Black Butte Road, Fern Road (observed 2001), Highway 44/ Dersch West, O'Brien Estates, Ponderosa Way (Observed 2018), Shingletown Ridge Road, and Whitmore Road 1. Where the following exists: Rocky streams with moderate riparian cover, Habitat will be avoided with implementation of wetland and stream buffers. |
| Shasta salamander | <i>Hydromantes shastae</i> | --/ST/-- | limestone fissures and caverns in valley-foothill hardwood-conifer, ponderosa pine, and mixed conifer habitats. | Potential to occur in: Bear Mountain Road. Where the following exists: Limestone fissures and caverns |

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| Common Name | Scientific Name | Conservation Status (CDFW/State/Fed) | Habitat Description | Potential to Occur in Project Area |
|-------------------------------------|---|---|---|---|
| Southern long-toed salamander | <i>Ambystoma macrodactylum sigillatum</i> | SSC/--/-- | Found primarily in yellow pine, mixed conifer, and red fir forests associated with mountain meadows. | No potential to occur in any PAAs. |
| Western pond turtle | <i>Emys marmorata</i> | SSC/--/-- | Aquatic, marsh & swamp, ponds and wetland habitat, nest in adjacent uplands under loose dirt or leaf litter. | Potential to occur in: Bear Mountain Road, Black Butte Road, Fern Road, Highway 44/ Dersch West, O'Brien Estates, Ponderosa Way, Shingletown Ridge Road, Whitmore Road 1, and Whitmore Road 2. Where the following exists: Marsh, Swamp, Ponds, Wetlands. Habitat will be avoided with implementation of wetland and stream buffers |
| Western spadefoot | <i>Spea hammondi</i> | SSC/--/-- | Terrestrial, enter water for breeding. Muddy pools for breeding that do not have bullfrogs, fish, or crayfish. Burrows underground in sandy or gravelly soils. | Potential to occur in: Bear Mountain Road, Highway 44/ Dersch West, and Whitmore Road 2. Where the following exists: Muddy pools absent of competition Habitat will be avoided with implementation of wetland and stream buffers. |
| Fish and Aquatic Vertebrates | | | | |
| Bull trout | <i>Salvelinus confluentus</i> | --/SE/FT | Once inhabited the McCloud river and tributaries (Shasta and Siskiyou counties) from the mouth of the river (now inundated by Lake Shasta) to Lower Falls in very cold and non-polluted waters. | No potential to occur. PAAs are outside of the historic range of these species. Habitat will be avoided with implementation of wetland and stream buffers. |
| Green sturgeon-southern DPS | <i>Acipenser medirostris pop. 1</i> | --/--/FT | Spawn in cool, deep, swift flowing river reaches over gravel and cobble bottoms, may over-summer in deep pools. | No potential to occur in any PAAs |
| Chinook Salmon CV Spring-run ESU | <i>Oncorhynchus tshawytscha pop.11</i> | --/ST/FT | Aquatic; Rivers and perennial and intermittent tributaries. | Potential to occur in Black Butte Road. Where the following exists: Rivers, Perennial tributaries. Habitat will be avoided with implementation of wetland and stream buffers. |
| Delta smelt | <i>Hypomesus transpacificus</i> | --/--/FT | Open waters of bays, tidal rivers, channels, and sloughs Populations are concentrated mainly in the lower Delta and upper Suisun Bay after breeding | No potential to occur. PAAs are outside of the historic range of these species. |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Table 2
POTENTIALLY OCCURRING SPECIAL-STATUS WILDLIFE SPECIES

| Common Name | Scientific Name | Conservation Status (CDFW/State/Fed) | Habitat Description | Potential to Occur in Project Area |
|------------------------------------|--|---|---|--|
| Longfin Smelt | <i>Spirinchus thaleichthys</i> | --/ST/FC | Habitat includes a wide range of temperature and salinity conditions in coastal waters near shore, bays, estuaries, and rivers; some populations are landlocked in lakes. Spawning occurs in fresh water, over sandy-gravel substrates, rocks, and aquatic plants | No potential to occur. PAAs are outside of the historic range of these species. |
| Pacific Lamprey | <i>Entosphenus tridentatus</i> | SSC/--/-- | Requires cold, clear, water for spawning and incubation. Ammocoetes need soft sediments in which to burrow during rearing. | Potential to occur in: Highway 44/ Dersch West, and Whitmore Road 1 (Observed 2009). Where the following exists: Cold clear streams, Soft sediment. Habitat will be avoided with implementation of wetland and stream buffers. |
| Steelhead CV DPS | <i>Oncorhynchus mykiss irideus pop. 11</i> | --/--/FT | Aquatic; Rivers and perennial and intermittent tributaries | Potential to occur in: Black Butte Road, Fern Road (Observed 2009), Highway 44/ Dersch West, Road, Ponderosa Way (Observed 2009), and Whitmore Road 1. Where the following exists: Rivers, Perennial/intermittent tributaries Habitat will be avoided with implementation of wetland and stream buffers. |
| Invertebrates & Insects | | | | |
| Monarch Butterfly | <i>Danaus plexippus</i> | --/--/FC | Forages on nectar producing plants, Milkweed required for reproduction. | Potential to occur in all PAAs wherever Milkweed is found. |
| Vernal pool tadpole shrimp | <i>Lepidurus packardii</i> | --/--/FE | Vernal pools, wetlands | Potential to occur in: Black Butte, Highway 44/ Dersch West, Shingletown Ridge Road, and Whitmore Road 2. Where the following exists: Vernal pools, wetlands Habitat will be avoided with implementation of wetland and stream buffers. |
| Vernal pool fairy shrimp | <i>Branchinecta lynchi</i> | --/--/FT | Vernal pools, wetlands | Potential to occur in: Highway 44/ Dersch West, Whitmore Road 2. Where the following exists: Vernal pools, Wetlands. Habitat will be avoided with implementation of wetland and stream buffers. |
| Conservancy fairy shrimp | <i>Branchinecta conservation</i> | --/--/FE | Vernal pools, wetlands | Potential to occur where the following exists: Vernal pools, wetlands. Habitat will be avoided with implementation of wetland and stream buffers |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

| Table 2 | | | | |
|---|--|---|---|--|
| POTENTIALLY OCCURRING SPECIAL-STATUS WILDLIFE SPECIES | | | | |
| Common Name | Scientific Name | Conservation Status (CDFW/State/Fed) | Habitat Description | Potential to Occur in Project Area |
| Valley Elderberry longhorn beetle | <i>Desmocerus californicus dimorphus</i> | --/--/FT | Reliant on host plant – elderberry. | Potential to occur in: Bear Mountain Road, Highway 44/ Dersch West, Whitmore Road 1, and Whitmore Road 2. Where the following exists: Elderberry shrubs |
| Western Bumble Bee | <i>Bombus occidentalis</i> | --/SCE/-- | Found in mixed woodlands, farmlands, urban areas, montane meadows and prairie grasslands often utilizing rodent burrows for nesting habitat | Potential to occur in: Ponderosa Way. Where the following exists: Mixed woodlands, rodent burrows |
| <small>FT: federally listed as threatened; FE: federally listed as endangered; FC: Candidate for listing; FD: Federally delisted ST: state listed as threatened SE: state listed as endangered CDFW SSC: Species of Special Concern; CDFW FP: CDFW fully protected; CDFW WL: CDFW watch list CV: Central Valley SCE: State Candidate Endangered</small> | | | | |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Table 3
POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

| Common Name | Scientific Name | Conservation Status CA Rare Plant Rank | Habitat Description | Potential to Occur in Project Area |
|-------------------------|--|---|---|--|
| Ahart's paronychia | <i>Paronychia ahartii</i> | 1B.1 | Annual herb occurring in cismontane woodland, valley and foothill grassland and vernal pools. Grows at elevations of 100-1675 feet and blooms Feb-June. | Potential to occur in: Bear Mountain Road, Black Butte Road, Fern Road, Highway 44/Dersch West, Ponderosa Way, Shingletown Ridge Road, Whitmore Road 1, and Whitmore Road 2. Where the following exists: Cismontane woodland, Vernal pools |
| Baker's navarretia | <i>Polemoniaceae</i> | 1B.1 | Annual Herb that occurs in cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foot hill grasslands, or vernal pools at Elevations of 15-5710 feet and blooms April-July | Potential to occur in Black Butte Road, Highway 44/ Dersch West, Ponderosa Way, Shingletown Ridge Road, Whitmore Road 1, and Whitmore Road 2. Where the following exists: Cismontane woodland, lower montane coniferous forest, meadows and seeps, Valley and foot hill grasslands, or Vernal pools |
| Bellinger's meadowfoam | <i>Limnanthes floccosa</i> ssp. <i>bellingariana</i> | 1B.2 | Annual herb that occurs in cismontane woodland and meadows and seeps and in mesic micro habitat. Elevations of 950-3610 feet and blooms from April-June. | Potential to occur in Bear Mountain Road, Black Butte Road, Highway 44/ Dersch West, O'Brien Estates, and Whitmore 2. Where the following exists: Cismontane woodland, meadows, seeps |
| Big-scale balsamroot | <i>Balsamorhiza macrolepis</i> | 1B.2 | Perennial herb occurring in chaparral, cismontane woodland, and valley and foothill grassland. Occurs sometimes in serpentinite microhabitat. Present at elevations of 150-5100 feet and blooms March-June. | Potential to occur in: Bear Mountain Road, Highway 44/Dersch West, and Whitmore Road 2. Where the following exists: Serpentine soils, chaparral, cismontane woodland |
| Blushing wild buckwheat | <i>Eriogonum ursinum</i> var. <i>erubescens</i> | 1B.3 | Perennial herb growing in chaparral(montane), lower montane coniferous forest habitats and rocky, scree, and talus micro habitat. Elevations of 2460-6235 feet and blooms June-September. | Potential to occur in Bear Mountain Road and O'Brian Estates. Where the following exists: montane chaparral, rocky talus |
| Boggs Lake hedge-hyssop | <i>Gratiola heterosepala</i> | 1B.2 | Annual herb occurring in marshes and swamps at lake margins and vernal pools and clay micro habitat. Elevations of 35-7790 feet and blooms April-August. | Potential to occur in: Bear Mountain Road, Black Butte Road, Highway 44/ Dersch West, Shingletown Ridge Road, Whitmore 1, and Whitmore 2. Where the following exists: Vernal pools, Clay micro habitat, Lakes, Marshes. The project will not impact this species due to buffers implemented for streams and wetlands. |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Table 3
POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

| Common Name | Scientific Name | Conservation Status CA Rare Plant Rank | Habitat Description | Potential to Occur in Project Area |
|--------------------------|---------------------------------------|---|--|---|
| Brazilian watermeal | <i>Wolffia brasiliensis</i> | 2B.3 | Perennial aquatic herb found in Marshes and swamps. Elevations 100-330 feet. Blooms April-December | Unlikely to occur in any PAA |
| Broad-nerved hump moss | <i>Meesia uliginosa</i> | 2B.2 | Moss found in Bogs and fens, Meadows and seeps, Subalpine coniferous forest, and Upper montane coniferous forest. Elevations of 2804-9200 feet | Potential to occur in Fern Road and Ponderosa Way. Where the following occurs Bogs and fens, meadows and seeps, subalpine coniferous forest, upper montane coniferous forest. |
| Brownish beaked-rush | <i>Rhynchospora capitellata</i> | 2B.2 | Perennial herb found in lower montane coniferous forest, meadows and seeps, marshes and swamps, and upper montane coniferous forest and mesic micro habitat. Elevations of 150-6560 feet. Blooms July-August. | Potential to occur in Black Butte Road, Highway 44/ Dersch West, Ponderosa Way, Shingletown Ridge Road, Whitmore Road 1, and Whitmore Road 2. Where the following exists: Meadows, seeps, marshes, swamps, montane coniferous habitat |
| Callahan's mariposa-lily | <i>Calochortus syntrophus</i> | 1B.1 | Perennial bulbiferous herb occurring in cismontane woodland and vernal mesic valley and foothill grassland. Elevations of 1725-3755 feet. Blooms May-June. | Potential to occur in: Black Butte Road, Fern Road, Highway 44/ Dersch West Ponderosa Way, Shingletown Ridge Road, Whitmore Road 1, and Whitmore Road 2. Where the following exists: Cismontane woodland, vernal mesic valley, foothill grassland |
| Cantelow's lewisia | <i>Lewisia cantelovii</i> | 1B.2 | Perennial herb growing in broadleafed upland forest, chaparral, cismontane woodland, and Lower montane coniferous forest. Micro habitats include granite, mesic, and sometimes seeps and serpentinite. Elevation of 1085-4495. Blooms May-October. | Potential to occur in: Bear Mountain Road, and O'Brien Estates. Where the following exists: Broadleaf forest, cismontane woodland, lower montane coniferous forest |
| Canyon Creek stonecrop | <i>Sedum paradisum ssp. paradisum</i> | 1B.3 | Perennial herb occurring in Granitic and rocky micro habitats within Broadleafed upland forest, Chaparral, Lower montane coniferous forest, Subalpine coniferous forest. Elevation of 985-6235 feet. Blooms May-June | Potential to occur in Bear Mountain Road, and O'Brien Estates. Where the following exists: Granitic or rocky broadleafed upland forest, chaparral, lower montane coniferous forest, and subalpine coniferous forest |
| English sundew | <i>Drosera anglica</i> | 2B.3 | Carnivorous perennial herb. Occurs in bogs and fens and mesic meadows and seeps. Elevations of 4265-7400 feet. Blooms June-September. | Potential to occur in Fern Road, and Whitmore Road 1. Habitat will be avoided with implementation of wetland and stream buffers. Where the following exists: Bogs, fens, mesic meadows |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Table 3
POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

| Common Name | Scientific Name | Conservation Status CA Rare Plant Rank | Habitat Description | Potential to Occur in Project Area |
|--------------------------|--|---|---|--|
| Finger rush | <i>Juncus digitatus</i> | 1B.1 | Annual herb growing in openings of cismontane woodland and lower montane coniferous forest as well as xeric vernal pools. Elevations of 2165-3600 feet. Bloom (April) May-June. | Potential to occur in: Black Butte Road, Fern Road Highway 44/Dersch West, Ponderosa Way, Shingletown Ridge Road, Whitmore Road 1 and Whitmore Road 2. Where the following exists: Xeric vernal pools, cismontane woodland, lower montane coniferous forest |
| Hairy marsh hedge-nettle | <i>Stachys pilosa</i> | 2B.3 | Perennial rhizomatous herb occurring in Great Basin Scrub (Mesic) and Meadows and Seeps. Elevations of 3935 to 5805. Blooms June to August. | Unlikely to occur in any PAA |
| Heckner's lewisia | <i>Lewisia cotyledon</i> var. <i>heckneri</i> | 1B.2 | Perennial herb. Occurs in rocky lower montane coniferous forest. Elevations of 740-6890 feet. Blooms May-July. | Potential to occur in O'Brien Estates. Where the following exists: rocky lower montane forest |
| Jepson's dodder | <i>Cuscuta jepsonii</i> | 1B.2 | Parasitic annual vine. Occurs in North Coast coniferous forest and streambank micro habitat. Elevations of 3935-7545 feet. Blooms July-September. | Potential to occur in Fern Road. The project will not impact this species due to buffers implemented for streams and wetlands. Where the following exists: Streambank micro habitat |
| Jepson's horkelia | <i>Horkelia daucifolia</i> var. <i>indicta</i> | 1B.1 | Perennial herb occurring within cismontane woodland and in quaternary-pyroclastic flows clay, openings, volcanic and vernal mesic microhabitats. Occurs at elevations of 785-2200 feet and blooms April-June. | Potential to occur in: Black Butte Road, Fern Road Ponderosa Way (Observed 2008), Shingletown Ridge Road, Whitmore Road 1, Whitmore Road 2. Where the following exists: Volcanic geology, cismontane woodland |
| Legenere | <i>Legenere limosa</i> | 1B.1 | Annual herb occurring in vernal pools at elevations of 880 to 2885 feet. Blooms April-June. | Potential to occur in Black Butte Road, Highway 44/ Dersch West, Shingletown Ridge Road, and Whitmore Road 2. Where Vernal pools exist. |
| Little hulsea | <i>Hulsea nana</i> | 2B.3 | Perennial herb occurring in Alpine boulder and rock field, Subalpine coniferous forest at elevations of 3355 to 11010 feet. Blooms July-August | Potential to occur in Fern Road. where alpine boulder and rock field, and subalpine coniferous forest exists. |
| Lassen paintbrush | <i>Castilleja lassenensis</i> | 1B.3 | Perennial herb occurring in meadow and seeps and subalpine coniferous forest and volcanic micro habitats. Occurs at elevations of 3135 to 10235 feet and blooms June-September. | Potential to occur in Fern Road. Where the following exists: Volcanic meadows and seeps and subalpine coniferous forest. |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Table 3
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| Common Name | Scientific Name | Conservation Status CA Rare Plant Rank | Habitat Description | Potential to Occur in Project Area |
|------------------------|--|---|---|---|
| Long-haired star-tulip | <i>Calochortus longebarbatus</i> var. <i>longebarbatus</i> | 1B.2 | Perennial bulbiferous herb occurring in Great Basin scrub, lower montane coniferous forest in openings and drainages, meadows, seeps, and vernal pools in clay and mesic micro habitats. Occurs at elevations from 3295-6235 feet and blooms June- August (Sep). | Potential to occur in Fern Road, Ponderosa Way. Where the following exists: Great basin scrub, drainages, meadows, seeps, vernal Pools |
| Long-leaved starwort | <i>Stellaria longifolia</i> | 2B.2 | Perennial rhizomatous herb growing in bogs and fens, meadows and seeps (mesic), riparian woodland, and upper montane coniferous forest. Occurs at elevations of 2955-6005 feet and blooms May-August. | Potential to occur om Fern Road, Ponderosa Way, and Whitmore 1. Wherever the following exist: Bogs and fens, meadows and seeps, riparian woodland, upper montane coniferous forest. |
| Long-stiped campion | <i>Silene occidentalis</i> ssp. <i>longistipitata</i> | 1B.2 | Perennial herb growing in chaparral, lower montane coniferous forest, upper montane coniferous forest. Elevation of 2000 to 6560 feet. Blooms June -August | Potential to occur in Fern Road wherever Chaparral, lower montane coniferous forest, or upper montane coniferous forest exists. |
| Maverick clover | <i>Trifolium piorkowskii</i> | 1B.2 | Annual herb found in chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill mesic grassland, and vernal pools. Grows clay, openings, streambanks, and volcanic habitats at elevations ranging from 525 to 2230 feet. Blooming period April-May. | Potential to occur in: Bear Mountain Road, Black Butte Road, Fern Road, Highway 44/Dersch West, Ponderosa Way, Shingletown Ridge Road, Whitmore Road 1, and Whitmore 2. Where the following exists: Vernal pools, chaparral, cismontane woodland, valley grassland |
| Mingan moonwort | <i>Botrychium minganense</i> | 2B.2 | Perennial herb occurring in mesic areas of bogs and fens, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest. Elevation of 2180 to 7155 feet, Blooms July to September | Potential to occur Fern Road, Ponderosa Way, and Whitmore Road 1. Wherever the following exist: mesic Bogs and fens, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest |
| Newberry's cinquefoil | <i>Potentilla newberryi</i> | 2B.3 | Perennial rhizomatous herb occurring in marshes and swamps, vernal pools. Elevation of 2200 to 7220 feet, Blooms May-August. | Potential to occur Fern Road, and Ponderosa Way. Wherever the following exist: marshes and swamps, vernal pools |
| Northwestern moonwort | <i>Botrychium pinnatum</i> | 2B.3 | Perennial herb occurring in mesic areas of Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest. Elevation of 2040 to 6695 feet. Blooms July to October | Potential to occur in Ponderosa Way, Wherever the following exist: Mesic Lower montane coniferous forest, Meadows and seeps, upper montane coniferous forest |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Table 3
POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

| Common Name | Scientific Name | Conservation Status CA Rare Plant Rank | Habitat Description | Potential to Occur in Project Area |
|----------------------------------|---|---|--|---|
| Oval-leaved viburnum | <i>Viburnum ellipticum</i> | 2B.3 | Perennial deciduous shrub found in chaparral, cismontane woodland, and lower montane coniferous forest. Found at elevations of 705 to 4595 feet. Blooming period May-June. | Potential to occur in: Bear Mountain Road, Fern Road, Highway 44/ Dersch West, O'Brien Estates, Ponderosa Way, Whitmore Road 1, and Whitmore Road 2. Where the following exists: Chaparral, cismontane woodland, lower montane forest |
| Rattlesnake fern | <i>Botrypus virginianus</i> | 2B.2 | Perennial herb found in bogs and fens, lower montane coniferous forest, meadows and seeps, and riparian forest. Occurs at elevations of 2345 to 4445 feet. Blooming period June through September. | Potential to occur in: Black Butte Road, Fern Road, Highway 44/ Dersch West, Ponderosa Way, Shingletown Ridge Road, Whitmore Road 1 and Whitmore Road 2. Where the following exists: Bogs, fens, meadows, riparian habitat |
| Red Bluff dwarf rush | <i>Juncus leiospermus</i> var. <i>leiospermus</i> | 1B.1 | Annual herb occurring in chaparral, cismontane woodland, meadows and seeps, valley and foothill grasslands and vernal pool habitat. Vernaly mesic micro-habitat. Elevations of 115-4100 feet. Blooms March-June. | Potential to occur in: Bear Mountain Road, Black Butte Road, Fern Road, Highway 44/Dersch West, O'Brien Estates, Shingletown Ridge Road, Whitmore 1, and Whitmore Road 2. Where the following exists: Chaparral, cismontane woodland, meadows, vernal pools |
| Red-flowered bird's-foot trefoil | <i>Acmispon rubriflorus</i> | 1B.1 | Annual herb occurring in cismontane woodland, valley, and foothill grassland. Elevation of 425 to 1395. Blooms April to June. | Potential to occur in Black Butte Road. Where Cismontane woodland, or Valley and foothill grassland exist. |
| Sanford's arrowhead | <i>Sagittaria sanfordii</i> | 1B.2 | Emergency perennial rhizomatous herb found in shallow freshwater marshes and swamps. Elevations of 0-2135 feet. Blooms May-October (November). | Potential to occur in Bear Mountain Road, Black Butte Road, Highway 44/ Dersch West, O'Brien Estates, Shingletown Ridge Road, and Whitmore Road 2. Where the following exists: Freshwater marshes, Swamp. Habitat will be avoided with implementation of wetland and stream buffers. |
| Santa Lucia dwarf rush | <i>Juncus luciensis</i> | 1B.2 | Annual herb that grows chaparral, great basin scrub, lower montane coniferous forest, meadows and seeps, vernal pools. Elevations of 2040 to 6695. Blooms April to July. | Potential to occur in Fern Road, and Ponderosa Way. Potential to occur wherever the following exists: Chaparral, Great Basin scrub, lower montane coniferous forest, meadows and seeps, vernal pools |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Table 3
POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

| Common Name | Scientific Name | Conservation Status CA Rare Plant Rank | Habitat Description | Potential to Occur in Project Area |
|--------------------|---|---|---|--|
| Scalloped moonwort | <i>Botrychium crenulatum</i> | 2B.2 | Perennial rhizomatous herb. Occurs in bogs and fens, lower montane coniferous forest, meadows and seeps, freshwater marshes and swamps, and upper montane coniferous forest. Elevations of 4160-10760 feet. Blooms Jun-September. | Potential to occur in: Fern Road, Ponderosa Way, and Whitmore Road 1. Where the following exists: Bogs, fens, meadows, lower montane coniferous forest, freshwater marshes |
| Shasta ageratina | <i>Ageratina shastensis</i> | 1B.2 | Perennial herb occurring in chaparral and lower montane coniferous forest habitat. Occurs in often carbonate and rocky micro habitat. Elevations ranging from 1310-5905 feet. Blooms June-October. | Potential to occur in: Bear Mountain Road, Fern Road, O'Brien Estates and Whitmore Road 1. Where the following exists: Carbonate and rocky habitat |
| Shasta clarkia | <i>Clarkia borealis</i> <i>ssp. arida</i> | 1B.1 | Annual herb known from fewer than 10 occurrences near Shingletown. Occurs in cismontane woodland and openings in lower montane coniferous forest habitat. Elevations of 1610-1950 feet. Blooms June-August. | Potential to occur in: Bear Mountain Road, Black Butte Road, Fern Road, Highway 44/Dersch West, Ponderosa Way, Shingletown Ridge Road Whitmore Road 1, and Whitmore Road 2. Where the following exists: Cismontane woodland, openings in lower montane coniferous habitat |
| Shasta fawn lily | <i>Erythronium shastense</i> | 1B.2 | Perennial bulbiferous herb. Occurs in cismontane woodland, lower montane coniferous forest habitats. Microhabitats include north-facing or shaded, can form clumps due to bulb offsets and usually carbonate and rocky micro habitat. Elevations of 1150-3345 feet. Blooms (February) March-April. | Potential to occur in: Bear Mountain Road Fern Road, O'Brian Estates, Whitmore Road 1. Where the following exists: Cismontane woodland, lower montane coniferous forest |
| Shasta huckleberry | <i>Vaccinium shastense</i> <i>ssp. shastense</i> | 1B.3 | Perennial deciduous shrub. Occurs in chaparral, cismontane woodland, lower montane coniferous forest, riparian forest, and subalpine coniferous forest habitats. Rocky outcrop microhabitats including acidic, disturbed, mesic, roadsides, rocky, sometimes seeps, and often streambanks. Elevations of 1065 to 4005 feet. Blooms (June-September) December-May. | Potential to occur in: Bear Mountain Road, Fern Road, Highway 44/ Dersch West, O'Brien Estates, Ponderosa Way, Whitmore Road 1, Whitmore Road 2. Where the following exists: chaparral, cismontane woodland, lower montane coniferous forest, riparian forest, and subalpine coniferous forest habitats |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Table 3
POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

| Common Name | Scientific Name | Conservation Status CA Rare Plant Rank | Habitat Description | Potential to Occur in Project Area |
|-------------------------------|-------------------------------|---|---|---|
| Shasta limestone monkeyflower | <i>Erythranthe taylorii</i> | 1B.1 | Annual herb occurring in carbonate crevices and rocky outcrops micro habitats within Cismontane woodland or lower montane coniferous forest between 1165-3215 feet. Flowering April-May. | Potential to occur in: Bear Mountain Road, and O'Brien Estates. Where the following exists: Carbonate crevices, rocky outcrops within cismontane forest |
| Shasta snow-wreath | <i>Neviusia cliftonii</i> | 1B.2 | Deciduous shrub in the rose family endemic to Shasta County in the mountains around Lake Shasta. Occurs on north facing slopes at elevations of 381 to 2148 feet. Flowers from April to June. | Potential to occur in: Bear Mountain Road, Fern Road, Highway 44/ Dersch West O'Brien Estates, Whitmore Road 1, and Whitmore Road 2. Where the following exists: limestone embankments |
| Sierra blue grass | <i>Poa sierrae</i> | 1B.3 | Perennial grasslike herb occurring in openings in Lower montane coniferous forest at elevations ranging from 1166 to 5130. Flowers from April to June. | Potential to occur in: Bear Mountain Road, Fern Road, and Whitmore 1. Where the following exists: Openings in lower montane coniferous forest |
| Silky cryptantha | <i>Cryptantha crinita</i> | 1B.2 | Rocky volcanic soils, gravelly streambanks, gravel bars in foothill woodland between 200 - 3985 feet; flowers April to May. | Potential to occur in: Bear Mountain Road, Black Butte Road, Fern Road, Highway 44/ Dersch West, O'Brien Estates, Ponderosa Way (Observed 1993), Shingletown Ridge Road, Whitmore Road 1, and Whitmore Road 2. Where the following exists: Rocky volcanic soils, gravelly streambanks |
| Siskiyou clover | <i>Trifolium siskiyouense</i> | 1B.1 | Perennial herb occurring in mesic areas of Meadows and seeps or streambanks, between 2885-4920 feet. Flowers June-July. | Potential to occur in: Fern Road and Whitmore Road 1. Where the following exists: Meadows, seeps |
| Slender Orcutt grass | <i>Orcuttia tenuis</i> | 1B.1 | Foothill Woodland, Freshwater Wetlands; between 115 - 5775 feet, flowers May to September | Potential to occur in: Bear Mountain Road, Black Butte Road, Highway 44/ Dersch West, Ponderosa Way, Shingletown Ridge Road, Whitmore Road 1, and Whitmore Road 2. Where the following exists: Freshwater wetlands, vernal pools. Habitat will be avoided with implementation of wetland and stream buffers. |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Table 3
POTENTIALLY OCCURRING SPECIAL-STATUS PLANT SPECIES

| Common Name | Scientific Name | Conservation Status CA Rare Plant Rank | Habitat Description | Potential to Occur in Project Area |
|----------------------------------|--|---|--|---|
| Stony Creek spurge | <i>Euphorbia ocellata</i> ssp. <i>rattanii</i> | 1B.2 | Annual herb found in Chaparral, Riparian scrub, Valley and foothill grassland. Elevations of 800 to 2625. Flowers May to October. | Potential to occur in Black Butte Road and Shingletown Ridge Road. Where the following exists: Chaparral, riparian scrub, valley and foothill grassland |
| Sulphur Creek brodiaea | <i>Brodiaea matsonii</i> | 1B.1 | Perennial bulbiferous herb occurs in rocky Cismontane woodland, meadows and seeps at elevations of 220-720 feet. Blooms May-June | Potential to occur in Bear Mountain Road. where rocky Cismontane woodland, meadows and seeps exist |
| Upswept moonwort | <i>Botrychium ascendens</i> | 2B.3 | Perennial rhizomatous herb that occurs in mesic Lower montane coniferous forest, meadows and seeps. Elevations of 3045 to 9990. Blooms (June) July to August. | Potential to occur in Fern Road and Ponderosa Way where mesic lower montane coniferous forest, meadows and seeps exist |
| Watershield | <i>Brasenia schreberi</i> | 2B.3 | Aquatic perennial herb with floating leaves that grows in ponds, lakes, and slow-moving streams. Occurs at elevations of 60 to 7211 feet. | Potential to occur in Bear Mountain Road, Black Butte Road, Fern Road, Highway 44/Dersch West, Ponderosa Way, Shingletown Ridge Road, Whitmore Road 1, and Whitmore Road2. Where the following exists: Ponds, Lakes, Slow-moving streams The project will not impact this species due to buffers implemented for streams and wetlands. |
| Western goblin | <i>Botrychium montanum</i> | 2B.1 | Perennial rhizomatous herb which occurs in mesic lower montane coniferous forest, meadows and seeps, upper montane coniferous forest. Elevations of 2180 to 7155. Blooms July-September. | Potential to occur in Fern, Road, Ponderosa Way, and Whitmore Road 1. Where the following exists: Mesic Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest |
| Sensitive Habitats | | | | |
| Northern Interior Cypress Forest | -- | -- | Upper slopes and ridges. Soils developed from sterile basaltic and serpentine substrates. | Potential to occur Shingletown Ridge Road Ponderosa Way, Highway 44-Dersch West, Black Butte Road. |

ARCHEOLOGY

An Archaeological Survey Report was prepared for the project by Alta Archaeological Consulting, LLC (ALTA). Since the project will be funded with federal and state grants, the project is subject to both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The Archaeological Survey Report was prepared to address the responsibilities of NEPA, Section 106 of the National Historic Preservation Act (NHPA) (36 CFR Part 800), CEQA, as codified in Public Resources Code sections 5097, and its implementing guidelines 21082 and 21083.2. A records search was completed at the California Historical Resources Information System. An archaeological field survey was completed by ALTA between February 2023 and June 2023 for the purpose of identifying cultural resources within the area of potential effect (APE) where landowner authorization was granted. The APE, encompassing a total area of approximately 6,496 acres, was surveyed. The Archaeological Survey Report was provided to CAL FIRE on June 12, 2023, and then submitted to Sonoma State University Anthropological Studies Center for review. Management recommendations included in the Archaeological Survey Report will be implemented for the project to avoid impacts to cultural resources.

CURRENT LAND USE AND PREVIOUS IMPACTS

The PAAs are located in high-priority WUI areas in Shasta County. Land use and zoning designations vary throughout the project site. Land Use Designations within each PAA are included in Figure 11 of Attachment A. Zoning districts are included in Figure 12. Due to the geographic extent of the project, existing conditions vary throughout the project area and within each individual PAA. In general, the PAAs include areas where dense vegetation is encroaching along county roadways and/or primary emergency evacuation or access routes for communities in WUI areas of the County. There are currently ongoing fuel treatment activities by private landowners and other entities within the project area. The project will involve coordination of activities between entities to ensure effective project implementation and avoid duplication of effort.

Conclusion of the Mitigated Negative Declaration

ENVIRONMENTAL PERMITS

Order R5-2017-0061 Waste Discharge Requirements General Order for Discharges Related to Timberland Management Activities for Non-Federal and Federal Lands

Timber Harvest Plan or Exemption

Caltrans Encroachment Permit

MITIGATION MEASURES

In additions to the Best Management Practices implemented during the project, the following four mitigation measures will be implemented to avoid or minimize environmental impacts. Implementation of these mitigation measures will reduce the environmental impacts of the proposed project to a less than significant level.

Mitigation Measure #1: Pre-Treatment Botanical Surveys (All PAAs)

As part of the preliminary site assessment (PSA) conducted on each eligible parcel potential habitat for special-status plants with potential occur within the treatment area will be identified along with species included in any sensitive natural communities. If potential habitat for special-status plants or sensitive natural communities are identified, protocol-level surveys of the eligible parcels shall be conducted by a qualified biologist during the flowering window for special-status plant species with potential to occur within the treatment area. Surveys shall comply with survey protocols for plants species listed under the CDFW *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (2018). If no special-status plants are found, no further measures pertaining to special-status plants are necessary. If special-status plant species are identified during the botanical surveys, the individuals will be avoided. The treatment prescription (TP) for the parcel will be modified to exclude activities within 25 feet of the individual and exclusionary fencing will be placed around the plants prior to operations on the parcel to establish the avoidance area during project implementation.

Mitigation Measure # 2: Herbicide Treatment Buffers (Anadromous Fish-Bearing Streams)

Herbicide treatment buffer will coincide with the prescribed treatment buffer for perennial and ephemeral streams for any anadromous fish bearing streams. In order to limit the effect of herbicides on anadromous fish. Herbicides with the potential to harm aquatic life shall not be applied within 150 feet of anadromous fish-bearing streams. If conditions necessitate that herbicides are applied within the 150-foot buffer, then the application shall be completed in the dry season when no precipitation is forecasted.

Mitigation Measure #3: Riparian and Wetland Identification and Exclusion (All PAAs)

During the preliminary site assessment of each eligible parcel, eligible parcels will be surveyed for aquatic resources. The treatment prescription (TP) will exclude activities within 75 feet of perennial streams and wetlands (including vernal pools) as well as 50 feet from ephemeral and

intermittent streams. The exclusion area will be marked with flagging. Biomass removal, herbicide application, equipment staging, operation of mechanical equipment, and on-site disposal of removed biomass shall not occur within the marked buffers.

Mitigation Measure #4: Surveys for Special-Status Amphibians and Reptiles (All PAAs)

During the Preliminary Site Assessment of each eligible parcel, work areas within 150 feet of flowing watercourses will be evaluated to determine if suitable upland dispersal habitat for potentially occurring special-status amphibians and reptiles are present. If no potential suitable upland dispersal habitat is identified, no further action is required. If suitable upland habitat is identified, no more than two days prior to the start of ground disturbing activities, focused pretreatment surveys for special status amphibians, reptiles, and their eggs will be completed by a qualified biologist in all suitable upland dispersal habitat areas within 150 feet of flowing watercourses. If a special status species is found, CDFW will be notified. If an adult individual is observed within the survey area, then the animal shall be avoided until it is no longer in harm's way, or it may be relocated by a qualified biologist if an area offsite that has appropriate habitat for the species is available. If relocating, the animal should be moved to a nearby area with habitat similar to the environment in which it was found.

If a nest, eggs, hatchlings, or an aestivating adult are observed within the survey area, then an avoidance buffer of 50 to 100 feet shall be applied to heavy equipment access, ground disturbing activities, and herbicide application. The qualified biologist shall consider the topography and vegetation onsite, as well as the treatments proposed onsite and the potential for disturbance when determining the buffer distance. Additionally, to avoid impacts to hatchlings' dispersal from the nest site, no woody debris or other barrier shall be placed in between the nest site and the nearest body of water.

During the Preliminary Site Assessment, eligible parcels within the Bear Mountain Road PAA will be evaluated for limestone rock outcrops. If no limestone rock outcrops suitable for Shasta salamander are identified within 300 feet of project activities are identified, no further action is required. If limestone rock outcrops are identified, treatment in areas containing limestone rock outcrops suitable for the Shasta salamander will be completed during the dry season when salamanders are the least likely to occur outside of limestone fissures. If work must occur within 300 feet of a limestone outcrop during the wet season (between November and March) then protocol-level surveys for Shasta salamander shall be completed by a qualified biologist. If Shasta salamanders are identified within work areas, then CDFW shall be notified and measures for avoiding impact must be approved. Potential measures can include implementing a 300-foot buffer around limestone outcrops, onsite monitoring, or issuance of appropriate permits for incidental take to relocate individual salamanders.

Mitigation Measure #5: Bat Roost Humane Exclusion (All PAAs)

During the Preliminary Site Assessment of eligible parcels, trees with maternity roost structures (i.e. cavities in the trunk or branches, woodpecker holes, loose bark, cracks) will be identified. If no trees with maternity roost structures are identified, no further measures are necessary. If removal of trees identified to have bat roost structure occurs from September 1 to October 30, no measures for special-status bats are required.

If removal of trees identified to have bat roost structure potential will occur during the bat maternity season, when young are non-volant (March 1- August 31), or during the bat hibernacula (November 1-March 1), when bats have limited ability to safely relocate roosts, humane exclusions should be implemented which consist of a two-day removal process by which the non-habitat trees and brush are removed along with smaller tree limbs on the first day, and the remainder of the tree limbs and the tree trunk on the second day.

Mitigation Measure # 6: Artificial Lighting Standards (All PAAs)

To minimize impacts of lighting to bats and other nocturnal species, any artificial lighting associated with short-term and long-term project activities should be downward facing, fully shielded, and designed and installed to minimize photo pollution of adjacent wildlife habitat.

Mitigation Measure #7: Bat Roost Habitat Avoidance (All PAAs)

During the Preliminary Site Assessment of each eligible parcel the presence of caves or bridges within the treatment area will be noted. If no caves or bridges are located within the project area, no further measures are necessary. If present within 50 feet of project activities, caves and bridges in the project area will be assessed during the Preliminary Site Assessment for potential bat roost structures (crevice roosts tend to be approximately 3/4 to 1-1/2 inches across and at least 18 inches deep. In most cases, they run from one side of the bridge to the other, and between three and several hundred meters above ground). If found, a qualified biologist will assess the structure for signs of bat presence (i.e., guano, insect pieces, etc.). If no roost is present, then no buffer is needed. If a roost is present, then a 50-foot non-disturbance buffer shall be implemented around the roost structure to prevent changes to the thermal stability and protective cover surrounding the roost structure that could result from tree removal.

Mitigation Measure #8: Mammal Den Surveys (Ponderosa Way, Shingletown Ridge Road, Fern Road, O'Brien Estates)

During the Preliminary Site Assessment of each eligible parcel, the project area will be evaluated for suitable mammal den habitat. If potential den habitat for fisher (*Pekania pennaniti*) or wolverine (*Gulo gulo*) is identified, and activities occur during the denning season for these species, pretreatment surveys shall be completed within thirty days prior to ground disturbing activities to determine if any terrestrial mammal (e.g., American wolverine and fisher) den structures are present within the work area. If potential dens are located within the work area and cannot be avoided during project activities, a qualified biologist will determine if the dens are occupied. If occupied dens are present within the work area, their disturbance and destruction will be avoided by stopping operations until an appropriate buffer approved by CDFW or USFWS.

Mitigation Measure #9: Native Milkweed Buffer (All PAAs)

Surveys will be completed to determine if native milkweed (*Asclepias* sp.) are present within work areas. If milkweed is identified onsite, disturbance to the plant would be avoided by implementing a 25-foot buffer around identified individuals.

Mitigation Measure #10: Valley Elderberry Longhorn Beetle Buffer (Bear Mountain Road, Highway 44/Dersch West, Whitmore Road 1 and Whitmore Road 2)

Protocol level surveys shall be completed to identify any elderberry (*Sambucus* spp.) within 165 feet of riparian corridors at sites below 3000 feet elevation, where access is possible. If any elderberry shrubs are found within the survey area, then a no-disturbance buffer of 20 feet or more shall be implemented. ESA flagging or similar high visibility flagging shall be installed to demarcate the buffer. No herbicide shall be applied within the 20-foot buffer.

Mitigation Measure #11: Invasive Species Management (All PAAs)

An invasive species management plan (ISMP) shall be prepared to provide guidance that prevents the spread of noxious weeds. If a significant population of Cal-IPC listed invasive species is observed, then equipment shall be cleaned at the contaminated site before proceeding to any other sites.

Mitigation Measure 12: Implement Management Recommendations in Archaeological Survey Report

Management Recommendations included in the Archaeological Survey Report prepared for the project shall be implemented to ensure that cultural resources are not adversely affected by the project which include the following:

Special Conditions

Archaeological resources within the Project Area are designated for Special Conditions where fuel reduction activities may be performed within the site limits. In some instances, removal of hazard trees is beneficial to site preservation. Special Conditions of cultural resources includes the following actions:

1. Prior to the commencement of operations, the Project Manager will ensure that all Special Treatment Zones (STZ) are clearly described and illustrated in plans, and specifications.
2. All parties (CAL FIRE, Project Manager, Registered Professional Forester [RPF], or equipment operators familiar with resource management work will review the plans.
3. Prior to commencement of operations, a CAL FIRE Certified Archaeological Surveyor or professional archaeologist familiar with the site, shall demarcate all sites with STZ flagging. Exclusionary flagging will be based on the site sketch map. No buffer around the site boundary is required for Special Condition sites. STZ flagging that is older than six months will be inspected and refreshed prior to operations.
4. Fuel reduction work utilizing hand tools (including chainsaws) may occur within the STZ area given the following conditions.
5. No skidding of logs shall occur within the STZ.
6. Timber shall be directionally felled away from the site.
7. Mechanized equipment shall be restricted to existing roads or disturbed areas within the STZ.
8. No tree planting will occur within STZ.

9. A CAL FIRE Certified Archaeological Surveyor or professional archaeologist will periodically inspect sites to ensure that BMPs are effective and the STZ has not been breached.

Unanticipated Discovery of Cultural Resources

If previously unidentified cultural resources are encountered during project implementation, avoid altering the materials and their stratigraphic context. A qualified professional archaeologist should be contacted to evaluate the situation. Project personnel should not collect cultural resources. Prehistoric resources include, but are not limited to, chert or obsidian flakes, projectile points, mortars, pestles, and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic resources include stone or abode foundations or walls; structures and remains with square nails; and refuse deposits or bottle dumps, often located in old wells or privies.

Encountering Native American Remains

Although unlikely, if human remains are encountered, all work must stop in the immediate vicinity of the discovered remains and the County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American and prehistoric, the Native American Heritage Commission must be contacted by the Coroner so that a “Most Likely Descendant” can be designated and further recommendations regarding treatment of the remains is provided.

SUMMARY OF FINDINGS

This IS-MND has been prepared to assess the project’s potential effects on the environment and an appraisal of the significance of those effects. Based on this IS-MND, it has been determined that the proposed project will not have any significant effects on the environment after implementation of mitigation measures. This conclusion is supported by the following findings:

1. The proposed project will have no effect related to agriculture and forest resources, energy, land use and planning, mineral resources, population and housing, public services, recreation, utility and service systems and wildfire.
2. The proposed project will have a less-than-significant impact on aesthetics, air quality, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, transportation, and utilities and service systems.
3. Mitigation is required to reduce potentially significant impacts related to biological resources, cultural resources, tribal cultural resources, and mandatory findings of significance.

The Initial Study-Environmental Checklist included in this document discusses the results of resource-specific environmental impact analyses that were conducted by the Department. This initial study revealed that potentially significant environmental effects could result from the proposed project. However, CAL FIRE revised its project plans and has developed mitigation measures that will eliminate impact or reduce environmental impacts to a less than significant level. CAL FIRE has found, in consideration of the entire record, that there is no substantial

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

evidence that the proposed project as currently revised and mitigated would result in a significant effect upon the environment. The IS-MND is therefore the appropriate document for CEQA compliance.

INITIAL STUDY-ENVIRONMENTAL CHECKLIST

The environmental factors checked below would be potentially affected by this project involving at least one impact that is a potentially significant impact as indicated by the checklist on the following pages.

Project Title: Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Lead Agency Name and Address: California Department of Forestry and Fire Protection (CAL FIRE), 875 Cypress Ave., Redding, CA 96001

Contact Person & Phone Number:

CAL FIRE Project Manager: Ben Rowe Forester III (530) 225-2432
 The McConnell Foundation, Grantee: Director of Land Management Alex Carter (530) 226-6249
 Document Preparer: VESTRA Resources, Inc., Wendy Johnston, Kristine Cloward, Nicolaas VanOoyen, Anna Prang (530) 223-2585

Project Location: Wildland Urban Interface (WUI) throughout Shasta County (see Figure 1).

Project Sponsor’s Name and Address: The McConnell Foundation, 800 Shasta View Drive, Redding, CA 96003

General Plan Designation: Agricultural Grazing, Mineral Resource, Mixed Use, Habitat Resource 40 and 80-acre density, Recreation Resource, Public Land, Rural Residential A, Rural Residential B, and Timber (see Figure 11).

Zoning: Multiple Districts (see Figure 12).

Description of Project: Hazardous Fuels Reduction

Surrounding Land Uses and Setting: Multiple land uses adjacent to critical transportation corridors.

Other public agencies whose approval may be required: NA

Environmental Factors Potentially Affected


| | | |
|--|--|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Agriculture Resources | <input type="checkbox"/> Hazards & Hazardous Materials | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Air Quality | <input type="checkbox"/> Hydrology and Water Quality | <input type="checkbox"/> Transportation |
| <input checked="" type="checkbox"/> Biological Resources | <input type="checkbox"/> Land Use and Planning | <input type="checkbox"/> Utilities and Service Systems |
| <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Wildfire |
| <input type="checkbox"/> Energy | <input type="checkbox"/> Noise | <input checked="" type="checkbox"/> Mandatory Findings of Significance |
| <input type="checkbox"/> Geology and Soils | <input type="checkbox"/> Population and Housing | |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Determination

On the basis of this initial evaluation:

- I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION would be prepared.
- I find that although the proposed project COULD have a significant effect on the environment, there WOULD NOT be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION would be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project COULD have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

DocuSigned by:

.6569EE653A04422

 John Melvin
 Assistant Deputy Director, Resource Protection
 California Department of Forestry and Fire Protection

12/18/2023

Date

Environmental Checklist and Discussion

AESTHETICS

| | | | | |
|--|--------------------------------|--|-------------------------------------|--------------------------|
| a) Except as provided in Public Resources Code § 21099, would the project have a substantial adverse effect on a scenic vista? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

a) The Shasta County General Plan does not identify specific scenic vistas within the county. The project will result in vegetation removal that could be noticeable in close vicinity to each treatment area. The change in vegetation will not be noticeable when viewed from a distance since large healthy trees will be retained with a spacing of 30 feet. Impacts to scenic vistas will not be substantially adverse. **Less-than-significant impact.**

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| b) Except as provided in Public Resources Code § 21099, would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

b) The project area does not include officially designated State Scenic Highways. **No impact.**

| | | | | |
|--|--------------------------------|--|-------------------------------------|--------------------------|
| c) Except as provided in Public Resources Code § 21099, <u>in non-urbanized areas</u> , would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is <u>in an urbanized area</u> , would the project conflict with applicable zoning and other regulations governing scenic quality? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

c) The project is located in non-urbanized areas. The PAAs are adjacent to public roadways and will be visible to the public. The existing visual character varies for each PAA, but generally consists of rural areas with dense vegetation adjacent to public roadways. The project includes removal of vegetation, small-diameter trees, and closely spaced trees from within 100 to 400 feet from the roadway centerline in each PAA as well as removal of dead and dying trees within 100 to 200 feet from the roadway centerline. Within the treatment area, trees spaced 30 feet apart will remain and grasses will be retained as feasible for erosion control. The removal of vegetation will result in a change to the existing character of the site which could be noticeable from public areas in close distance to the treatment areas, however the change will not be substantially different from

existing conditions since large diameter trees will be retained at a spacing of 30 feet. The project will not substantially degrade the existing visual character or quality of public views of the site and the surroundings area, nor would it conflict with zoning or any other regulations governing scenic quality. **Less-than-significant impact.**

| | | | | |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| d) Except as provided in Public Resources Code § 21099, would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

d) The project does not include the installation or use of any new lighting sources or structures that would be a new source of glare. The project will not create substantial light or glare that would affect day or nighttime views in the area. **No impact.**

AGRICULTURAL RESOURCES

| | | | | |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

a) Portions of the project area contain California Important Farmland as mapped by the California Department of Conservation. Most of the Important Farmland within the project area is designated as grazing land. California Important Farmland within the project area is shown in Figure 20A and 20B. Hazardous fuel reduction activities within the project area will not result in the conversion of Farmland to a non-agricultural uses. **No impact.**

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| b) Would the project conflict with existing zoning for agricultural use or a Williamson Act contract? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

b) The project includes land enrolled in a Williamson Act Contract as mapped by the California Department of Conservation California Williamson Act Enrollment Finder. The project will not result in a development or change in use of these lands to non-agricultural uses. **No impact.**

| | | | | |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| c) Would the project conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104(g))?

c) Portions of the project are Zoned Timber Production (TPZ) or Timberland (TZ). None of the landholding within the treatment areas will be rezoned and will remain TPZ or TZ. The project would not result in rezoning of forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104(g)). **No impact.**

| | | | | |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| d) Would the project result in the loss of forest land or conversion of forest land to non-forest use? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

d) Forested lands are located within the project areas. Approximately 42 percent of the area to be treated includes a forested landscape. The type of forested land included in descending number of acres is Ponderosa Pine, Montane Hardwood, Montane Hardwood-Conifer, and Sierra Mixed Conifer. The project will result in fuel reduction and thinning within the Wildland-Urban Interface (WUI) and will aid in protecting forested lands from wildfire. Forest lands within the project site are included in Figure 18A and 18B of Attachment A. The project will not result in the loss of forest land or conversion of forest land to non-forest uses. **No impact.**

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| e) Would the project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of farmland to non-agricultural use? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

e) The project does not involve changes in the existing environment which could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use. **No impact.**

AIR QUALITY

| | | | | |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| a) Would the project conflict with or obstruct implementation of the applicable air quality plan? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

a) The Northern Sacramento Valley Planning Area 2021 Triennial Air Quality Attainment Plan addresses non-attainment of California Ambient Air Quality Standards for ozone in the Northern Sacramento Valley Planning Area. The Plan requires control measures for stationary sources and

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

incentive programs, community education efforts, reduction from land use programs, air quality forecasting, and district rules applicable to new development to address non-stationary sources of ozone.

The project does not include a permanent source of ozone emissions. The project will result in short-term emissions of ozone precursors (Reactive organic gases (ROG) and nitrogen oxides (NOx) through mobile sources including equipment, contractor worker trips, and offsite disposal of biomass as feedstock for biomass facilities. Emissions generated from using biomass from the project as fuel for biomass facilities will not exceed the permitted capacity or volume allowed by the applicable permits for each biomass facility. All emissions will be short term in nature. BMPs will be implemented during the project as described under b) below that will minimize ozone emissions generated by vehicles and equipment used during project implementation. The project will not conflict with or obstruct the Air Quality Attainment Plan. **Less-than-significant impact.**

| b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

b) Shasta County is designated as nonattainment for ozone and PM10 California Ambient Air Quality Standards (CAAQS). The project will result in minor, short-term emissions of PM10 and ozone precursors (ROG and NOx). The following BMPs which include applicable BMPs contained in the *FEMA Programmatic Environmental Assessment, Recurring Actions in Arizona, California, and Nevada* will be implemented by the treatment contractor during project activities:

- All exposed unpaved surfaces shall be watered two times per day to limit dust generation.
- All haul trucks transporting soil, chips, or other loose material offsite shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- Monitor dust-generating activities and implement appropriate measures for maximum dust control.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes.
- Clear signage shall be provided for project workers at all access points.
- All project equipment shall be maintained and properly tuned in accordance with manufacturer specifications. All equipment shall be checked by a certified visible emissions evaluator.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

within 48 hours. The Air District’s phone number shall also be visible to ensure compliance with applicable regulations.

- All trucks and equipment, including their tires, shall be washed off prior to leaving the site.
- Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- The idling time of diesel-powered equipment will be minimized to two minutes.
- All equipment, diesel trucks, and generators are required to be equipped with Best Available Control Technology for emission reductions of NOx and PM.
- Monitor dust-generating activities and implement appropriate measures for maximum dust control.
- All equipment used onsite will be California Air Resources Board (CARB) compliant.

The BMPs listed above will minimize emissions of PM10 and ozone precursors generated by the project. Project emissions will be temporary and will cease upon completion of the project. The project will not result in a cumulatively considerable net increase of PM10 or ozone precursors.

Less-than-significant impact.

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|-------------------------------------|--------------------------|
| c) Would the project expose sensitive receptors to substantial pollutant concentrations? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

c) BMPs listed in b) above will be implemented for the project to control emissions generated by vehicles and mechanical equipment used for the project. Emissions will also be generated through use of biomass from the project as fuel at biomass facilities. The project will not result in an increase in the permitted capacities or emissions of these facilities. Equipment and vehicles will not generate substantial pollutants and will not be operated in any one location for an extended period of time. The project will not expose sensitive receptors to substantial pollutant concentrations. **Less-than-significant impact.**

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

d) The project will require equipment that could result in diesel exhaust odors. Odor emissions are highly dispersive, and equipment will not be operated in any one location for an extended period of time. In addition, the PAAs are located in rural areas with low population density. BMPs listed in b) above will be implemented by the treatment contractor for the project including limits on equipment idling times that will minimize equipment diesel exhaust emissions. The project will

not result in odors or other emissions that would adversely affect a substantial number of people.
Less-than-significant-impact.

BIOLOGICAL RESOURCES

| | | | | |
|---|---|--|---|--|
| <p>a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?</p> | <p>Potentially Significant Impact</p> <p><input type="checkbox"/></p> | <p>Less Than Significant with Mitigation Incorporated</p> <p><input checked="" type="checkbox"/></p> | <p>Less Than Significant Impact</p> <p><input type="checkbox"/></p> | <p>No Impact</p> <p><input type="checkbox"/></p> |
|---|---|--|---|--|

a) Special-status plant and wildlife species with potential to occur within each PAA are included in Tables 2 and 3 in the Project Description and Environmental Setting. Special status species with potential to occur within the project area include:

WILDLIFE SPECIES

- American peregrine falcon (*Falco peregrinus anatum*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Northern goshawk (*Accipiter gentilis*)
- Osprey (*Pandion haliaetus*)
- Purple Martin (*Progne subis*)
- Tricolored blackbird (*Agelaius tricolor*)
- Yellow-billed Cuckoo (*Coccyzus americanus*)
- Fisher (*Pekania pennanti*)
- Pallid bat (*Antrozous pallidus*)
- Spotted bat (*Euderma maculatum*)
- Townsend’s big-eared bat (*Corynorhinus townsendii*)
- Wolverine (*Gulo gulo*)
- Cascades frog (*Rana cascadae*)
- Foothill yellow-legged frog (*Rana boylei*)
- Shasta salamander (*Hydromantes shastae*)
- Western pond turtle (*Emys marmorata*)
- Western spadefoot (*Spea hammondi*)
- Chinook Salmon CV Spring-run ESU (*Oncorhynchus tshawytscha pop. 11*)
- Pacific Lamprey (*Entosphenus tridentatus*)
- Steelhead CV DPS (*Oncorhynchus mykiss irideus pop. 11*)
- Monarch butterfly (*Danaus plexippus*)
- Vernal pool tadpole shrimp (*Lepidurus packardi*)
- Vernal pool fairy shrimp (*Branchinecta lynchi*)
- Conservancy fairy shrimp (*Branchinecta conservation*)

- Valley Elderberry longhorn beetle (*Desmocerus californicus dimorphus*)
- Western bumble bee (*Bombus occidentalis*)

PLANT SPECIES

- Ahart's paronychia (*Paronychia ahartii*)
- Baker's navarretia (*Polemoniaceae*)
- Bellingher's meadowfoam (*Limnanthes floccosa* ssp. *bellingheriana*)
- Big-scale balsamroot (*Balsamorhiza macrolepis*)
- Blushing wild buckwheat (*Eriogonum ursinum* var. *erubescens*)
- Boggs Lake hedge-hyssop (*Gratiola heterosepala*)
- Broad-nerved hump moss (*Meesia uliginosa*)
- Brownish beaked-rush (*Rhynchospora capitellata*)
- Callahan's mariposa-lily (*Calochortus syntrophus*)
- Cantelow's lewisia (*Lewisia cantelovii*)
- Canyon Creek stonecrop (*Sedum paradisum* ssp. *paradisum*)
- English sundew (*Drosera anglica*)
- Finger rush (*Juncus digitatus*)
- Heckner's Lewisia (*Lewisia cotyledon* var. *heckneri*)
- Jepson's dodder (*Cuscuta jepsonii*)
- Jepson's horkelia (*Horkelia daucifolia* var. *indicta*)
- Legenere (*Legenere limosa*)
- Little hulsea (*Hulsea nana*)
- Lassen Paintbrush (*Castilleja lassenensis*)
- Long haired star-tulip (*Calochortus longebarbatus* var. *longebarbatus*)
- Long-leaved starwort (*Stellaria longifolia*)
- Long-stiped campion (*Silene occidentalis* ssp. *longistipitata*)
- Maverick clover (*Trifolium piorkowskii*)
- Mingan moonwort (*Botrychium minganense*)
- Newberry's cinquefoil (*Potentilla newberryi*)
- Northwestern moonwort (*Botrychium pinnatum*)
- Oval-leaved viburnum (*Viburnum ellipticum*)
- Rattlesnake fern (*Botrypus virginianus*)
- Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus*)
- Red-flowered bird's-foot trefoil (*Acmispon rubriflorus*)
- Sanford's arrowhead (*Sagittaria sanfordii*)
- Santa Lucia dwarf rush (*Juncus luciensis*)
- Scalloped moonwort (*Botrychium crenulatum*)
- Shasta ageratina (*Ageratina shastensis*)
- Shasta clarkia (*Clarkia borealis* ssp. *arida*)
- Shasta fawn lily (*Erythronium shastense*)
- Shasta huckleberry (*Vaccinium shastense* ssp. *shastense*)
- Shasta limestone monkeyflower (*Erythranthe taylorii*)

- Shasta snow-wreath (*Neviusia cliftonii*)
- Sierra blue grass (*Poa sierrae*)
- Silky cryptantha (*Cryptantha crinite*)
- Siskiyou clover (*Trifolium siskiyouense*)
- Slender Orcutt grass (*Orcuttia tenuis*)
- Stony Creek spurge (*Euphorbia ocellata* ssp. *rattanii*)
- Sulphur Creek brodiaea (*Brodiaea matsonii*)
- Upswept moonwort (*Botrychium ascendens*)
- Watershield (*Brasenia schreberi*)
- Western goblin (*Botrychium montanum*)

The following BMPs, which include applicable BMPs contained within the *Final Programmatic EIR for Recurring Actions in Arizona, California, and Nevada*, will be implemented prior to and during project implementation by the qualified biologist and treatment contractor to minimize impacts to special-status species, raptors, and migratory birds from implementation of the project:

SPECIAL-STATUS SPECIES BMPs

- Treatment will generally occur during the dry season (April 15 to October 15)
- No more than two days prior to the start of ground-disturbing activities, focused pretreatment surveys for special-status species will be completed by a USFWS/CDFW-approved biologist in all suitable upland dispersal habitat areas, if special-status species have been previously identified in the area.
- If special-status species are found during focused pretreatment surveys, the USFWS/CDFW will be contacted within one working day, and a suitable protocol shall be approved by USFWS/CDFW for relocation before treatment activities may begin.
- Exclusion fencing such as Ertec E-fence™ or an equivalent will be installed around special-status species habitat prior to any treatment during the dry season (April 1 through October 15), when special status species are not actively dispersing or foraging. The fencing will remain in place until all project activities in the vicinity of suitable upland dispersal habitat are completed.
- To prevent Special Status Species from becoming entangled or trapped in erosion control materials, plastic monofilament netting (erosion control matting) or similar material will not be used for erosion control. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.
- Prior to any treatment where Special Status Species have been detected a USFWS/CDFW-qualified biologist will conduct an education program for operational personnel. At a minimum, the training will include a description of Special Status Species and their habitats; the potential occurrence of these species in the project area; the measures to be implemented to conserve listed species and their habitats as they relate to the work site; and boundaries in which work may occur. A fact sheet conveying this information will be prepared and distributed to all crews and project personnel entering the project area. Upon completion of the program, personnel will sign a form stating that they attended the program and understand all of the avoidance and minimization measures for the Special Status Species.

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

- All project-related trenches and holes in the ground will be covered at the end of each workday to prevent entrapment of Special Status Species. A USFWS/CDFW-approved biologist will survey the holes at the beginning of each workday to check for trapped Special Status Species. If a Special Status Species is observed, the USFWS/CDFW-approved biologist will capture and relocate them to a suitable area outside the project area.
- All organic matter should be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with ponds, wetlands, or potentially contaminated sediments. Items should be washed with a 5 percent bleach solution and rinsed with clean water before leaving each study site. Used cleaning materials (liquids, etc.) should be disposed of safely, and if necessary, taken off site for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.
- Implement measures to minimize the spread of disease and non-native species based on current Wildlife Agency protocols and other best available science.

RAPTOR BMPs

Pretreatment surveys for raptors, other special-status birds, and appropriate nesting habitat will be conducted within 50 feet of the project area no more than three days prior to ground-disturbing activities. If an active nest is found, CDFW will be consulted to determine the appropriate buffer area to be established around the nesting site and the type of buffer to be used, which typically is ESA fencing. If establishment of a buffer is not feasible, the appropriate agency will be contacted for further avoidance and minimization guidelines.

- A qualified biologist will conduct weekly monitoring during project work, to evaluate the identified nest for potential disturbances associated with treatment activities. Project work within the buffer is prohibited until the qualified biologist determines the nest is no longer active.
- If an active nest is found after project work begins, treatment activities in the vicinity of the nest will stop until a qualified biologist has evaluated the nest and established the appropriate buffer around the nest. If establishment of the buffer is not feasible, the appropriate agency will be contacted for further avoidance and minimization guidelines

MIGRATORY BIRD BMPs

The measures below would be implemented for project activities during the nesting season (February 15 through August 31).

- A qualified biologist will conduct pretreatment surveys for nesting migratory birds in the project area no more than three days prior to the start of ground disturbing activities. If pretreatment surveys indicate the presence of any migratory bird nests where activities would directly result in bird injury or death, a buffer zone of 50 feet will be placed around the nest.
- Buffers will be established around active migratory bird nests where project activities would directly result in bird injury or death. The size of the buffer may vary for different species and will be determined in coordination with the responsible agency. A qualified biologist will delineate the buffer using ESA fencing, pin flags, and/or yellow caution tape.

- Buffer zones will be maintained around all active nest sites until the young have fledged and are foraging independently. In the event that an active nest is found after the completion of pretreatment surveys and after work begins, all treatment activities within a 50-foot radius will be stopped until a qualified biologist has evaluated the nest and erected the appropriate buffer around it.
- If an active nest is found in an area after project work begins, treatment activities in the vicinity of the nest will stop until a qualified biologist has evaluated the nest and established the appropriate buffer around the nest. If establishment of the buffer is not feasible, the responsible agency will be contacted for further avoidance and minimization guidelines.

The project will result in habitat modification to special-status species through the removal of shrubs, branches, small trees and dead or dying trees within 100 to 400 feet of the roadways. While the project would result in removal of vegetation within the project area, the surrounding land outside of the project treatment areas would remain undisturbed. This land can provide shelter and food for wildlife species foraging or residing within shrubs and smaller trees. Project activities will not occur within 75 feet of perennial streams and wetlands or within 50 feet of other waterbodies, therefore project activities will not result in habitat impacts to streams or riparian corridors. Habitat modification impacts of the project will be **less than significant**.

Implementation of the BMPs listed above for special-status species and migratory birds will ensure project impacts to special-status and migratory birds are **less than significant**.

Potentially occurring special-status plant species vary by each PAA. Special-status plant species occurring on banks of rivers and streams and within wetlands and vernal pools will be avoided through implementation of the project wetland and stream buffers. The project includes vegetation removal, ground disturbance, and herbicide application that could result in impacts to special-status plant species present within the activity area. **Mitigation Measure 1** is included to identify potential habitat for special-status plants on each eligible parcel so protocol-level surveys can be conducted where needed and avoidance buffers implemented if necessary. In addition, **Mitigation Measure 11** will be implemented to reduce the spread of invasive plant species during project implementation. Project impacts to special-status plant species will be **less than significant with mitigation incorporation**.

The project activities include application of herbicides and vegetation removal. Many aquatic species are sensitive to the concentration of chemicals found in herbicides (i.e., glyphosate, adjuvants, and surfactants). Anadromous fish spawn in freshwater watercourses and migrate to the ocean before returning to their birthplace to reproduce. Salmonids, such as the Spring-run Chinook are highly vulnerable to toxic injury and are especially susceptible as alevin (Kennedy 2018). Alevin may occur where the project area overlaps with salmonid spawning grounds. Chinook Salmon have potential to occur within streams in the Black Butte Road PAA. Central Valley Steelhead could occur within streams in the Black Butte Road, Fern Road, Highway 44/Dersch West, Ponderosa Way, and Whitmore Road PAAs. Anadromous salmon are also inherently sensitive to physical habitat changes along their long migratory corridors. Increases in temperature, siltation, and UV-B radiation are harmful to salmonid wellbeing. The removal of riparian vegetation can directly increase stream temperature and UV-B radiation levels. No project

activities (including vegetation removal) will occur within 75 feet of perennial streams or wetlands or within 50 feet of ephemeral and intermittent streams. **Mitigation Measure 3** is included to ensure all ephemeral, intermittent, and perennial streams as well as wetlands and vernal pools are identified within each eligible parcel so that the appropriate buffers can be implemented for the project. Additional BMPs to protect water quality will be implemented for the project and are listed in the Hydrology and Water Quality section of this document. To minimize impacts to anadromous fish species from herbicide application, **Mitigation Measure 2** is included which includes an increased herbicide application buffer (150 feet) from anadromous fish-bearing streams. With incorporation of water quality BMPs, stream buffers, and implementation of **Mitigation Measure 2** and **Mitigation Measure 3**, project impacts to special-status fish species will be **less than significant with mitigation incorporation**.

Western pond turtle have potential to occur within all of the PAAs in aquatic marsh, swamp, pond, and wetland habitat and could also nest in adjacent uplands under loose dirt or leaf litter. The project includes a 75-foot buffer from perennial streams and wetlands as well as a 50-foot buffer from intermittent and ephemeral streams. Therefore, western pond turtles are unlikely to be impacted while they reside in the water. Pond turtles do have to potential to be impacted by habitat modification of their nest sites. Pond turtles often nest along sandy banks of rivers, but they have also been known to move a considerable distance (over 250 feet) away from streams to find a suitable nest site (CDFW 2000). The nest sites that may occur outside of riparian buffers that are implemented are at the greatest risk of being impacted by project activities. **Mitigation Measure 4** is included to avoid impacts to upland dispersal and nesting habitat. Impacts to Western pond turtle will be **less than significant with mitigation incorporation**.

Special-status amphibian species could also be present along streams and ponds within the project area. Aquatic habitat for these species will be avoided with implementation of setbacks from streams and wetlands, however, they may also use suitable upland dispersal habitat within 150 feet of flowing watercourses. **Mitigation Measure 4** is included to avoid individuals within upland dispersal habitat during project activities. In addition, Shasta salamanders could occur within limestone areas present within the Bear Mountain Road PAA. During the dry season, they remain deep within the crevices to preserve moisture. There is no risk that they will be impacted by project activities while they are sheltering in this way. During the wet season (particularly during rain events), they may be found dispersing in the open around limestone belts. Incidental take of individual salamanders has the potential to occur while they disperse. **Mitigation Measure 4** is included to avoid impacts to Shasta salamander within the Bear Mountain Road PAA if project activities are conducted during the wet season. With implementation of **Mitigation Measure 3** and **Mitigation Measure 4**, impacts to special-status amphibians will be **less than significant with mitigation incorporation**.

Bats use a variety of different roosts throughout the year according to their life cycle. The roost structure utilized depends on the type of roost. Typically, hibernation and maternity roosts are found within permanent structures such as caves, bridges, mines, and buildings. Feeding perches and day/night roosts are more temporary and trees are utilized. While the project activities are unlikely to directly disturb permanent structures, tree removal around maternity and hibernation roosts may impact temperature conditions and the noise may cause a disturbance. Individual bats

roosting in trees could be harmed if the tree is removed, or the vegetation around it is treated. **Mitigation Measure 5** and **Mitigation Measure 7** are included to avoid impacts to maternity and hibernation roosts. Additionally, nocturnal foraging may be disrupted by bright artificial lighting. **Mitigation Measure 6** is included to minimize project impacts related to artificial lighting. Impacts to special-status bat species will be **less than significant with mitigation incorporation**.

Large terrestrial mammals (wolverine and fisher) could potentially occur within the Ponderosa Way, Shingletown Ridge Road, Fern Road, and O'Brien Estates PAAs and utilize large tracts of land for dispersal and foraging. The removal of small pockets of vegetation relative to their typical range is unlikely to cause any adverse impact unless a den occurs in the project area. Den structures vary widely by species. For example, fishers den within tree cavities and in rock crevices in the winter, and wolverines den in complex snow tunnels or trees and boulders with at least 1 meter of snow (Magoun & Copeland 1998). Typically, denning occurs in the winter and early spring until young can disperse. Given the variety of den sites, a qualified biologist will survey the project site 30 days prior to operation in areas where they are likely to occur per **Mitigation Measure 8**. Impacts to special-status terrestrial mammal species will be **less than significant with mitigation incorporation**.

The Valley Elderberry Longhorn Beetle (VELB) and the Monarch butterfly are dependent on elderberry shrubs and native milkweeds respectively for their life cycles. VELB lay their eggs in the stems of elderberry within riparian zones. The young remain inside, feeding on the shrub until they are old enough to disperse as adults. Similarly, monarch caterpillars can only feed on milkweed, so they are essential for reproduction. Given that the young of VELB and monarchs reside on elderberry and milkweed, removal of these plants may result in direct harm or mortality of these species. Even if no occupation is observed, removal of these plant species reduces habitat that is essential to the VELB and monarch life cycles. With the implementation of **Mitigation Measure 9** and **Mitigation Measure 10** that include disturbance setbacks for these species, the impact to the Valley Elderberry Longhorn Beetle and the Monarch butterfly will be **less than significant with mitigation incorporation**.

Mitigation Measure 1: Pre-Treatment Botanical Surveys (All PAAs)

As part of the preliminary site assessment (PSA) conducted on each eligible parcel potential habitat for special-status plants with potential occur within the treatment area will be identified along with species included in any sensitive natural communities. If potential habitat for special-status plants or sensitive natural communities are identified, protocol-level surveys of the eligible parcels shall be conducted by a qualified biologist during the flowering window for special-status plant species with potential to occur within the treatment area. Surveys shall comply with survey protocols for plants species listed under the CDFW *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (2018). If no special-status plants are found, no further measures pertaining to special-status plants are necessary. If special-status plant species are identified during the botanical surveys, the individuals will be avoided. The treatment prescription (TP) for the parcel will be modified to exclude activities within 25 feet of the individual operation and exclusionary fencing will be placed around the plants prior to operations on the parcel to establish the avoidance area during project implementation.

Mitigation Measure 2: Herbicide Treatment Buffers(Anadromous Fish-Bearing Streams)

Herbicide treatment buffer will coincide with the prescribed treatment buffer for perennial and ephemeral streams for any anadromous fish bearing streams. In order to limit the effect of herbicides on anadromous fish. Herbicides with the potential to harm aquatic life shall not be applied within 150 feet of anadromous fish bearing streams. If conditions necessitate that herbicides are applied within the 150-foot buffer, then the application shall be completed in the dry season when no precipitation is forecasted.

Mitigation Measure 3: Riparian and Wetland Identification and Exclusion (All PAAs)

During the preliminary site assessment of each eligible parcel, eligible parcels will be surveyed for aquatic resources. The treatment prescription (TP) will exclude activities within 75 feet of perennial streams and wetlands (including vernal pools) as well as a 50-feet from ephemeral and intermittent streams. The exclusion area will be marked with flagging. Biomass removal, herbicide application, equipment staging, operation of mechanical equipment, and on-site disposal of removed biomass shall not occur within the marked buffers.

Mitigation Measure 4: Surveys for Special Status Amphibians and Reptiles (All PAAs)

During the Preliminary Site Assessment of each eligible parcel, work areas within 150 feet of flowing watercourses will be evaluated to determine if suitable upland dispersal habitat for potentially occurring special-status amphibians and reptiles are present. If no potential suitable upland dispersal habitat is identified, no further action is required. If suitable upland habitat is identified, no more than two days prior to the start of ground disturbing activities, focused pretreatment surveys for special status amphibians, reptiles, and their eggs will be completed by a qualified biologist in all suitable upland dispersal habitat areas within 150 feet of flowing watercourses. If a special status species is found, CDFW will be notified. If an adult individual is observed within the survey area, then the animal shall be avoided until it is no longer in harm's way, or it may be relocated by a qualified biologist if an area offsite that has appropriate habitat for the species is available. If relocating, the animal should be moved to a nearby area with habitat similar to the environment in which it was found.

If a nest, eggs, hatchlings, or an aestivating adult are observed within the survey area, then an avoidance buffer of 50 to 100 feet shall be applied to heavy equipment access, ground disturbing activities, and herbicide application. The qualified biologist shall consider the topography and vegetation onsite, as well as the treatments proposed onsite and the potential for disturbance when determining the buffer distance. Additionally, to avoid impacts to hatchlings' dispersal from the nest site, no woody debris or other barrier shall be placed in between the nest site and the nearest body of water.

During the Preliminary Site Assessment, eligible parcels within the Bear Mountain Road PAA will be evaluated for limestone rock outcrops. If no limestone rock outcrops suitable for Shasta Salamander are identified within 300 feet of project activities are identified, no further action is required. If limestone rock outcrops are identified, treatment in areas containing limestone rock outcrops suitable for the Shasta Salamander will be completed during the dry season when salamanders are the least likely to occur outside of limestone fissures. If work must occur within 300 feet of a limestone outcrop during the wet season (between November and March) then

protocol-level surveys for Shasta salamander shall be completed by a qualified biologist. If Shasta salamanders are identified within work areas, then CDFW shall be notified and measures for avoiding impact must be approved. Potential measures can include implementing a 300-foot buffer around limestone outcrops, onsite monitoring, or issuance of appropriate permits for incidental take to relocate individual salamanders.

Mitigation Measure 5: Bat Roost Humane Exclusion (All PAAs)

During the Preliminary Site Assessment of eligible parcels, trees with maternity roost structures ((i.e. cavities in the trunk or branches, woodpecker holes, loose bark, cracks) will be identified. If no trees with maternity roost structures are identified, no further measures are necessary. If removal of trees identified to have bat roost structure occurs from September 1 to October 30, no measures for special-status bats are required.

If removal of trees identified to have bat roost structure potential will occur during the bat maternity season, when young are non-volant (March 1- August 31), or during the bat hibernacula (November 1-March 1), when bats have limited ability to safely relocate roosts, humane exclusions should be implemented which consist of a two-day removal process by which the non-habitat trees and brush are removed along with smaller tree limbs on the first day, and the remainder of the tree limbs and the tree truck on the second day.

Mitigation Measure 6: Artificial Lighting Standards (All PAAs)

To minimize impacts of lighting to bats and other nocturnal species, any artificial lighting associated with short-term and long-term project activities should be downward facing, fully shielded, and designed and installed to minimize photo pollution of adjacent wildlife habitat.

Mitigation Measure 7: Bat Roost Habitat Avoidance (All PAAs)

During the Preliminary Site Assessment of each eligible parcel the presence of caves or bridges within the treatment area will be noted. If no caves or bridges are located within the project area, no further measures are necessary. If present within 50 feet of project activities, caves and bridges in the project area will be assessed during the Preliminary Site Assessment for potential bat roost structures (crevice roosts tend to be approximately 3/4 to 1 1/2 inches across and at least 18 inches deep. In most cases, they run from one side of the bridge to the other, and between three and several hundred meters above ground). If found, a qualified biologist will assess the structure for signs of bat presence (i.e., guano, insect pieces, etc.). If no roost is present, then no buffer is needed. If a roost is present, then a 50-foot non-disturbance buffer shall be implemented around the roost structure to prevent changes to the thermal stability and protective cover surrounding the roost structure that could result from tree removal.

Mitigation Measure 8: Mammal Den Surveys (Ponderosa Way, Shingletown Ridge Road, Fern Road, O'Brien Estates)

During the Preliminary Site Assessment of each eligible parcel, the project area will be evaluated for suitable mammal den habitat. If potential den habitat for fisher (*Pekania pennaniti*) or wolverine (*Gulo gulo*) is identified, and activities occur during the denning season for these species, pretreatment surveys shall be completed within thirty days prior to ground disturbing activities to determine if any terrestrial mammal (e.g., American wolverine and fisher) den

structures are present within the work area. If potential dens are located within the work area and cannot be avoided during project activities, a qualified biologist will determine if the dens are occupied. If occupied dens are present within the work area, their disturbance and destruction will be avoided by stopping operations until an appropriate buffer approved by CDFW or USFWS.

Mitigation Measure 9: Native Milkweed Buffer (All PAAs)

Surveys will be completed to determine if native milkweed (*Asclepias sp.*) are present within work areas. If milkweed is identified onsite, disturbance to the plant would be avoided by implementing a 25-foot buffer around identified individuals.

Mitigation Measure 10: Valley Elderberry Longhorn Beetle Buffer (Bear Mountain Road, Highway 44/Dersch West, Whitmore Road 1 and Whitmore Road 2)

Protocol level surveys shall be completed to identify any elderberry (*Sambucus spp.*) within 165 feet of riparian corridors at sites below 3000 feet elevation, where access is possible. If any elderberry shrubs are found within the survey area, then a no-disturbance buffer of 20 feet or more shall be implemented. ESA flagging or similar high visibility flagging shall be installed to demarcate the buffer. No herbicide shall be applied within the 20-foot buffer.

Mitigation Measure 11: Invasive Species Management (All PAAs)

An invasive species management plan (ISMP) shall be prepared to provide guidance that prevents the spread of noxious weeds. If a significant population of Cal-IPC listed invasive species is observed, then equipment shall be cleaned at the contaminated site before proceeding to any other sites.

| | | | | |
|---|--|---|--|---|
| b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service? | Potentially Significant Impact <input type="checkbox"/> | Less Than Significant with Mitigation Incorporated <input checked="" type="checkbox"/> | Less Than Significant Impact <input type="checkbox"/> | No Impact <input type="checkbox"/> |
|---|--|---|--|---|

b) The project does not include biomass removal or other treatment activities within 75 feet of perennial streams and wetlands or within 50 feet of ephemeral and intermittent streams. In addition, hydrology and water quality BMPs (listed in the Hydrology and Water Quality section of this document) will be implemented for the project. **Mitigation Measure 3** above is included to ensure the appropriate buffers are implemented for the project. The Northern Interior Cypress Forest is a potentially occurring sensitive natural community within the Shingletown Ridge Road, Ponderosa Way, Highway 44 Dersch West and Black Butte Road PAAs. Sensitive natural communities would be avoided through implementation of Mitigation Measures 1 and 3. Impacts to riparian habitat and sensitive natural communities will be **Less than significant with mitigation incorporated**.

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

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| <p>c) Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?</p> | <p>Potentially Significant Impact</p> <p><input type="checkbox"/></p> | <p>Less Than Significant with Mitigation Incorporated</p> <p><input type="checkbox"/></p> | <p>Less Than Significant Impact</p> <p><input type="checkbox"/></p> | <p>No Impact</p> <p><input checked="" type="checkbox"/></p> |
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c) With implementation of **Mitigation Measures 3** above, the project will not affect any federally protected wetlands. See b). **No impact.**

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| <p>d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?</p> | <p>Potentially Significant Impact</p> <p><input type="checkbox"/></p> | <p>Less Than Significant with Mitigation Incorporated</p> <p><input type="checkbox"/></p> | <p>Less Than Significant Impact</p> <p><input checked="" type="checkbox"/></p> | <p>No Impact</p> <p><input type="checkbox"/></p> |
|---|---|---|--|--|

d) Project activities will occur in areas with existing human presence and disturbance (adjacent to roadways and residential land uses). Project activities could temporarily deter wildlife movement through the project area. Activities will not occur in any single location for an extended period of time and opportunities will be available for wildlife to move through adjacent undeveloped areas outside of the active treatment area while treatment activities occur.

The project will include removal of shrubs, small trees, densely spaced trees, and dead and dying trees within the treatment areas, but abundant habitat is available in areas adjacent to the project site. As discussed under a) above, BMPs will be implemented to avoid impacts to nesting birds in the project vicinity. In addition, the project will not include activities within 75 feet of perennial streams or wetlands or 50 feet of ephemeral and intermittent streams. The project would not substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. **Less-than-significant impact.**

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| <p>e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?</p> | <p>Potentially Significant Impact</p> <p><input type="checkbox"/></p> | <p>Less Than Significant with Mitigation Incorporated</p> <p><input type="checkbox"/></p> | <p>Less Than Significant Impact</p> <p><input type="checkbox"/></p> | <p>No Impact</p> <p><input checked="" type="checkbox"/></p> |
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e) Shasta County does not have a tree preservation policy or ordinance. The project does not conflict with any local policies or ordinances protecting biological resources or tree preservation policy/ordinance. **No impact.**

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

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| f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

f) No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan exist within the project area. **No impact.**

CULTURAL RESOURCES

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|---|--------------------------------|--|------------------------------|--------------------------|
| a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

a) The following best management practice included in the FEMA Final Programmatic EIR for Recurring Actions in Arizona, California, and Nevada will be implemented for the project.

- In the event that any prehistoric or historic subsurface cultural resources, as defined by the responsible agency, are discovered during ground disturbing activities all work within 50 feet of the resources shall be halted and the project applicant should consult with a qualified archaeologist or paleontologist to assess the significance of the find. If any find is determined to be significant, representatives of the proponent and qualified archaeologist and the landowner would meet to determine the appropriate course of action.

An Archaeological Survey Report was prepared for the project by Alta Archaeological Consulting, LLC (ALTA). The survey area included 6,496 acres. Project activities could result in a substantial adverse change in the significance of a cultural resource. In addition to the BMP included above, Mitigation Measure 12 will be implemented to ensure the project does not result in substantial adverse effects to cultural resources within the project area. Impacts to cultural resources will be **less than significant with mitigation implementation.**

Mitigation Measure 12: Implement Management Recommendations in Archaeological Survey Report

Management Recommendations included in the Archaeological Survey Report prepared for the project shall be implemented to ensure that cultural resources are not adversely affected by the project which include the following:

Special Conditions

Archaeological resources within the Project Area are designated for Special Conditions where fuel reduction activities may be performed within the site limits. In some instances, removal of hazard trees is beneficial to site preservation. Special Conditions of cultural resources includes the following actions:

1. Prior to the commencement of operations, the Project Manager will ensure that all Special Treatment Zones (STZ) are clearly described and illustrated in plans, and specifications.
2. All parties (CAL FIRE, Project Manager, Registered Professional Forester [RPF], or equipment operators familiar with resource management work will review the plans.
3. Prior to commencement of operations, a CAL FIRE Certified Archaeological Surveyor or professional archaeologist familiar with the site, shall demarcate all sites with STZ flagging. Exclusionary flagging will be based on the site sketch map. No buffer around the site boundary is required for Special Condition sites. STZ flagging that is older than six months will be inspected and refreshed prior to operations.
4. Fuel reduction work utilizing hand tools (including chainsaws) may occur within the STZ area given the following conditions.
5. No skidding of logs shall occur within the STZ.
6. Timber shall be directionally felled away from the site.
7. Mechanized equipment shall be restricted to existing roads or disturbed areas within the STZ.
8. No tree planting will occur within STZ.
9. A CAL FIRE Certified Archaeological Surveyor or professional archaeologist will periodically inspect sites to ensure that BMPs are effective and the STZ has not been breached.

Unanticipated Discovery of Cultural Resources

If previously unidentified cultural resources are encountered during project implementation, avoid altering the materials and their stratigraphic context. A qualified professional archaeologist should be contacted to evaluate the situation. Project personnel should not collect cultural resources. Prehistoric resources include, but are not limited to, chert or obsidian flakes, projectile points, mortars, pestles, and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic resources include stone or abode foundations or walls; structures and remains with square nails; and refuse deposits or bottle dumps, often located in old wells or privies.

Encountering Native American Remains

Although unlikely, if human remains are encountered, all work must stop in the immediate vicinity of the discovered remains and the County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American and prehistoric, the Native American Heritage Commission must be contacted by the Coroner so that a "Most Likely Descendant" can be designated and further recommendations regarding treatment of the remains is provided.

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|--------------------------|
| b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

b) See discussion to a) above. Best management practices during project implementation and implementation of **Mitigation Measure 12** will ensure the project will not cause a substantial adverse change to the significance of an archaeological resource. **Less-than-significant impact with mitigation.**

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|--------------------------|
| c) Would the project disturb any human remains, including those interred outside of formal cemeteries? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

The project does not include excavation activities and is not anticipated to disturb human remains. In the unlikely event of discovery of human remains, the following BMP contained in the FEMA Final Programmatic EIR for Recurring Actions in Arizona, California, and Nevada will be implemented for the project follows:

- There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:
- The Coroner of the county in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required, and
- If the coroner determines the remains to be Native American:
 - The coroner shall contact the responsible agency within 24 hours.
 - The responsible shall identify the person or persons it believes to be the most likely descended from the deceased Native American.

The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods.

In addition to the BMP listed above, measures included in the report prepared by the qualified archeologist for unanticipated discovery of human remains will be implemented. Impacts related to disturbance of human remains will be less than significant with implementation of the BMP above as well as **Mitigation Measure 12** above. **Less than significant with mitigation incorporation.**

ENERGY

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|---|--------------------------------|--|------------------------------|-------------------------------------|
| a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

a) The project will not result in wasteful or inefficient consumption of energy. The project will require temporary consumption of energy resources (diesel fuel and gasoline) for equipment used for biomass removal and off-site disposal of biomass. Compliance with state, federal, and local regulations (limiting engine idling times, etc.) will reduce and/or minimize short-term energy demand during the project to the extent feasible and would not result in wasteful or inefficient use of energy. **No impact.**

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|---|--------------------------------|--|------------------------------|-------------------------------------|
| b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

b) Shasta County does not currently have a renewable energy or energy efficiency plan. The majority of biomass removed and disposed off-site will be used as fuel for biomass plants. The project will provide a source of renewable energy (biomass) which is consistent with the Energy Element of the Shasta County General Plan See a) above. **No impact.**

GEOLOGY AND SOILS

| | | | | |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| a) Would the project directly or indirectly cause potential substantial adverse effects, including risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.) | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

a) Alquist-Priolo earthquake fault zones are mapped in the eastern portion of Shasta County and in close vicinity to several of the PAAs included in the project (DOC 2022). The project does not include permanent development or additional permanent occupancy within the project area. The project will not increase the risk of loss, injury or death involving rupture of a known earthquake fault. **No impact.**

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| b) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

b) According to the Shasta County General Plan Seismic and Geologic Hazards Element, Shasta County has a low level of historic seismic activity. Most of the stronger intensity seismic activity has occurred in eastern Shasta County. The western half of Shasta County is less seismically active (Shasta County, 2004). The project does not include construction of structures or permanent occupancy within the project site. The project will not result in the risk of loss, injury or death involving seismic ground shaking. **No impact.**

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| c) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

c) The project site is not within a mapped Liquefaction Zone where liquefaction and landslides may occur during a strong earthquake (California State Geoportal 2022). According to the Shasta County General Plan Seismic and Geologic Hazards Element, liquefaction is most likely to occur in alluvial and stream channel deposits, especially when the groundwater table is high. Areas of potential liquefaction are located in the north central valley area of the County (Shasta County 2004). The project does not include activities in areas where liquefaction is likely to occur and does not include permanent occupancy or construction of structures within the project area, therefore it will not result in the risk of loss, injury or death from seismic-related ground failure. **No impact.**

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| d) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

d) According to the Shasta County General Plan Seismic and Geologic Hazards Element, landslides occur throughout Shasta County, although they have not been considered a major problem. Landslides are more prevalent in the eastern and northern portions of the County and are more commonly related to the sedimentary and volcanic rocks in these vicinities (Shasta County 2004). The project does not include work in areas with slopes greater than 65 percent or on slopes greater than 50 percent with high or extreme erosion hazard rating, therefore the project is not anticipated to increase the risk of landslides or expose the treatment contractor to landslide risks. **Less-than-significant impact.**

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| e) Would the project result in substantial soil erosion or the loss of topsoil? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

e) The project could result in erosion within the treatment areas resulting from disturbance from mechanical equipment and removal of vegetation. As discussed in the project description, no work will be conducted in areas on slopes greater than 65 percent or on slopes greater than 50 percent with high or extreme erosion hazard rating. BMPs including applicable measures contained in the FEMA *Programmatic Environmental Assessment, Recurring Actions in Arizona, California, and Nevada* (December 2014) will be implemented for the project by the treatment contractor to reduce the potential for erosion impacts. BMPs include:

- Highly erosive soils will be identified in the field by the contractor and applicable controls applied per RWQCB guidance (Order R5-2017-0061).
- Delineate clearing limits, easements, setbacks, sensitive or critical areas, trees, and buffer zones to prevent excessive or unnecessary disturbances and exposure.
- Avoid excavation and soil disturbance during wet weather. It is unlikely that operations will be limited during the winter season. This will be determined on a case-by-case basis by the contractor and CAL FIRE project manager.
- Use standard erosion control features such as hydro-seeding, wood chips, jute or straw matting; fiber rolls other mulch material to stabilize disturbed soils.
- Cover stockpiled soil and landscaping materials with secured plastic sheeting and divert runoff around them, if used.
- Protect drainage courses, creeks, or catch basins with fiber rolls, silt fences, sand/gravel bags, and/or temporary drainage swales.
- Conduct routine inspections of erosion control measures especially before and immediately after rainstorms, and repair if necessary.

As part of site restoration, grass seeding, slash packing, or other appropriate erosion control or slope stabilization techniques will be deployed on any site where site inspection determines that disturbance would likely lead to an increased risk of erosion or slope stabilization. Site restoration and implementation of the BMPs listed above will result in a **less-than-significant impact** related to soil erosion or loss of topsoil from project activities.

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| f) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

f) As discussed in the project description, no work will be conducted in areas on slopes greater than 65 percent or on slopes greater than 50 percent with high or extreme erosion hazard rating. In addition, BMPs listed in e) above will be implemented for the project. The project is not anticipated to result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. **No impact.**

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|---|--------------------------------|--|------------------------------|-------------------------------------|
| g) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial direct or indirect risks to life or property? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

g) The project does not include construction of buildings or structures. The project will not create a substantial direct or indirect risks to life or property from expansive soils. **No impact.**

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| h) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

h) The project will not require installation of a septic tank or alternative wastewater disposal system. **No impact.**

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|---|--------------------------------|--|-------------------------------------|--------------------------|
| i) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

i) There are no known paleontological resources or unique geologic features within the project area. The following BMP contained in FEMA *Programmatic Environmental Assessment, Recurring Actions in Arizona, California, and Nevada* (December 2014) will be implemented in the event that unanticipated paleontological resources are uncovered during the course of the project.

- The project proponent shall notify a qualified paleontologist of unanticipated discoveries, made by either the cultural resources monitor or construction personnel and subsequently document the discovery as needed. In the event of an unanticipated discovery of a breas, true, and/or trace fossil during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist. The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before activities are allowed to resume at the location of the find.

Project impacts to unique geologic features and paleontological resources will be **less than significant.**

GREENHOUSE GAS EMISSIONS

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

a) The project will result in greenhouse gas emissions from operation of mechanical equipment and vehicle trips to transport workers, equipment, and offsite biomass disposal. Best Management Practices (BMPs) described in the Air Quality Section of this document will be implemented during the project, which will minimize emissions of greenhouse gases generated by operation of vehicles and equipment used for the project. Off-site biomass disposal will include transport of removed biomass to biomass facilities for use as fuel. The project will not result in an increase in permitted production or capacity of these facilities. Due to the temporary nature of the project, the project is not likely to produce significant greenhouse gas emissions. An estimate of greenhouse gas emissions generated by vehicle and equipment operation is included in Table 4.

Generally, a standard of 10,000 metric tons of CO₂ has been used to identify significant impacts. Based on the analysis in Table 4, the project generation of CO₂ falls below this threshold.

All equipment used onsite will meet the CARB requirements for emissions. Idling times will be minimized. The removal of the dead trees and their use for cogeneration power will reduce overall greenhouse gas emissions (GHG) from the project compared to open pile burning methods of disposal. The removal of the vegetation for fuel will limit the nitrogen process and reduce overall GHG emissions. Because of the small scope of the project, treatments are not likely to produce significant GHG emissions which could result in adverse impacts on the environment. Project activities will be limited to a short timeframe and will not result in a long-term increase in GHG emissions. The improved growing conditions will improve residual stands photosynthetic capacity, increase vigor in residual trees and result in an overall increase in carbon sequestration rates. No significant impacts from GHGs are expected as a result of the proposed project. **Less-than-significant impact.** Calculation sheet and assumptions for GHGs is included in Table 4.

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|-------------------------------------|--------------------------|
| b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

b) Onsite equipment and vehicles would generate greenhouse gas emissions. Emissions would be short-term and cease upon completion of the project. The project would not result in substantial greenhouse gas emissions or conflict with any adopted plans, policies, or regulations adopted for the purpose of reducing greenhouse gas emissions. **Less-than-significant impact.**

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

**Table 4
GREENHOUSE GAS EMISSIONS**

| General Information | | | |
|--|-------------|--|--------------------------------|
| Project Name | Shasta 4382 | | Blue = Variable Inputs |
| Project Acres | 7625 | | Black = Equation Produced Data |
| Total Project Days | 382 | | Red = Constants |
| | | | |
| Exhaust CO2 Emissions | | | |
| Total Round Trip Miles | 60 | | |
| # of Chainsaws | 4 | | |
| # of Chippers | 2 | | |
| # Masticators | 2 | | |
| Diesel Kilograms/Gal | 10.15 | | |
| Gas Kilograms/Gal | 8.91 | | |
| Pounds of CO ₂ /Kilogram | 2.20462 | | |
| One Chipper Gas Gal/day | 10 | | |
| Masticator Diesel gal/day | 50 | | |
| Crew Bus MPG | 8 | | |
| Chainsaw Gas Gal/Day/Saw | 1.5 | | |
| Conversion Factor Pounds to Ton | 2000 | | |
| Conversion Factor Tons of Biomass to Tons CO ₂ | 1.65 | | |
| Crew Bus Total Miles | 183,360 | Chainsaws Total Gal Gas Needed | 2292 |
| Total Gal of Diesel Needed | 38,200 | Chipper Total Gal Gas Needed | 7640 |
| Total Kilograms of Diesel Produced | 387,730 | Total Kilograms of Gas Produced | 28,062 |
| Diesel Total Pounds of CO ₂ Produced | 854,797 | Gas Total Pounds of CO ₂ Produced | 61,865 |
| Diesel Total Tons CO ₂ | 427 | Gas Total Tons of CO ₂ Produced | 31 |
| | | | |
| Smoke or Decay CO2 Emissions | | | |
| Est. Biomass Tons Per Acre Removed (Fuel Model) | | Assumes 0.5 ton biomass residual following mastication | |
| Biomass Total Tons Removed | | | |
| Total Tons of CO ₂ | | | |
| | | | |
| Final Outputs | | | |
| Total Tons of CO ₂ for Project | 458 | | |
| Sequestration Rate 2 - 6 Tons/Ac/Yr (stocked Sierra mixed conifer) | 4 | | |
| Total Sequestration Rate/Yr | 111935 | | |
| Years Required for Complete Sequestration | 0.0 | | |

HAZARDS AND HAZARDOUS MATERIALS

| a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

a) The project will require the use of hazardous materials including gasoline, diesel, oil, and lubricants required for vehicle and equipment operation. In addition, herbicides may be used for pre-treatment of the project site and following biomass removal. Herbicide application will be conducted by a Licensed Pest Applicator with right-of-way or landscape certification. The Licensed Pest Applicator will obtain all applicable permits and perform the work in accordance with applicable federal, state and local rules and regulations including but not limited to holding a current Qualified Applicator License issued by the California Department of Pesticide Regulation.

In addition, the following BMPs contained in the FEMA *Programmatic Environmental Assessment, Recurring Actions in Arizona, California, and Nevada* (December 2014) will be implemented by the treatment contractor for the handling and use of hazardous materials for the project:

- Vehicles and equipment will be inspected and approved before use to ensure that they will not leak hazardous materials such as oil, hydraulic fluid, or fuel. All equipment will be equipped with spark arrestors and fire extinguishers.
- Fueling will take place in designated staging areas, outside native vegetation or wetlands.
- The contractor will prepare a Spill Prevention and Response Plan and have emergency cleanup gear for spills (spill containment and absorption materials) and fire-suppression equipment available onsite at all times.
- Leaks, drips, and other spills will be cleaned up immediately to avoid soil or groundwater contamination. Cleanup of a spill on soil will include removing the contaminated soil using the emergency spill cleanup gear. Contaminated soil and disposable gear used to clean a hazardous materials spill will be properly disposed of following State and Federal hazardous material disposal regulations.
- Major vehicle maintenance and washing will be done offsite.
- Spent fluids including motor oil, radiator coolant, and used vehicle batteries will be collected, stored, and recycled as hazardous waste offsite.
- Spilled dry materials will be swept up immediately.
- No smoking will be allowed in work areas.

The implementation of these practices will result in **less-than-significant impact**.

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

| | | | | |
|--|--------------------------------|--|-------------------------------------|--------------------------|
| b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

b) The project will require the use of hazardous materials (fuel and oil) within equipment and vehicles during biomass removal as well as application of herbicides. Significant quantities of these materials will not be stored within the project area. The following BMPs contained in the FEMA Programmatic Environmental Assessment, *Recurring Actions in Arizona, California, and Nevada* (December 2014) will be implemented during project implementation:

- If hazardous materials are encountered or accidentally released as a result of the project, the following procedures will be implemented:
 - Work shall stop in the vicinity of any discovered contamination or release.
 - The scope and immediacy of the problem shall be identified.
 - Coordination with the responsible agencies shall take place.
 - The necessary investigation and remediation activities shall be conducted to resolve the situation before continuing construction work.

The project will not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials with implementation of the BMPs listed above as well as those listed under a) above. **Less-than-significant impact.**

| | | | | |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

c) The project area contains several schools. Project operations will not emit hazardous emissions. The project will require handling of herbicides. Herbicide application will be conducted by a Licensed Pest Applicator with right-of-way or landscape certification. The Licensed Pest Applicator will obtain all applicable permits and perform the work in accordance with applicable federal, state and local rules and regulations including but not limited to holding a current Qualified Applicator License issued by the California Department of Pesticide Regulation. The project will not require handling of acutely hazardous materials, substances, or waste. **Less-than-significant impact.**

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

significant hazard to the public or the environment?

d) A Search of the EnviroStor database cleanup sites including Federal Superfund, State Response, Voluntary Cleanup, School Cleanup, Evaluation, School Investigation, Military Evaluation, Tiered Permit and Corrective Action sites was conducted for the project site. None of these cleanup sites were present in the project area. In addition, a query of the Geotracker database was also conducted to determine if LUST cleanup sites, cleanup program sites, military cleanup sites, military privatized sites, and military UST sites were present within the project area. The Whitmore Road 1 PAA contains a closed leaking underground storage tank (LUST) cleanup site. The case is closed for the LUST cleanup site. The project does not include excavation activities that could expose the public, environment, or contractors to hazards from LUST sites. **No impact.**

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

e) There are no PAAs within two miles of an airport. **No impact.**

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

f) The project will not interfere with any emergency response plan or evacuation plan. The project will provide for safe ingress and egress of evacuating residents and responding emergency personnel in the event of a fire. **No impact.**

| | | | | |
|--|--------------------------------|--|-------------------------------------|--------------------------|
| g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

g) Equipment and vehicle operation as well as increased human presence in the project area could result in a temporary increased risk of fire during biomass removal activities. As described in a) above, BMPs will be implemented during project implementation which include the storage of fire suppression equipment onsite at all times by contractors. Project activities will not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Upon completion, the project will provide for safe ingress and egress of evacuated residents and

emergency personnel during wildland fires, increase defensible space to effectively fight fires from the roads and reduce roadside fuels to slow the spread of a fire started in or adjacent to the roadway. **Less-than-significant impact.**

HYDROLOGY AND WATER QUALITY

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|-------------------------------------|--------------------------|
| a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

a) Perennial, intermittent, and ephemeral streams as well as ponds are located within the project area. Hydrology within the project area is shown in Figures 14A and 14B. In addition, the project site includes wetlands mapped by the U.S. Fish & Wildlife Service National Wetland Inventory as shown in Figure 16A and 16B.

The project does not include activities within 75 feet of perennial streams or wetlands or within 50 feet of ephemeral or intermittent streams. The following applicable BMP included in the FEMA *Programmatic Environmental Assessment, Recurring Actions in Arizona, California, and Nevada* (December 2014) will be implemented for the project by the treatment contractor when working near waters of the U.S. or wetlands to protect surface water quality during project implementation and minimize potential water quality impacts from ground disturbance, spills or leaks, and herbicide application:

- For work between 50 and 200 feet of a wetland or waterbody:
 - Herbicides will be restricted to glyphosate-based herbicides that are approved by the EPA for use around water (e.g., Rodeo).
 - No equipment fueling will occur.
- Never wash down pavement or surfaces where materials have spilled. Use dry cleanup methods whenever possible.
- Protect all storm drain inlets using filter fabric cloth or other best management practices to prevent sediments from entering the storm drainage system during p activities.
- Keep materials out of the rain — prevent runoff pollution at the source. Schedule clearing for periods of dry weather. Before it rains, sweep and remove materials from surfaces that drain to storm drains, creeks, or channels.
- Prior to project work, wetlands located in the project area will be flagged for exclusion.
- Appropriate erosion control measures will be used to reduce siltation and runoff of contaminants into wetlands and adjacent, ponds, streams, or riparian woodland/scrub. The contractor will not be allowed to stockpile brush, loose soils, or other debris material on stream banks.
- Native plant species should be used in erosion control or revegetation seed mix. Any hydroseed mulch used for revegetation must also be certified weed-free. Dry farmed straw

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

will not be used, and certified weed-free straw will be required where erosion control straw is to be used. Filter fences and mesh will be of material that will not entrap reptiles and amphibians. Erosion-control measures will be placed between water or wetland and the outer edge of the project site.

- All off-road project equipment will be cleaned of potential noxious weed sources (mud, vegetation) before entry into the project area. Equipment will be considered free of soil, seeds, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment compartments or specialized inspection tools is not required.
- Vehicles and equipment will be parked on pavement, existing road, or specified staging areas.
- Trash generated by covered activities should be promptly removed and properly removed from the site.
- Equipment storage, fueling, and staging areas will be sited on disturbed areas or on non-sensitive nonnative grassland land cover types, when these sites are available, to minimize risk of direct discharge into riparian area or other sensitive land cover types.
- All temporarily disturbed areas, such as staging areas, will be returned to pre-project or ecologically improved conditions as required by responsible agencies.
- Dispose of all wastes properly. Materials that cannot be reused or recycled must be taken to an appropriate landfill or may require disposal as hazardous waste. Never throw debris into channels, creeks, or into wetland areas. Never store or leave debris in the street or near a creek where it may contact runoff.

Best Management Practices included above, as well as soil erosion BMPs described in the Geology and Soils section of this document, will minimize project impacts to surface water quality. In addition, the project is required to comply with Order R5-2017-0061 (*Waste Discharge Requirements General Order for Discharges Related to Timberland Management Activities for Non-Federal and Federal Lands*) and will be required to comply with the terms and conditions of the Order including implementation of best management practices and/or water quality protection measures and monitoring and reporting. The project does not include activities that could result in impacts to groundwater quality. The project will not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. **Less-than-significant impact.**

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

b) The project will require minimal use of water for dust suppression during biomass removal activities. The source of water will depend on the location of the treatment area as well as the treatment contractor. Water use will be short-term and cease upon completion of biomass removal

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

activities. The project will not substantially decrease groundwater supplies or interfere with groundwater recharge. **No impact.**

| | | | | |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial on- or off-site erosion or siltation? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

c) The project will not alter the course of any streams or rivers. The project will include a 75-foot buffer from perennial streams and wetlands and a 50-foot buffer from ephemeral and intermittent streams. The project does not include changes to project site topography or addition of impervious surfaces. The project includes site restoration for areas where ground disturbance will be caused by machinery and equipment in areas sensitive to soil stabilization issues. **Less-than-significant impact.**

| | | | | |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| d) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

d) The project does not include substantial alteration of the existing drainage pattern of the project area or increase in impervious surfaces. See a) and c) above. The project will not substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. **No impact.**

| | | | | |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| e) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, or substantially increase the rate or amount of surface runoff in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

e) The project will not result in a substantial increase in the rate or amount of surface runoff from the project site. As discussed under a), BMPs for erosion control and water quality will be implemented for the project that will minimize pollutants in runoff from the project site. **Less-than-significant impact.**

| | | | | |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| f) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, or substantially increase the rate or amount of surface runoff in a manner which would impede or redirect flows? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

f) As discussed in a) through e) above, the project will not substantially alter the existing drainage pattern of the site or substantially increase the rate or amount of surface runoff. The project will not impede or redirect flows. **No impact.**

| | | | | |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| g) In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

g) Flood Hazard Zones within the project area as mapped by FEMA National Flood Hazard Layer are shown in Figure 15A and 15B. Several portions of the project are located within Flood Hazard Zone A: Area Subject to Inundation. The project includes site restoration to stabilize treatment areas where needed following biomass removal. Grass seeding, slash packing, or other appropriate erosion control or slope stabilization techniques will be deployed in areas disturbed by mechanical equipment operation following biomass removal. Site restoration will minimize the risk of release of sediment if the project were to become inundated. In addition, the project does not include work within 75 feet of perennial streams or wetlands or within 50 feet of ephemeral and intermittent streams. **Less-than-significant impact.**

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| h) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

h) The BMPS listed under a) above will be implemented by the treatment contractor to minimize impacts to surface water quality. As discussed under b) above, the project will not use significant volumes of groundwater or result in impacts to groundwater quality. The project will not conflict with or obstruct any water quality control plan or sustainable groundwater management plan. **No impact.**

LAND USE AND PLANNING

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| a) Would the project physically divide an established community? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

a) The project will not divide an established community. **No impact.**

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

b) Best management practices and mitigation measures included this document will be implemented to avoid and reduce environmental effects of the project. The project will not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. **No impact.**

MINERAL RESOURCES

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

a) The project does not include development activities, change in land use, or mineral extraction activities. The project will not result in the loss of availability of a mineral resource. **No impact.**

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

b) Project activities will not result in the loss of availability of a locally important mineral resource recovery stie. **No impact.**

NOISE

| | | | | |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

a) The project will not result in any permanent sources of noise. The project will generate short-term increases in ambient noise levels in the project vicinity from the operation of mechanical equipment (masticators, chippers, and chainsaws) and minor increased vehicle traffic. The project impacts on individual sites will be short as hazard vegetation is removed from the parcel and the operations moved onto the next parcel. Short-term noise generated by the project will be transitory.

The following BMPs contained in the FEMA *Programmatic Environmental Assessment, Recurring Actions in Arizona, California, and Nevada* (December 2014) will be implemented for the project:

- Provide advance notification to surrounding land uses disclosing the treatment schedule, including the various types of activities that would be occurring throughout the duration of the treatment period.
- Noise-generating treatment activities, including truck traffic coming to and from the site for any purpose, shall be limited to the hours of 7:00 a.m. to 7:00 p.m. during weekdays and 8:00 a.m. to 5:00 p.m. on Saturday and Sunday.
- All noise-producing project equipment and vehicles using internal combustion engines shall be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed “package” equipment shall be equipped with shrouds and noise control features that are readily available for that type of equipment.
- Contractor shall be responsible for maintaining equipment in best possible working condition.
- Mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receivers.
- Locate equipment as far as possible from nearby noise-sensitive receptors.
- The use of noise-producing signals, including horns, whistles, alarms, and bells shall be for safety warning purposes only. No project-related public address or music system shall be audible at the location of any adjacent noise-sensitive receptor.
- The contractor shall notify adjacent property owners, property managers, and business owners of adjacent parcels of the schedule in writing and in advance of the work. The notification shall include the name and phone number of a project representative or site supervisor.

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

- The onsite supervisor shall have the responsibility and authority to receive and resolve noise complaints. A clear appeals process to the Owner shall be established prior to commencement of treatment that shall allow for resolution of noise problems that cannot be immediately solved by the site supervisor.

The project is not anticipated to result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the Shasta County General Plan or applicable standards of other agencies. **Less-than-significant impact.**

| | | | | |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

b) The project does not include equipment or processes that would result in significant levels of vibration or groundborne noise, such as pile driving or blasting. Mechanical equipment such as grinders and masticators will result in low levels of ground vibration perceptible in the immediate vicinity of the equipment. Equipment will not operate in a single location for an extended period of time. The project will not generate excessive levels of vibration that could result in structural damage or annoyance levels. **Less-than-significant impact.**

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

c) No PAAs are located within two miles of an airport. **No impact.**

POPULATION AND HOUSING

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

a) The project will not induce substantial population growth. The project does not include expansion of any roads or infrastructure. The project does not include construction of new homes or businesses that would result in unplanned population growth. **No impact.**

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

| | | | | |
|---|--|--|--|--|
| b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? | Potentially Significant Impact <input type="checkbox"/> | Less Than Significant with Mitigation Incorporated <input type="checkbox"/> | Less Than Significant Impact <input type="checkbox"/> | No Impact <input checked="" type="checkbox"/> |
|---|--|--|--|--|

b) The project would not displace people or housing requiring the construction of replacement housing elsewhere. **No impact.**

PUBLIC SERVICES

| | | | | |
|--|--|--|--|--|
| a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection? | Potentially Significant Impact <input type="checkbox"/> | Less Than Significant with Mitigation Incorporated <input type="checkbox"/> | Less Than Significant Impact <input type="checkbox"/> | No Impact <input checked="" type="checkbox"/> |
|--|--|--|--|--|

a) The project does not include construction of new structures or involve activities that would adversely affect fire protection service ratios, response times, or other objectives. The project will not include or require new or physically altered governmental facilities for fire protection. **No impact.**

| | | | | |
|--|--|--|--|--|
| b) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection? | Potentially Significant Impact <input type="checkbox"/> | Less Than Significant with Mitigation Incorporated <input type="checkbox"/> | Less Than Significant Impact <input type="checkbox"/> | No Impact <input checked="" type="checkbox"/> |
|--|--|--|--|--|

b) The project will not require the construction of new or altered facilities to maintain acceptable police service ratios, response times, or other performance objectives for police response. **No impact.**

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

| | | | | |
|---|---------------------------------------|---|-------------------------------------|-------------------------------------|
| <p>c) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for schools?</p> | <p>Potentially Significant Impact</p> | <p>Less Than Significant with Mitigation Incorporated</p> | <p>Less Than Significant Impact</p> | <p>No Impact</p> |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

c) The project will not result in the need for new or physically altered schools. **No impact.**

| | | | | |
|---|---------------------------------------|---|-------------------------------------|-------------------------------------|
| <p>d) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for parks?</p> | <p>Potentially Significant Impact</p> | <p>Less Than Significant with Mitigation Incorporated</p> | <p>Less Than Significant Impact</p> | <p>No Impact</p> |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

d) The project will not increase the use of local parks or require construction of new or altered parks to maintain acceptable service ratios or other performance objectives. **No impact.**

| | | | | |
|---|---------------------------------------|---|-------------------------------------|-------------------------------------|
| <p>e) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for other public facilities?</p> | <p>Potentially Significant Impact</p> | <p>Less Than Significant with Mitigation Incorporated</p> | <p>Less Than Significant Impact</p> | <p>No Impact</p> |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

e) The project will not result in the need for new or physically altered other public facilities. **No impact.**

RECREATION

| | | | | |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

a) The project will have no impact on recreation. No new demand will be generated for the use of existing area parks or recreational facilities. **No impact.**

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| b) Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

b) The project does not include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. **No impact.**

TRANSPORTATION

| | | | | |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| a) Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

a) The project will not conflict with any program, plan, ordinance or policy addressing the circulation system including transit, roadway, bicycle and pedestrian facilities. The project may result in a minor temporary increase in traffic in the specific location of project activities, however project activities will be transitory and will not occur in a single area for an extended time period. The following BMPs including applicable BMPs contained in the FEMA *Programmatic Environmental Assessment, Recurring Actions in Arizona, California, and Nevada* (December 2014) will be implemented for the project:

- When possible, crews will travel outside of peak hour traffic times, thereby minimizing peak traffic time impacts.
- All vehicles related to project, including contractor vehicles and trucks, will use designated Truck Routes where those are available.
- Detour signs shall be used when necessary for vehicles, bicycle and pedestrian ways.
- All detour signs during the project would be designed to meet the responsible agency standards.

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

- A Traffic Control Plan will be developed and submitted to Shasta County Public Works (County road) or Caltrans (State Highway) if the project is expected to require road closures.

With these practices in place, a **less-than-significant impact** is anticipated.

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| b) Would the project conflict or be inconsistent with CEQA Guidelines § 15064.3(b)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

b) Shasta County has not adopted VMT-based transportation significance thresholds. The project will result in a short-term increase in vehicle miles traveled that will cease upon project completion. The project will not result in a long-term increase in VMT and will not conflict or be inconsistent with CEQA guidelines 15064.3(b). **Less-than-significant impact.**

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

c) There will be no change in road design or construction. As discussed in a) above, A Traffic Control Plan will be developed for the project if a road closure is required. **No impact.**

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| d) Would the project result in inadequate emergency access? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

d) Emergency access will not be impaired by the project. The project is proposed to improve ingress and egress in the event of a wildfire. **No impact.**

TRIBAL CULTURAL RESOURCES

| | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|---|--------------------------------|--|------------------------------|--------------------------|
| a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code § 5020.1(k)?

a) AB 52 was enacted on July 1, 2015, and establishes that “a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment” (Public Resources Code Section 21084.2). It further states that the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource when feasible (PRC Section 21084.3).

Public Resources Code Section 21074 (a)(1)(A) and (B) defines tribal cultural resources as “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe” and meets either of the following criteria:

- Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 also establishes a formal consultation process for California cities, counties, and tribes regarding tribal cultural resources. Under AB 52, lead agencies are required to “begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project.” Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

Tribal notification letters for the project were sent on December 2, 2022. The Sacred Lands File search did not identify a positive result within the project area. Records search area Figures and Tribal consultation documents are included in Attachment C. The search of the information center identified resources and studies within the search area.

Mitigation Measure 12 included in the Cultural Resources section of this document will be implemented to avoid impacts to all known cultural resources within the project area, including those eligible for listing in the California Register of Historical Resources (CRHR). In addition, BMPs will be implemented during the project for unanticipated discovery of cultural resources and human remains. Impacts to tribal cultural resources will be **less than significant with mitigation incorporation**.

| | | | | |
|--|--------------------------------|--|------------------------------|-----------|
| b) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-----------|

| | | | | |
|--|--------------------------|-------------------------------------|--------------------------|--------------------------|
| landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|-------------------------------------|--------------------------|--------------------------|

b) All prehistoric resources will be avoided during project implementation. Resources will be flagged by a Certified Archeologist prior to ground disturbing activities. Historical resources will be evaluated for significance by a Certified Archeologist and flagged for avoidance prior to ground disturbing activities. See **Mitigation Measure 12** included in the Cultural Resources Section of this document. **Less than significant with mitigation incorporated.**

UTILITIES AND SERVICE SYSTEMS

| | | | | |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

a) The project will not result in the construction of new or relocated water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities. **No impact.**

| | | | | |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

b) The project is a short-duration project. The project will require water for dust suppression during biomass removal activities. The source of water for the project will depend on the location within the project area and the treatment contractor. The project is not anticipated to require significant quantities of water for dust suppression, and the need for water will cease upon completion of biomass removal activities. **Less-than-significant impact.**

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

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|---|--------------------------------|--|------------------------------|-------------------------------------|
| c) Would the project result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

c) The project will not require wastewater treatment. **No impact.**

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

d) Small quantities of solid waste generated by the project will be bagged, removed from the site, and transported to the city/county transfer site for disposal. **No impact.**

| | | | | |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

e) The project will comply with all federal state and local statutes and regulations relating to solid waste and disposal. **No impact.**

WILDFIRE

| | | | | |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| a) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

a) The project site is within state responsibility areas classified as very high fire hazard severity zones (FRAP 2007). The project will reduce fire behavior and intensity and provide safer emergency ingress and egress. The project will not impair an adopted emergency response plan or emergency evacuation plan. **No impact.**

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

| | | | | |
|---|---|---|---|---|
| <p>b) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?</p> | <p>Potentially Significant Impact</p> <p><input type="checkbox"/></p> | <p>Less Than Significant with Mitigation Incorporated</p> <p><input type="checkbox"/></p> | <p>Less Than Significant Impact</p> <p><input type="checkbox"/></p> | <p>No Impact</p> <p><input checked="" type="checkbox"/></p> |
|---|---|---|---|---|

b) The project could temporarily increase wildfire risk due to operation of vehicles and mechanized equipment and increased human presence in the project area during project activities. BMPs listed in the Hazards and Hazardous Materials section of this document include the following that will also reduce the risk of wildfire caused by project activities:

- Vehicles and equipment will be inspected and approved before use to ensure that they will not leak hazardous materials such as oil, hydraulic fluid, or fuel. All equipment will be equipped with spark arrestors and fire extinguishers.
- The contractor will prepare a Spill Prevention and Response Plan and have emergency cleanup gear for spills (spill containment and absorption materials) and fire-suppression equipment available onsite at all times.
- No smoking will be allowed in work areas.

Upon completion, reduction of fuel loads and interruption of fuel continuity will decrease the likelihood of ignition, increase the probability of success of fire suppression activities, reduce severity of a fire and provide safer ingress and egress for evacuation and fire response. **No impact.**

| | | | | |
|---|---|---|---|---|
| <p>c) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?</p> | <p>Potentially Significant Impact</p> <p><input type="checkbox"/></p> | <p>Less Than Significant with Mitigation Incorporated</p> <p><input type="checkbox"/></p> | <p>Less Than Significant Impact</p> <p><input type="checkbox"/></p> | <p>No Impact</p> <p><input checked="" type="checkbox"/></p> |
|---|---|---|---|---|

c) The project will not require installation or maintenance of associated infrastructure or fire breaks not described in this document that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. **No impact.**

| | | | | |
|---|--------------------------------|--|------------------------------|-------------------------------------|
| d) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

d) The project will not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. **No impact.**

MANDATORY FINDINGS OF SIGNIFICANCE

| | | | | |
|--|--------------------------------|--|------------------------------|--------------------------|
| a) Would the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

a) All impacts associated with the project have been identified in this document. Potential project impacts to biological resources, cultural resources, and tribal cultural resources are discussed in the Biological Resources, Cultural Resources, and Tribal Cultural Resources sections of this document. The project will not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory with implementation of Mitigation Measures and BMPs included in the Cultural Resources, Tribal Cultural Resources and Biological Resources sections of this document. **Less-than-significant with mitigation incorporation.**

| | | | | |
|---|--------------------------------|--|-------------------------------------|--------------------------|
| b) Would the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

other current projects, and the effects of probable future projects.)

b) Potential impacts of the project including air quality, greenhouse gas, traffic, noise, hazardous materials, geology and soils, and hydrology are short-term and will cease upon completion of project activities. Since these impacts will cease upon completion of the project and project-level impacts are less than significant, they will not be cumulatively considerable with past, current, or future projects.

Project impacts to cultural resources, tribal cultural resources, biological resources, timberland, and aesthetics are cumulatively considerable with other projects including multiple planned fuel reduction projects within Shasta County. Aesthetic and habitat impacts of the project will be limited to the area 100 to 400 feet from either side of the roadway centerlines and will not combine with other projects to result in a significant cumulative impact. There will be no negative impacts to forest resource areas or timberland resources. The project is designed to improve fire resiliency within these resources. Project impacts to cultural resources, tribal cultural resources and direct biological resource impacts of the project will be avoided through implementation of BMPs and mitigation measures and will not result in a cumulatively significant impact. **Less-than-significant impact.**

| c) Would the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly? | Potentially Significant Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|--------------------------------|--|------------------------------|-------------------------------------|
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

c) The project will not have any adverse environmental effects on human beings either directly or indirectly. **No impact.**

PREPARERS OF THIS DOCUMENT

This document was prepared by VESTRA Resources, Inc., for The McConnell Foundation with input and support from CAL FIRE.

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Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

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Mitigation Monitoring and Reporting Plan

In accordance with CEQA Guidelines § 15074(d), when adopting a mitigated negative declaration, the lead agency will adopt a mitigation monitoring and reporting plan (MMRP) that ensures compliance with mitigation measures required for project approval. CAL FIRE is the lead agency for the above-listed project and has developed this MMRP as a part of the final IS-MND supporting the project. This MMRP lists the mitigation measures developed in the IS-MND that were designed to reduce environmental impacts to a less-than-significant level. This MMRP also identifies the party responsible for implementing the measure, defines when the mitigation measure must be implemented, and which party or public agency is responsible for ensuring compliance with the measure.

POTENTIALLY SIGNIFICANT EFFECTS AND MITIGATION MEASURES

The following is a list of the resources that will be potentially affected by the project and the mitigation measures made part of the Initial Study-Mitigated Negative Declaration.

Mitigation Measure #1: Pre-Treatment Botanical Surveys (All PAAs)

As part of the Preliminary Site Assessment (PSA) conducted on each eligible parcel, potential habitat for special-status plants with potential occur within the treatment area will be identified along with species included in any sensitive natural communities. If potential habitat for special-status plants or sensitive natural communities are identified, protocol-level surveys of the eligible parcels shall be conducted by a qualified biologist during the flowering window for special-status plant species with potential to occur within the treatment area. Surveys shall comply with survey protocols for plants species listed under the CDFW *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (2018). If no special-status plants are found, no further measures pertaining to special-status plants are necessary. If special-status plant species are identified during the botanical surveys, the individuals will be avoided. The treatment prescription (TP) for the parcel will be modified to exclude activities within 25 feet of the individual and exclusionary fencing will be placed around the plants prior to operations on the parcel to establish the avoidance area during project implementation.

Schedule:

Responsible Party:

Verification of Compliance:

Monitoring Party: CAL FIRE

Initials: _____

Date: _____

Mitigation Measure # 2: Herbicide Treatment Buffers(Anadromous Fish-Bearing Streams)

Herbicide treatment buffer will coincide with the prescribed treatment buffer for perennial and ephemeral streams for any anadromous fish bearing streams. In order to limit the effect of herbicides on anadromous fish. Herbicides with the potential to harm aquatic life shall not be applied within 150 feet of anadromous fish bearing streams. If conditions necessitate that herbicides are applied within the 150-foot buffer, then the application shall be completed in the dry season when no precipitation is forecasted.

Schedule:

Responsible Party:

Verification of Compliance:

Monitoring Party: CAL FIRE

Initials: _____

Date: _____

Mitigation Measure #3: Riparian and Wetland Identification and Exclusion (All PAAs)

During the preliminary site assessment of each eligible parcel, eligible parcels will be surveyed for aquatic resources. The treatment prescription (TP) will exclude activities within 75 feet of perennial streams and wetlands (including vernal pools) as well as 50 feet from ephemeral and intermittent streams. The exclusion area will be marked with flagging. Biomass removal, herbicide application, equipment staging, operation of mechanical equipment, and on-site disposal of removed biomass shall not occur within the marked buffers.

Schedule:

Responsible Party:

Verification of Compliance:

Monitoring Party: CAL FIRE

Initials: _____

Date: _____

Mitigation Measure #4: Surveys for Special Status Amphibians and Reptiles (All PAAs)

During the Preliminary Site Assessment of each eligible parcel, work areas within 150 feet of flowing watercourses will be evaluated to determine if suitable upland dispersal habitat for potentially occurring special-status amphibians and reptiles are present. If no potential suitable upland dispersal habitat is identified, no further action is required. If suitable upland habitat is identified, no more than two days prior to the start of ground disturbing activities, focused pretreatment surveys for special status amphibians, reptiles, and their eggs will be completed by a qualified biologist in all suitable upland dispersal habitat areas within 150 feet of flowing watercourses. If a special status species is found, CDFW will be notified. If an adult individual is observed within the survey area, then the animal shall be avoided until it is no longer in harm's way, or it may be relocated by a qualified biologist if an area offsite that has appropriate habitat for the species is available. If relocating, the animal should be moved to a nearby area with habitat similar to the environment in which it was found.

If a nest, eggs, hatchlings, or an aestivating adult are observed within the survey area, then an avoidance buffer of 50 to 100 feet shall be applied to heavy equipment access, ground disturbing activities, and herbicide application. The qualified biologist shall consider the topography and vegetation onsite, as well as the treatments proposed onsite and the potential for disturbance when determining the buffer distance. Additionally, to avoid impacts to hatchlings' dispersal from the nest site, no woody debris or other barrier shall be placed in between the nest site and the nearest body of water.

During the Preliminary Site Assessment, eligible parcels within the Bear Mountain Road PAA will be evaluated for limestone rock outcrops. If no limestone rock outcrops suitable for Shasta

Salamander are identified within 300 feet of project activities are identified, not further action is required. If limestone rock outcrops are identified, treatment in areas containing limestone rock outcrops suitable for the Shasta Salamander will be completed during the dry season when salamanders are the least likely to occur outside of limestone fissures. If work must occur within 300 feet of a limestone outcrop during the wet season (between November and March) then protocol-level surveys for Shasta salamander shall be completed by a qualified biologist. If Shasta salamanders are identified within work areas, then CDFW shall be notified and measures for avoiding impact must be approved. Potential measures can include implementing a 300-foot buffer around limestone outcrops, onsite monitoring, or issuance of appropriate permits for incidental take to relocate individual salamanders.

Schedule:

Responsible Party:

Verification of Compliance:

Monitoring Party: CAL FIRE

Initials: _____

Date: _____

Mitigation Measure #5: Bat Roost Humane Exclusion (All PAAs)

During the Preliminary Site Assessment of eligible parcels, trees with maternity roost structures (i.e. cavities in the trunk or branches, woodpecker holes, loose bark, cracks) will be identified. If no trees with maternity roost structures are identified, no further measures are necessary. If removal of trees identified to have bat roost structure occurs from September 1 to October 30, no measures for special-status bats are required.

If removal of trees identified to have bat roost structure potential will occur during the bat maternity season, when young are non-volant (March 1- August 31), or during the bat hibernacula (November 1-March 1), when bats have limited ability to safely relocate roosts, humane exclusions should be implemented which consist of a two-day removal process by which the non-habitat trees and brush are removed along with smaller tree limbs on the first day, and the remainder of the tree limbs and the tree truck on the second day.

Schedule:

Responsible Party:

Verification of Compliance:

Monitoring Party: CAL FIRE

Initials: _____

Date: _____

Mitigation Measure # 6: Artificial Lighting Standards (All PAAs)

To minimize impacts of lighting to bats and other nocturnal species, any artificial lighting associated with short-term and long-term project activities should be downward facing, fully shielded, and designed and installed to minimize photo pollution of adjacent wildlife habitat.

Schedule:

Responsible Party:

Verification of Compliance:

Monitoring Party: CAL FIRE

Initials: _____

Date: _____

Mitigation Measure #7: Bat Roost Habitat Avoidance (All PAAs)

During the Preliminary Site Assessment of each eligible parcel, the presence of caves or bridges within the treatment area will be noted. If no caves or bridges are located within the project area, no further measures are necessary. If present within 50 feet of project activities, caves and bridges in the project area will be assessed during the Preliminary Site Assessment for potential bat roost structures (crevice roosts tend to be approximately 3/4 to 1-1/2 inches across and at least 18 inches deep. In most cases, they run from one side of the bridge to the other, and between three and several hundred meters above ground). If found, a qualified biologist will assess the structure for signs of bat presence (i.e., guano, insect pieces, etc.). If no roost is present, then no buffer is needed. If a roost is present, then a 50-foot non-disturbance buffer shall be implemented around the roost structure to prevent changes to the thermal stability and protective cover surrounding the roost structure that could result from tree removal.

Schedule:**Responsible Party:****Verification of Compliance:**

Monitoring Party: CAL FIRE

Initials: _____

Date: _____

Mitigation Measure #8: Mammal Den Surveys (Ponderosa Way, Shingletown Ridge Road, Fern Road, O'Brien Estates)

During the Preliminary Site Assessment of each eligible parcel, the project area will be evaluated for suitable mammal den habitat. If potential den habitat for fisher (*Pekania pennanti*) or wolverine (*Gulo gulo*) is identified, and activities occur during the denning season for these species, pretreatment surveys shall be completed within thirty days prior to ground disturbing activities to determine if any terrestrial mammal (e.g., American wolverine and fisher) den structures are present within the work area. If potential dens are located within the work area and cannot be avoided during project activities, a qualified biologist will determine if the dens are occupied. If occupied dens are present within the work area, their disturbance and destruction will be avoided by stopping operations until an appropriate buffer approved by CDFW or USFWS.

Schedule:**Responsible Party:****Verification of Compliance:**

Monitoring Party: CAL FIRE

Initials: _____

Date: _____

Mitigation Measure #9: Native Milkweed Buffer (All PAAs)

Surveys will be completed to determine if native milkweed (*Asclepias* sp.) are present within work areas. If milkweed is identified onsite, disturbance to the plant would be avoided by implementing a 25-foot buffer around identified individuals.

Schedule:

Responsible Party:

Verification of Compliance:

Monitoring Party: CAL FIRE

Initials: _____

Date: _____

Mitigation Measure #10: Valley Elderberry Longhorn Beetle Buffer (Bear Mountain Road, Highway 44/Dersch West, Whitmore Road 1 and Whitmore Road 2)

Protocol level surveys shall be completed to identify any elderberry (*Sambucus* spp.) within 165 feet of riparian corridors at sites below 3000 feet elevation, where access is possible. If any elderberry shrubs are found within the survey area, then a no-disturbance buffer of 20 feet or more shall be implemented. ESA flagging or similar high visibility flagging shall be installed to demarcate the buffer. No herbicide shall be applied within the 20-foot buffer.

Schedule:

Responsible Party:

Verification of Compliance:

Monitoring Party: CAL FIRE

Initials: _____

Date: _____

Mitigation Measure #11: Invasive Species Management (All PAAs)

An invasive species management plan (ISMP) shall be prepared to provide guidance that prevents the spread of noxious weeds. If a significant population of Cal-IPC listed invasive species is observed, then equipment shall be cleaned at the contaminated site before proceeding to any other sites.

Schedule:

Responsible Party:

Verification of Compliance:

Monitoring Party: CAL FIRE

Initials: _____

Date: _____

Mitigation Measure 12: Implement Management Recommendations in Archaeological Survey Report

Management Recommendations included in the Archaeological Survey Report prepared for the project shall be implemented to ensure that cultural resources are not adversely affected by the project which include the following:

Special Conditions

Archaeological resources within the Project Area are designated for Special Conditions where fuel reduction activities may be performed within the site limits. In some instances, removal of

hazard trees is beneficial to site preservation. Special Conditions of cultural resources includes the following actions:

1. Prior to the commencement of operations, the Project Manager will ensure that all Special Treatment Zones (STZ) are clearly described and illustrated in plans, and specifications.
2. All parties (CAL FIRE, Project Manager, Registered Professional Forester [RPF], or equipment operators familiar with resource management work will review the plans.
3. Prior to commencement of operations, a CAL FIRE Certified Archaeological Surveyor or professional archaeologist familiar with the site, shall demarcate all sites with STZ flagging. Exclusionary flagging will be based on the site sketch map. No buffer around the site boundary is required for Special Condition sites. STZ flagging that is older than six months will be inspected and refreshed prior to operations.
4. Fuel reduction work utilizing hand tools (including chainsaws) may occur within the STZ area given the following conditions.
5. No skidding of logs shall occur within the STZ.
6. Timber shall be directionally felled away from the site.
7. Mechanized equipment shall be restricted to existing roads or disturbed areas within the STZ.
8. No tree planting will occur within STZ.
9. A CAL FIRE Certified Archaeological Surveyor or professional archaeologist will periodically inspect sites to ensure that BMPs are effective and the STZ has not been breached.

Unanticipated Discovery of Cultural Resources

If previously unidentified cultural resources are encountered during project implementation, avoid altering the materials and their stratigraphic context. A qualified professional archaeologist should be contacted to evaluate the situation. Project personnel should not collect cultural resources. Prehistoric resources include, but are not limited to, chert or obsidian flakes, projectile points, mortars, pestles, and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic resources include stone or abode foundations or walls; structures and remains with square nails; and refuse deposits or bottle dumps, often located in old wells or privies.

Encountering Native American Remains

Although unlikely, if human remains are encountered, all work must stop in the immediate vicinity of the discovered remains and the County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American and prehistoric, the Native American Heritage Commission must be contacted by the Coroner so that a "Most Likely Descendant" can be designated and further recommendations regarding treatment of the remains is provided.

Schedule:

Responsible Party:

Verification of Compliance:

Monitoring Party: CAL FIRE

Initials: _____

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Date: _____

A copy of the completed MMRP will be forwarded to: CAL FIRE Environmental Protection Program, P.O. Box 944246, Sacramento, CA 94244.

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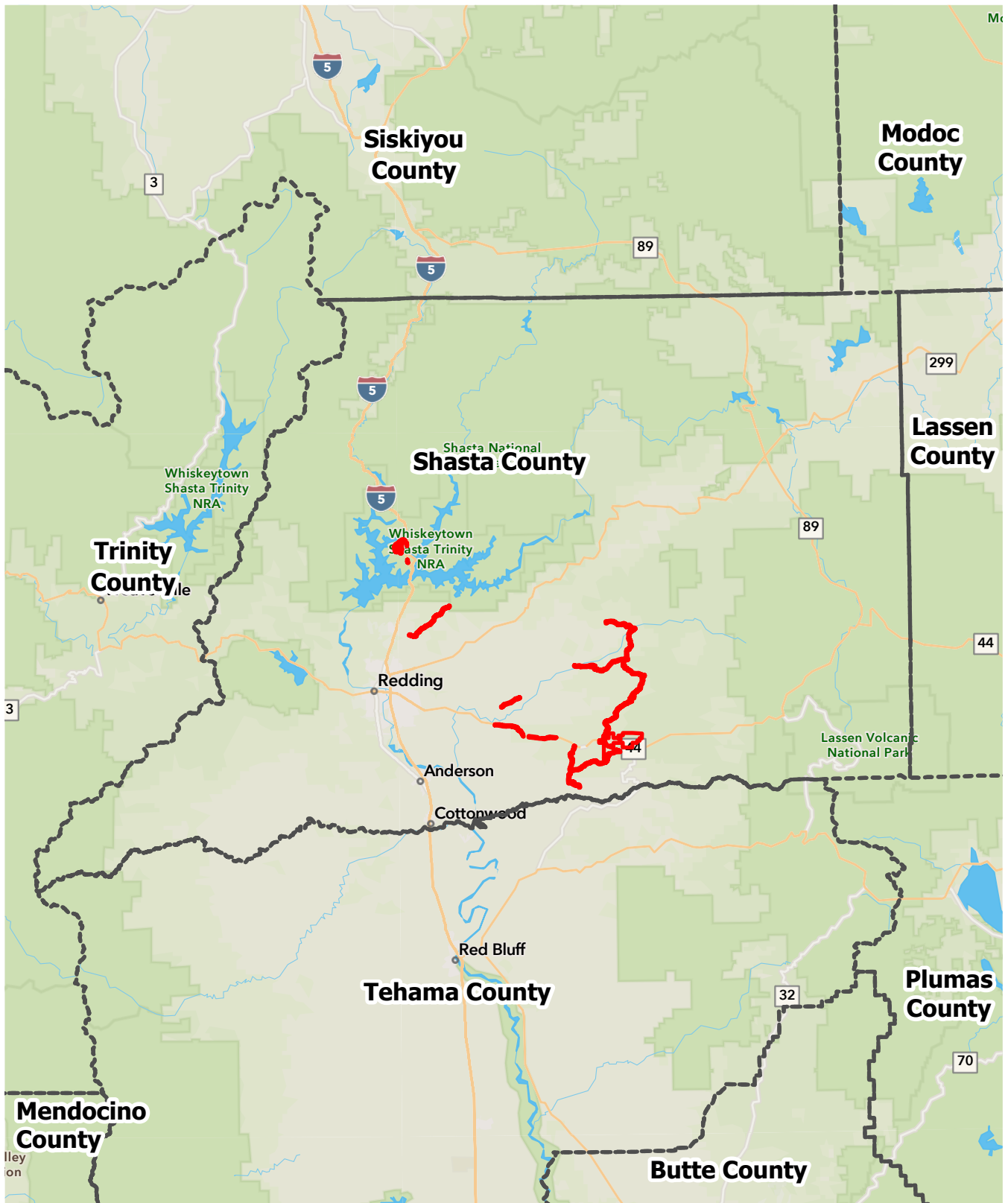
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Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project

Attachment A
Figures



-  County Boundary
-  Project Treatment Boundary

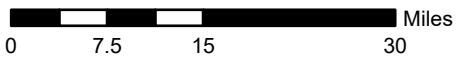


FIGURE 1
PROJECT LOCATION
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



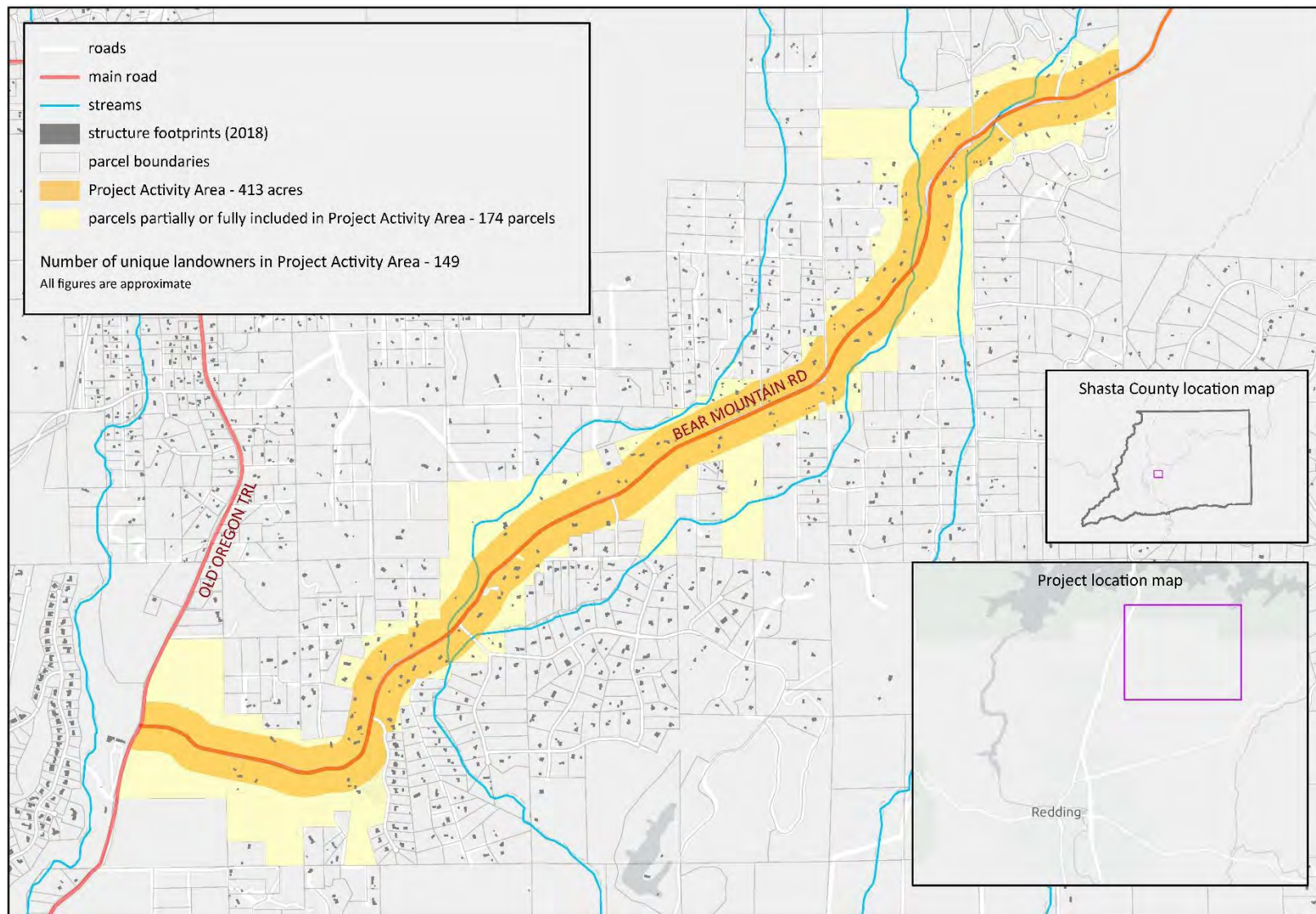


FIGURE 2
 BEAR MOUNTAIN ROAD PAA
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



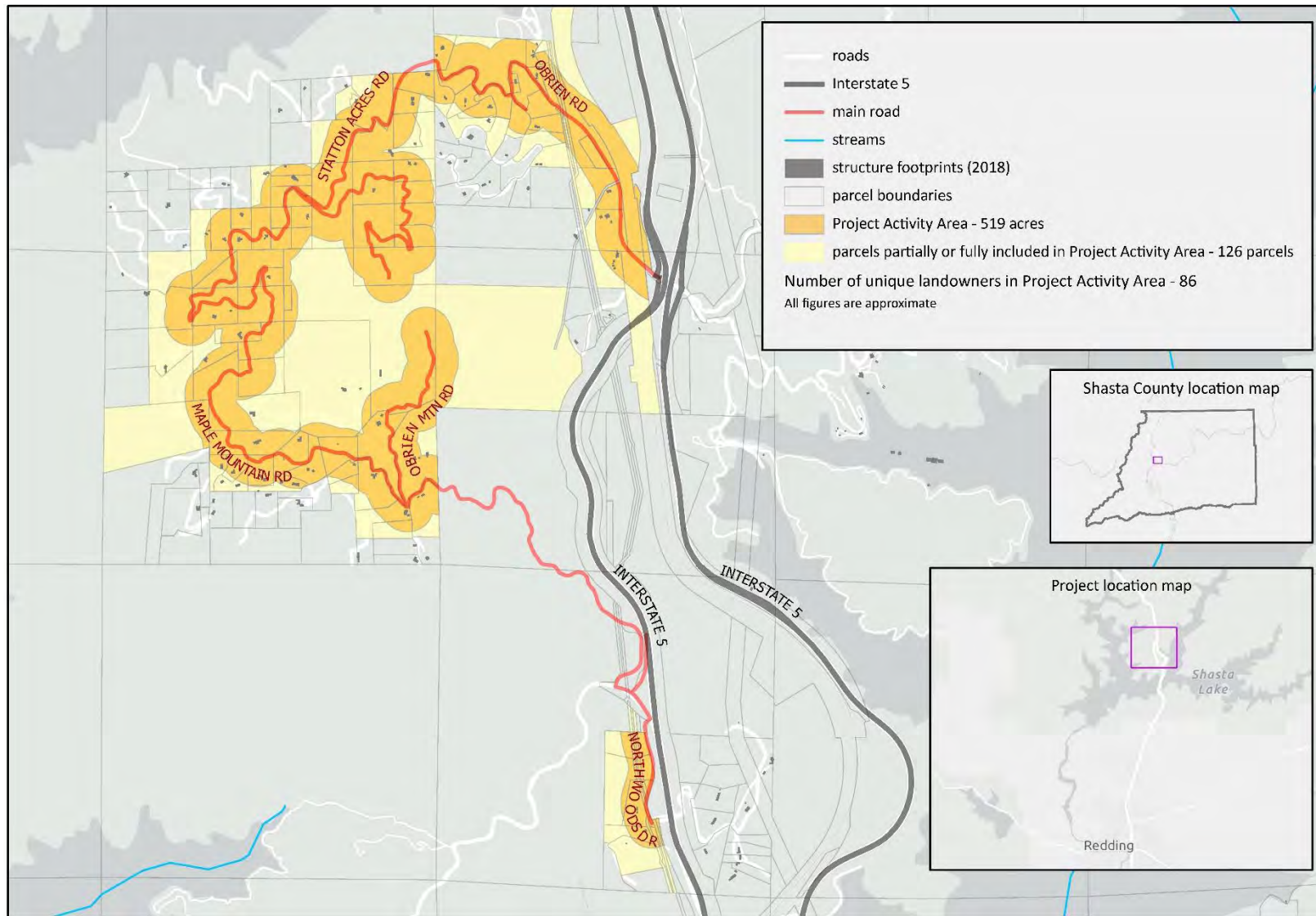


FIGURE 3
 O'BRIEN ESTATES PAA
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



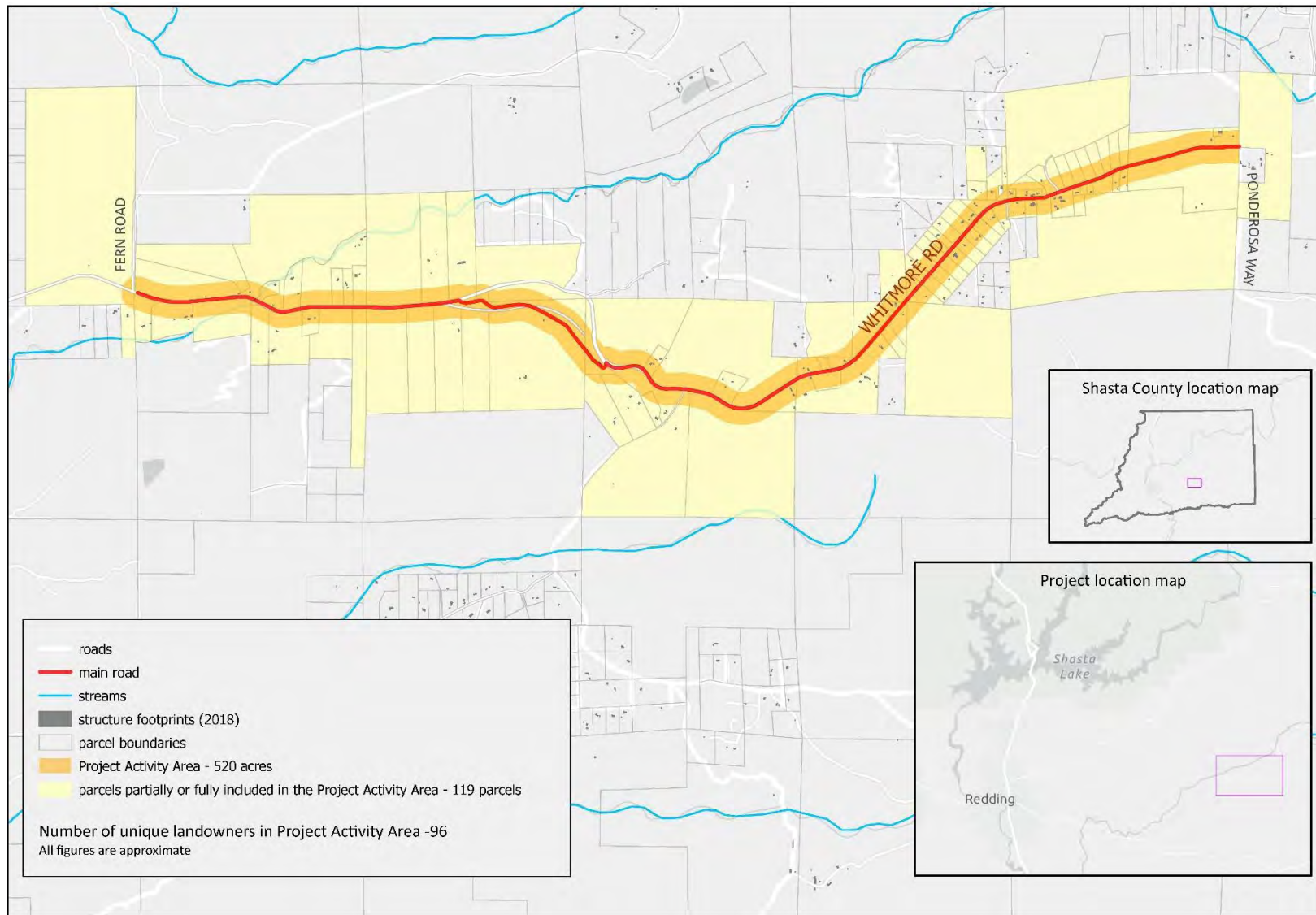


FIGURE 4
 WHITMORE ROAD 1 PAA
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



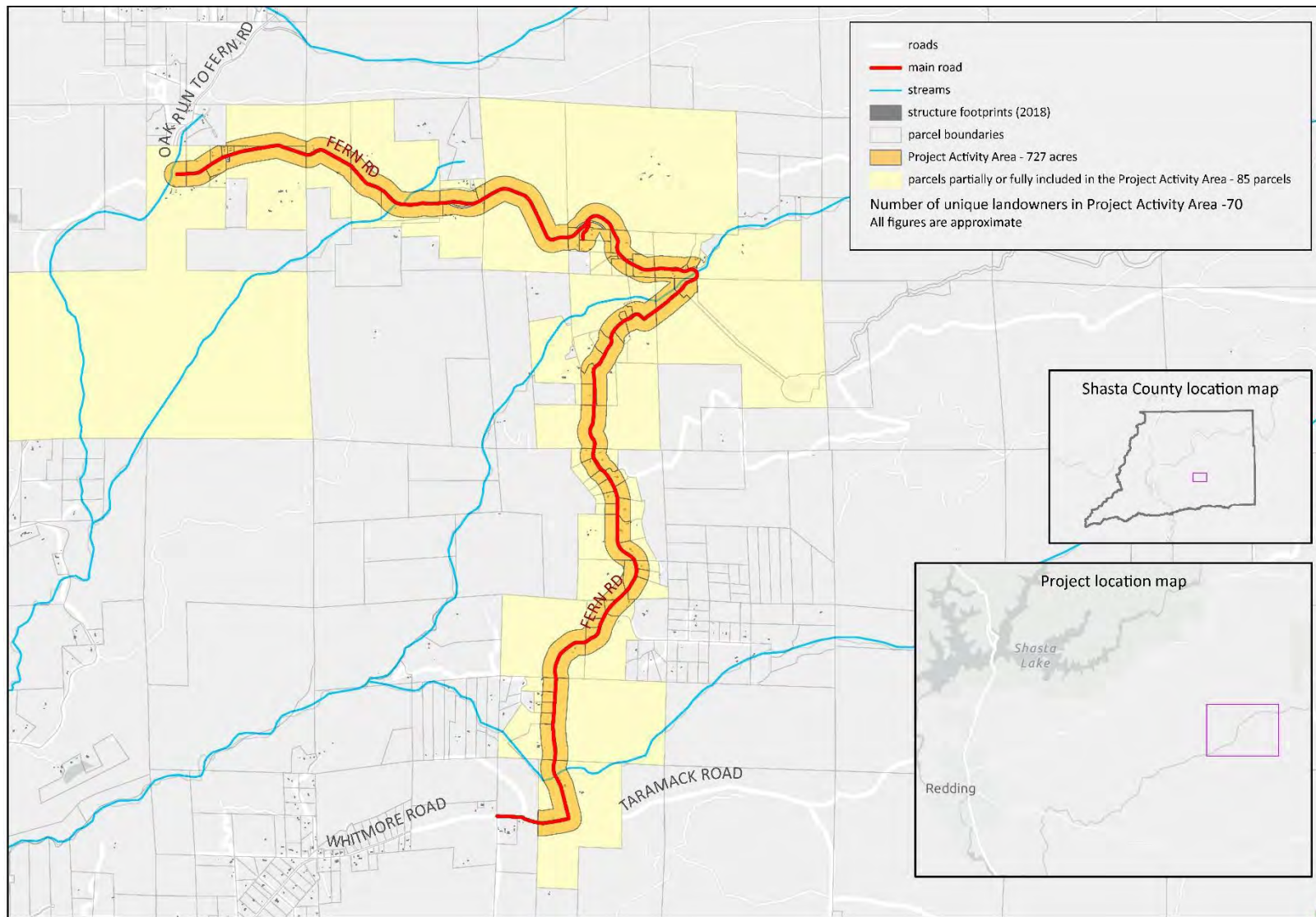


FIGURE 5
 FERN ROAD PAA
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



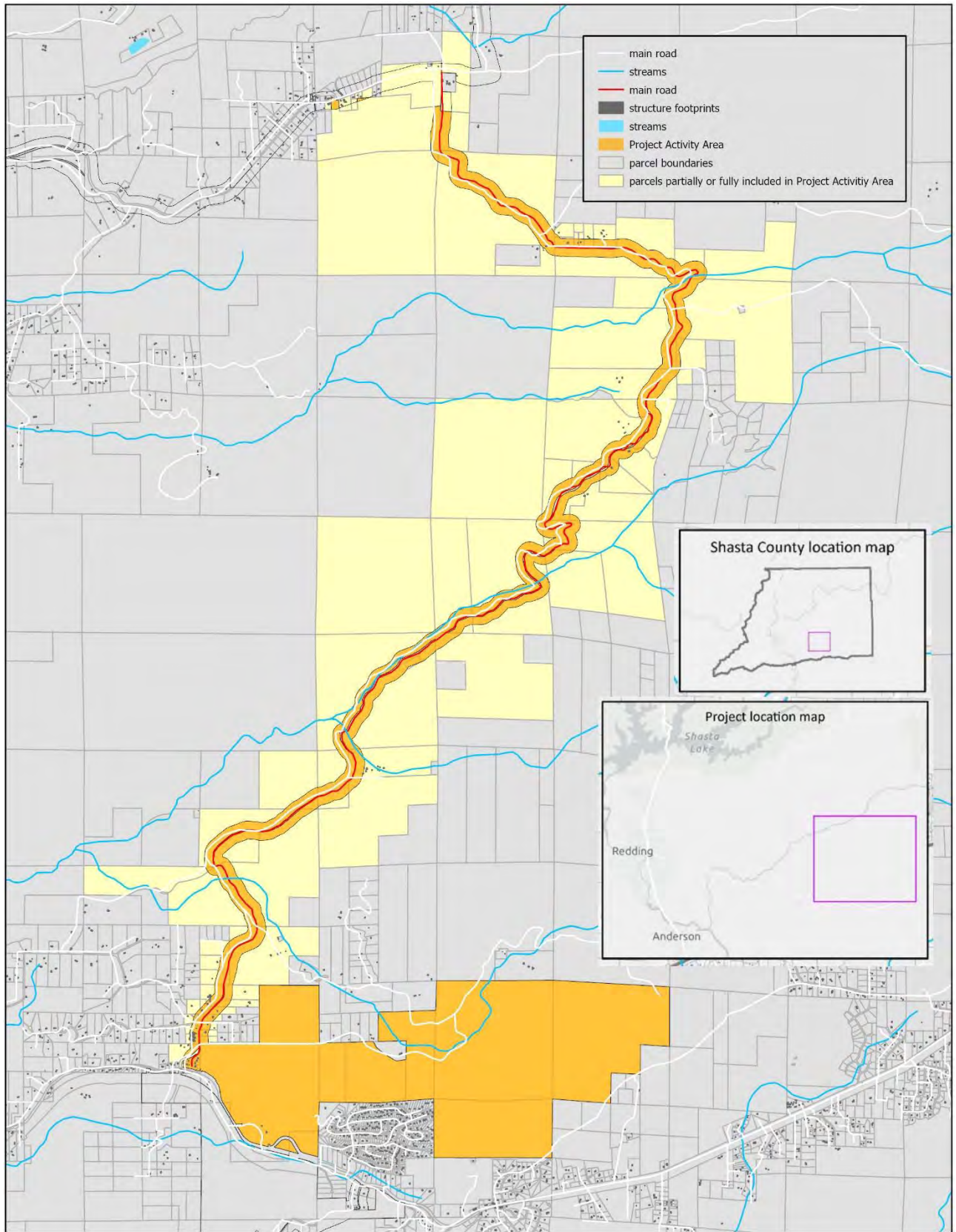


FIGURE 6
 PONDEROSA WAY
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



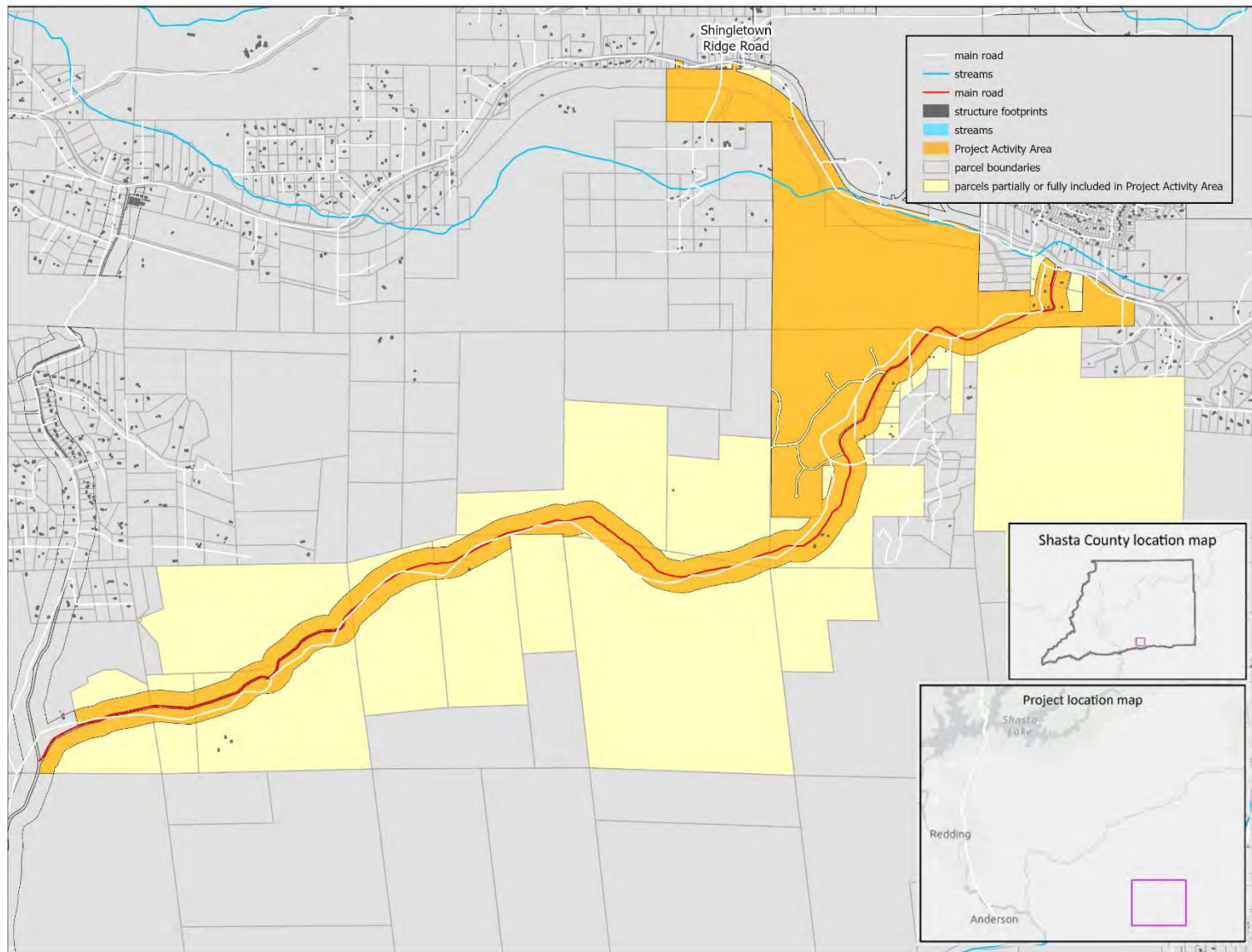


FIGURE 7
 SHINGLETOWN RIDGE ROAD
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



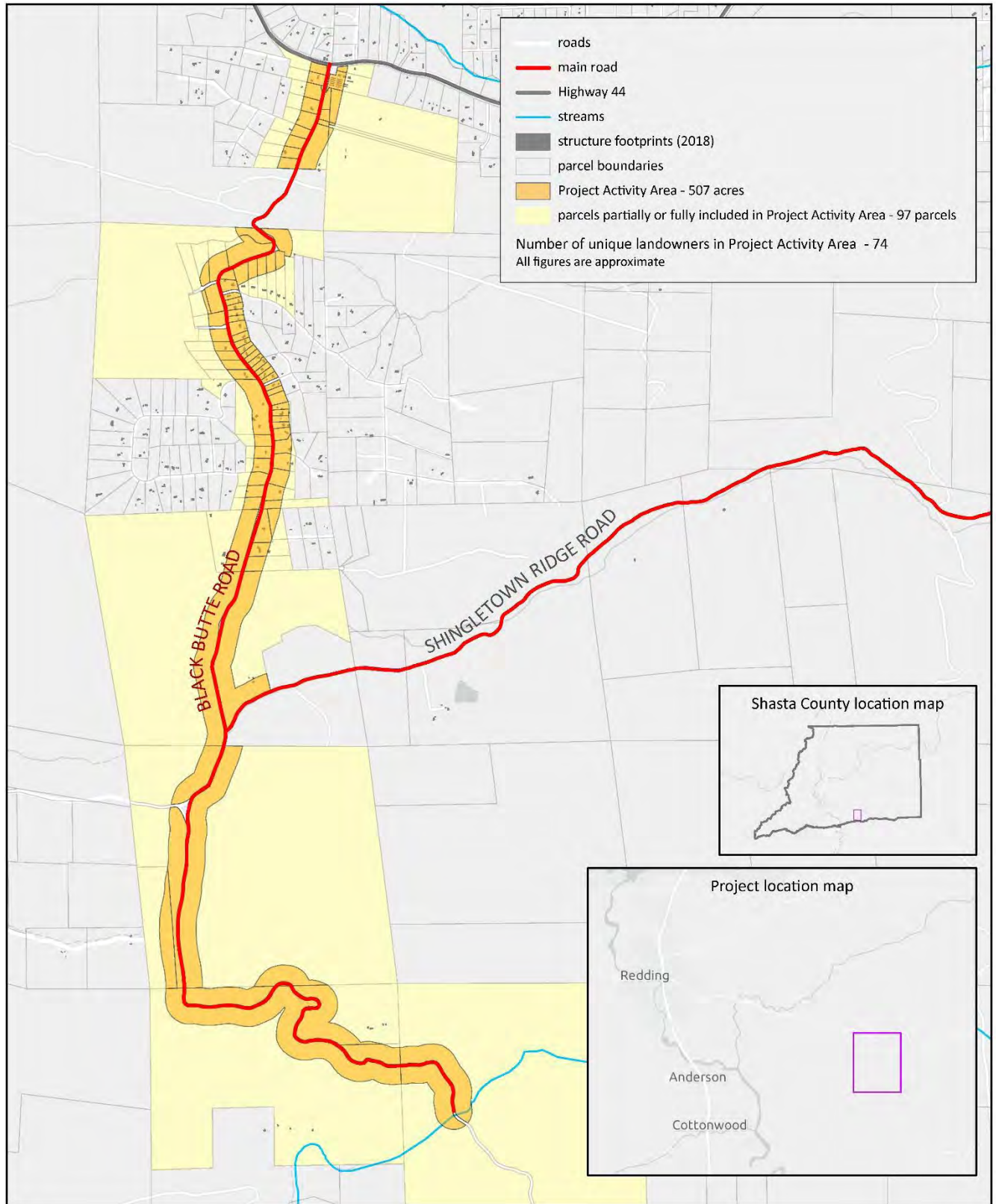


FIGURE 8
 BLACK BUTTE ROAD PAA
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



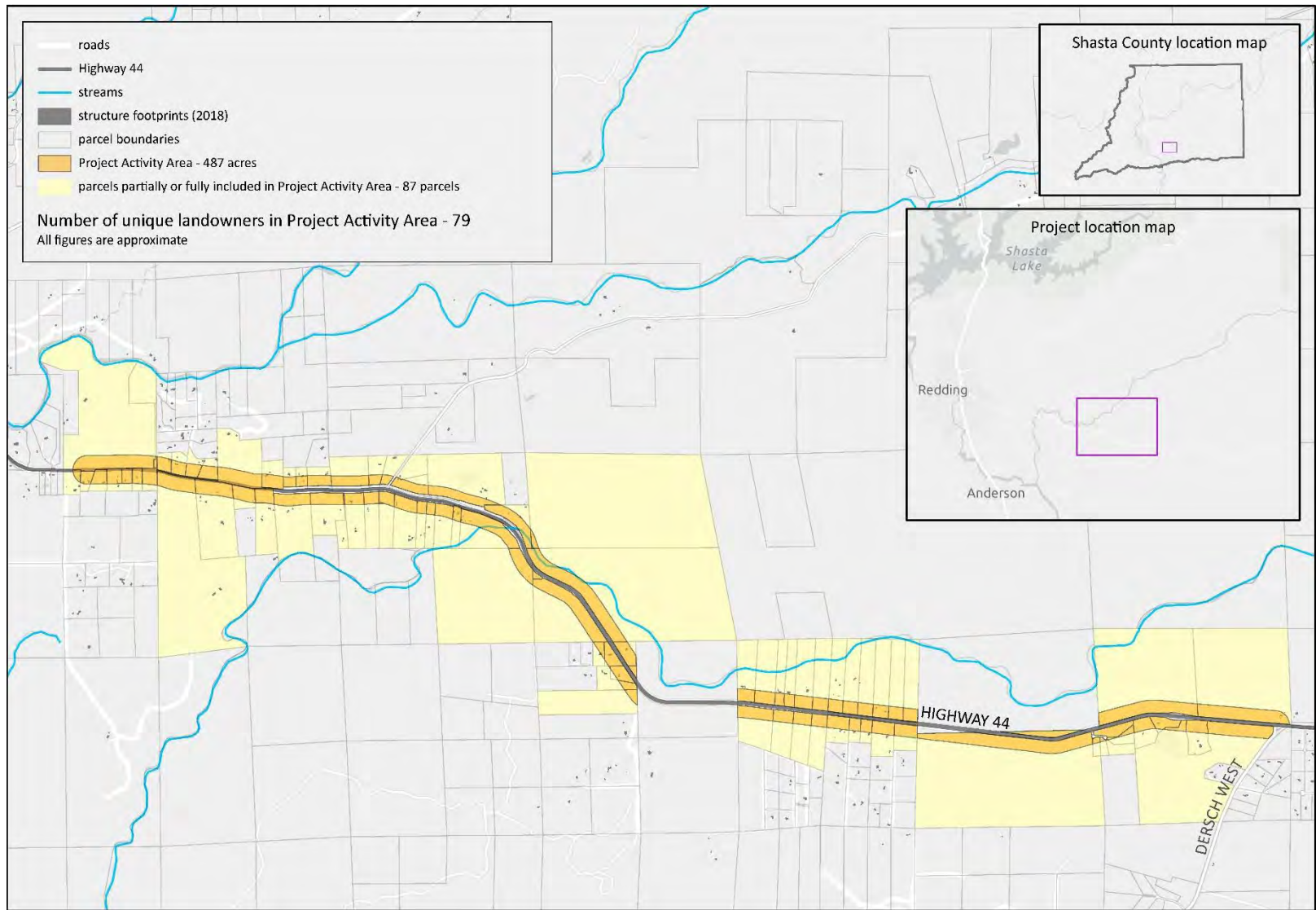


FIGURE 9
 HIGHWAY 44-DERSCH WEST PAA
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



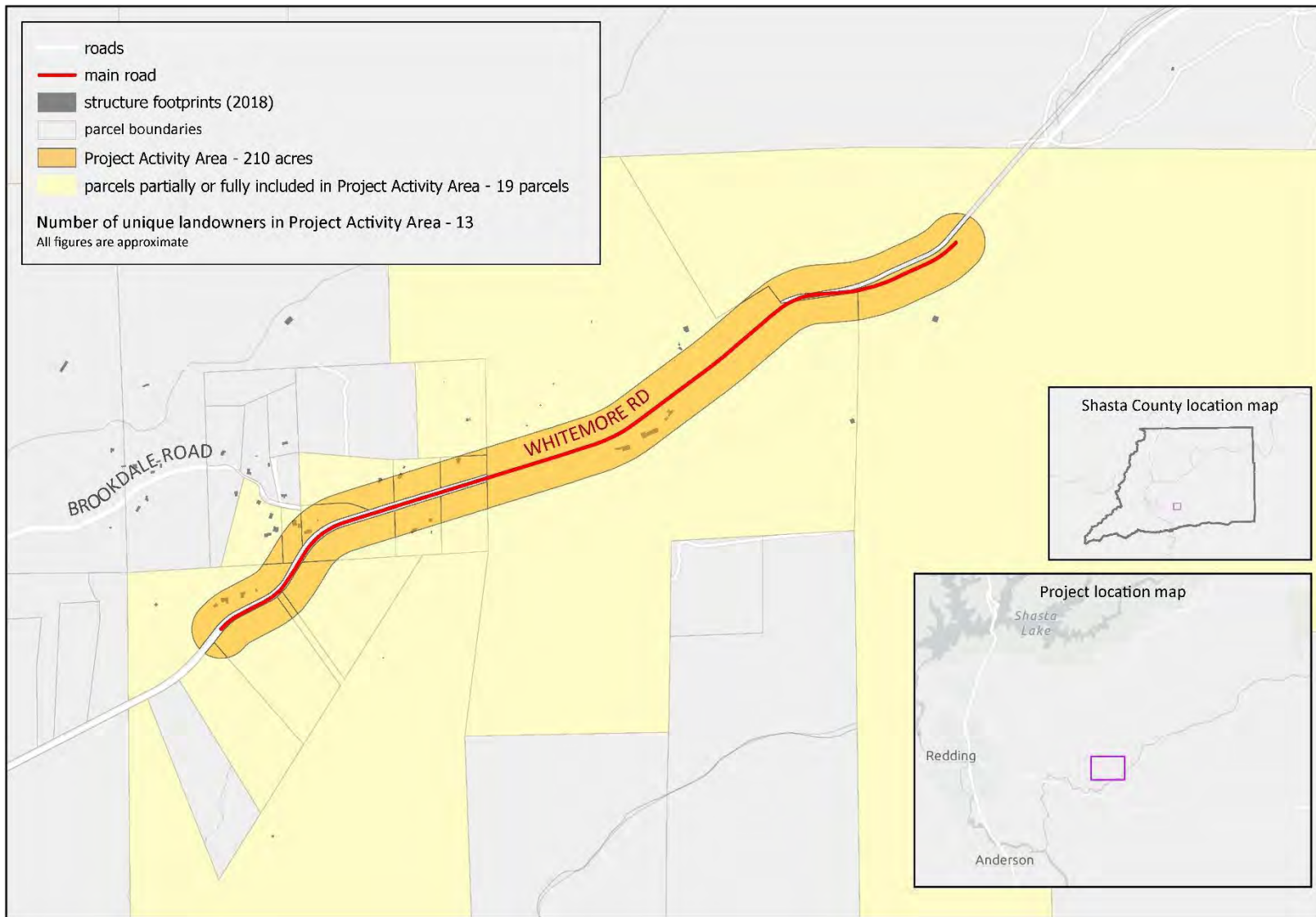
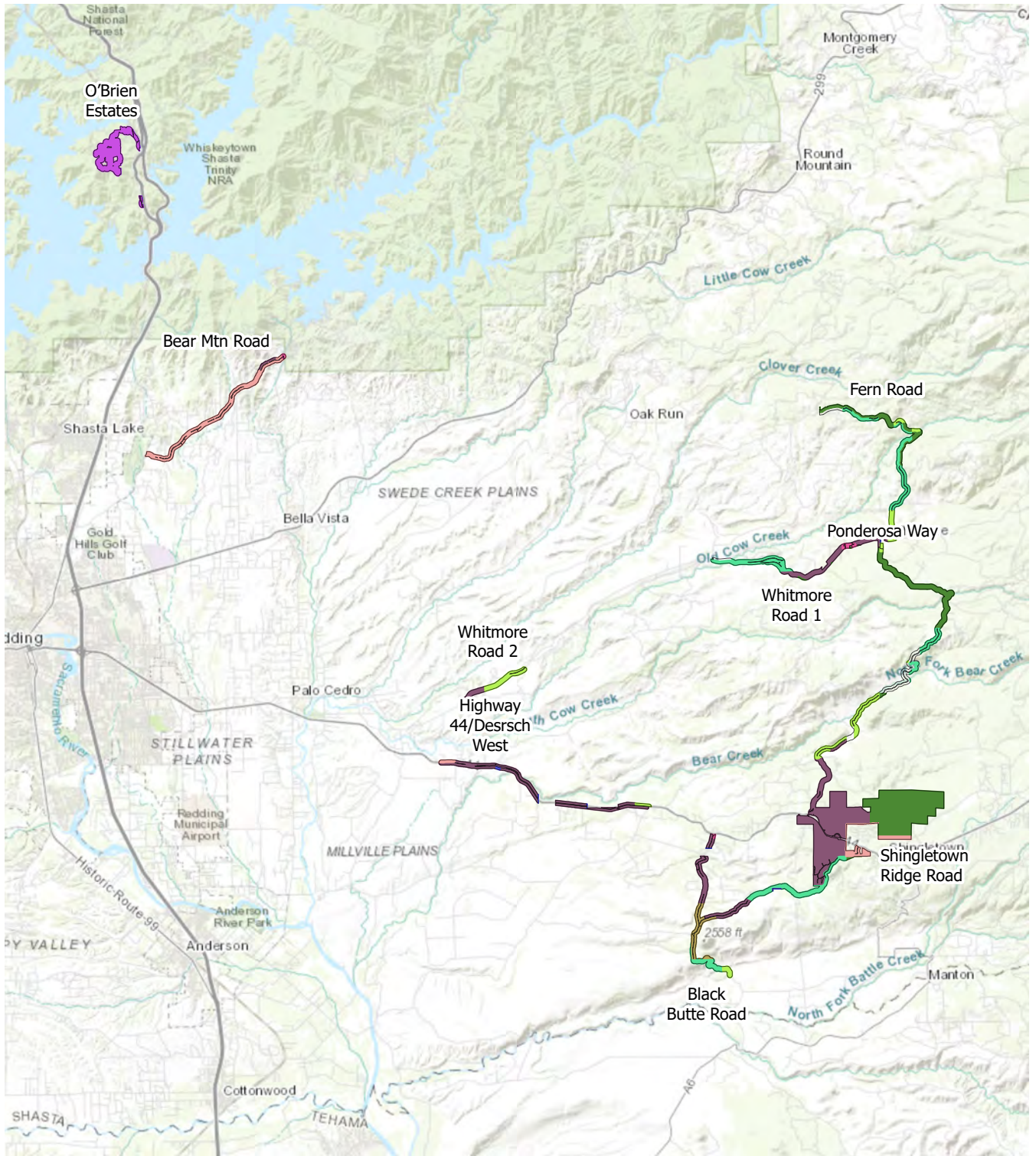


FIGURE 10
 WHITEMORE ROAD 2 PAA
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA















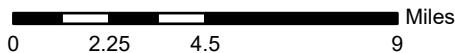
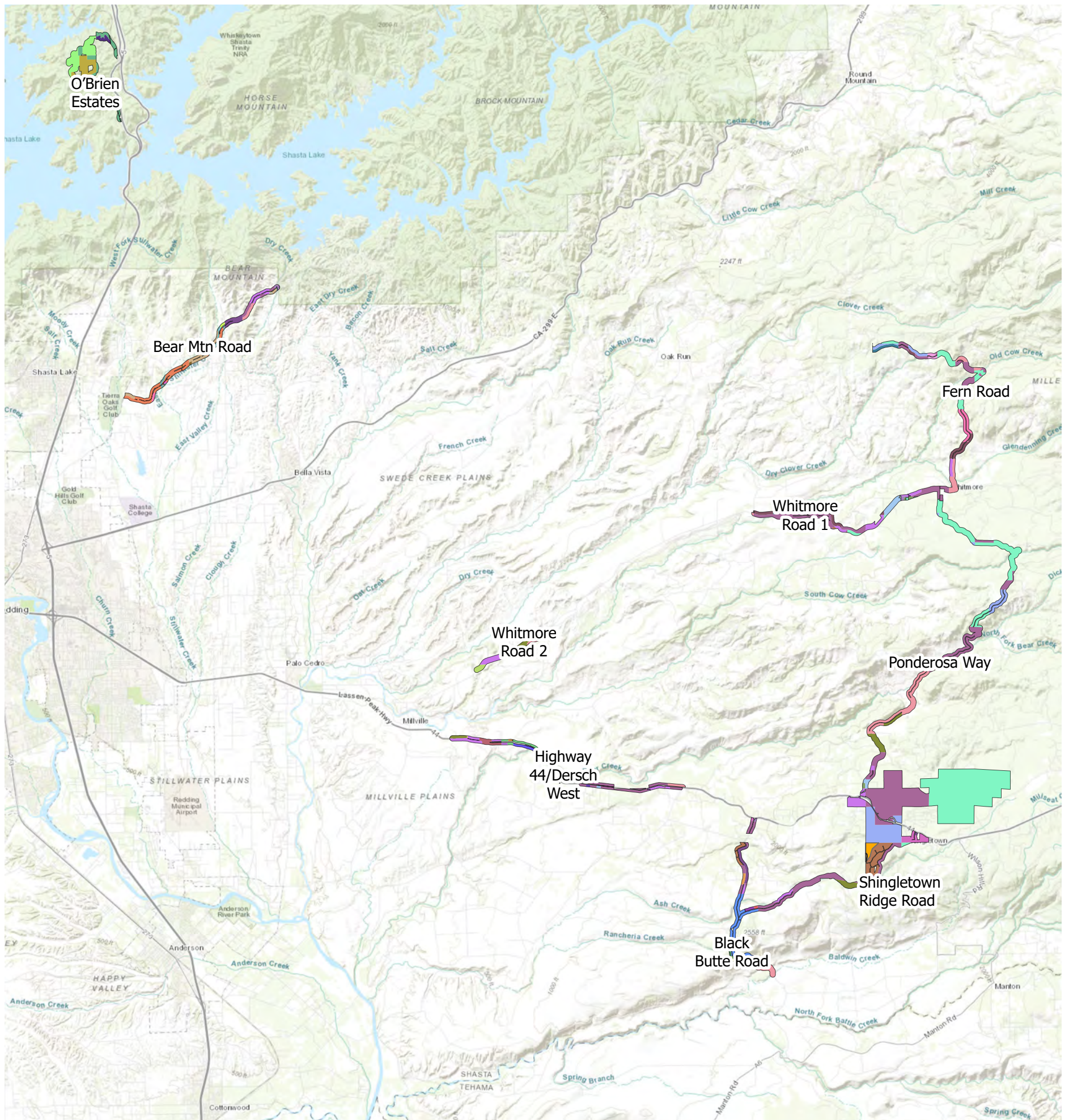
- | | |
|--|--|
|  A-G: Agricultural Grazing |  PUB: Public Land |
|  MR: Mineral Resource |  RA: Rural Residential A |
|  MU: Mixed Use |  RB: Rural Residential B |
|  N-H-40: Habitat Resource 40-Acre Density |  T: Timber |
|  N-R: Recreation Resource |  Project Treatment Boundary |

FIGURE 11
LAND USE DESIGNATIONS
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



SOURCE: SHASTA COUNTY 2022





- | | | | | |
|--|---|---|---|--|
| <ul style="list-style-type: none"> A-1-BA-10: Limited Agriculture - 10-acre minimum A-1-BA-4: Limited Agriculture - 4-acre minimum A-1-BSM: Limited Agriculture Building Site Minimum A-1-T-BA-10: Limited Agriculture - Mobile Home District - 10-acre minimum A-1-T-BA-40: Limited Agriculture - Mobile Home District - 40-acre minimum C-R: Commercial Recreation EA: Exclusive Agricultural District EA-AP: Exclusive Agricultural District - Agricultural Preserve District | <ul style="list-style-type: none"> EA-AP-MRB: Exclusive Agricultural District - Agricultural Preserve District - Mineral Resource Buffer EA-BA-40: Exclusive Agricultural District - 40-acre minimum EA-BA-40-MRB: Exclusive Agricultural District - 40-acre minimum - Mineral Resource Buffer HP-BA-40: Habitat Protection District - 40-acre minimum HP-BA-80: Habitat Protection District - 80-acre minimum HP-BSM: Habitat Protection District - Building Site Minimum MR: Mineral Resource District MU: Mixed Use District | <ul style="list-style-type: none"> NRA-S: National Recreation Area, Shasta Unit District NRA-S-T-BSM: National Recreation Area, Shasta Unit - Mobile Home District - Building Site Minimum OS: Open Space PD: Planned Development PF: Public Facilities R-L: Limited Residential R-L-BA-10: Limited Residential - 10-acre minimum R-L-BA-15: Limited Residential - 15-acre minimum R-L-BA-20: Limited Residential - 20-acre minimum | <ul style="list-style-type: none"> R-L-BA-30: Limited Residential - 30-acre minimum R-L-BSM: Limited Residential - Building Site Minimum R-L-NRA-S: Limited Residential - National Recreation Area, Shasta Unit R-L-T: Limited Residential - Mobile Home District R-R: Rural Residential R-R-BA-10: Rural Residential - 10-acre minimum R-R-BA-2.5-NRA-S: Rural Residential - 2.5-acre minimum - National Recreation Area, Shasta Unit R-R-BA-7: Rural Residential - 7-acre minimum | <ul style="list-style-type: none"> R-R-BSM: Rural Residential - Building Site Minimum R-R-T: Rural Residential - Mobile Home District R-R-T-BA-5: Rural Residential - Mobile Home District - 5-acre minimum R-R-T-BSM: Rural Residential - Mobile Home District - Building Site Minimum TL: Timberland TP: Timber Production U: Unclassified U-MRB: Unclassified - Mineral Resource Buffer |
|--|---|---|---|--|

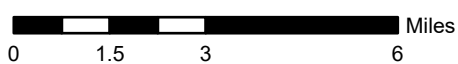
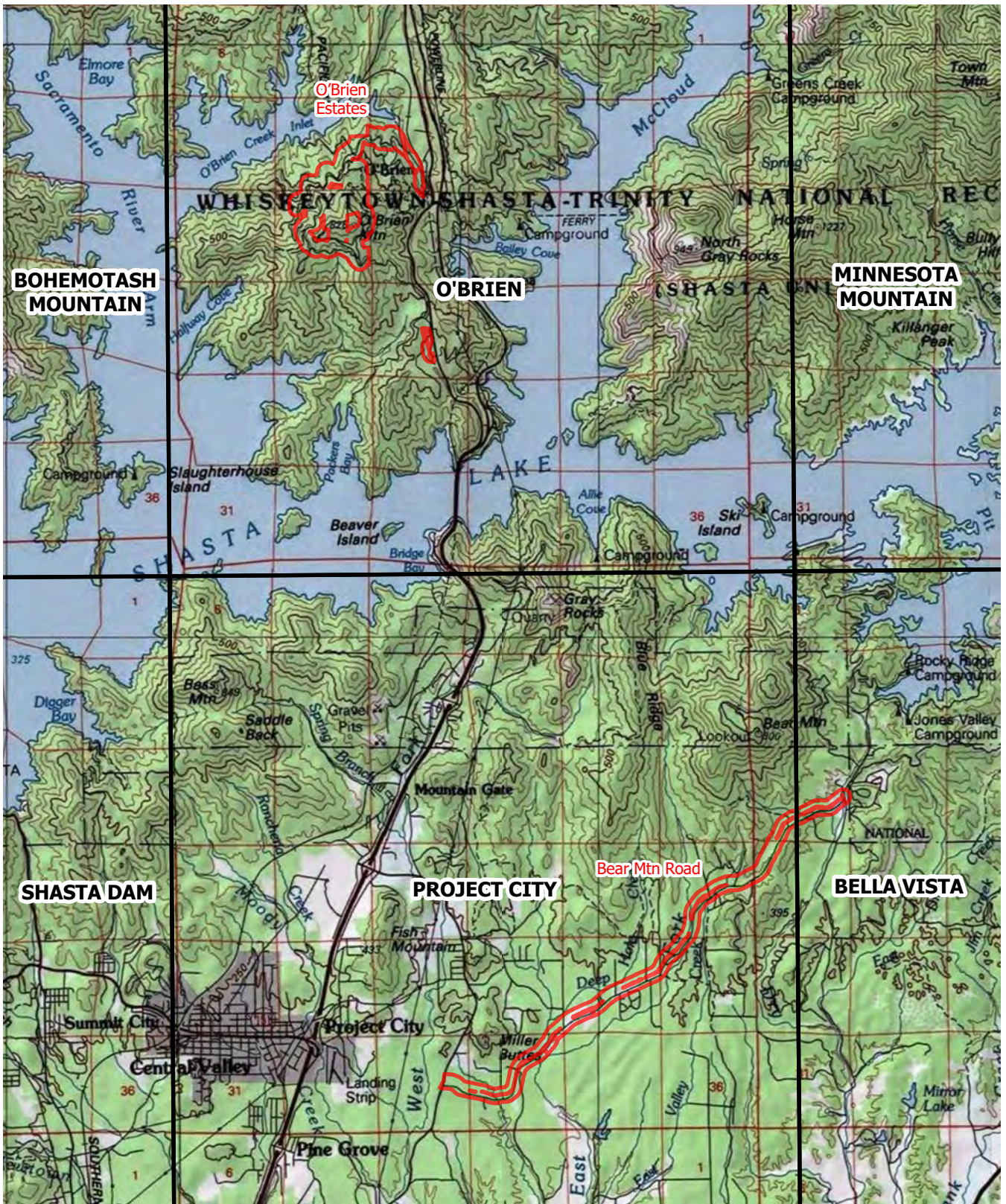
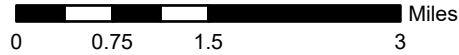


FIGURE 12
ZONING
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA

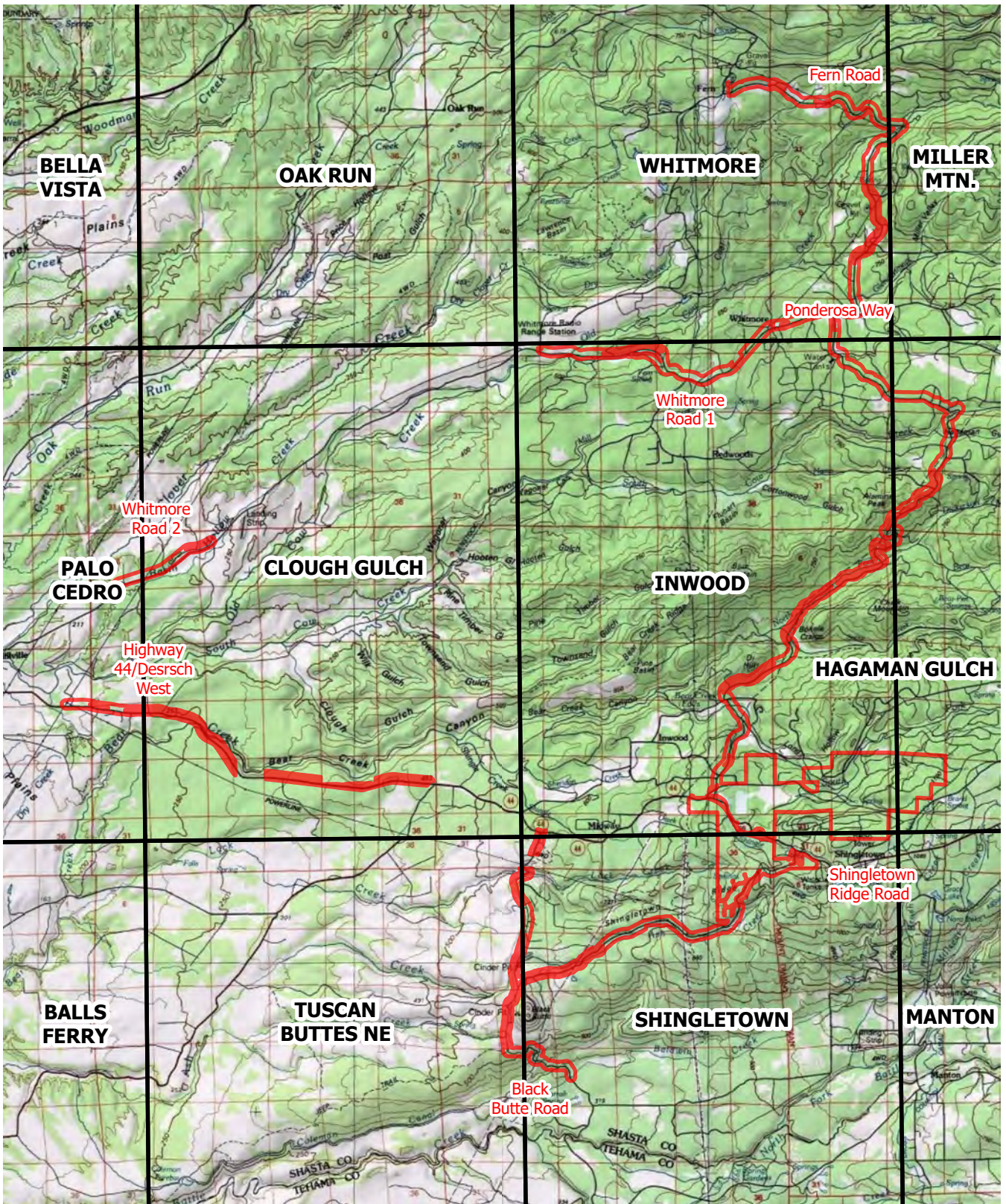




- 7.5' Quadrangle Boundary
- Project Treatment Boundary

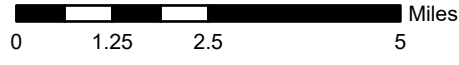


SOURCE: USGS TOPOGRAPHIC MAPS

FIGURE 13A
 USGS TOPOGRAPHIC MAPS
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA






-  7.5' Quadrangle Boundary
-  Project Treatment Boundary

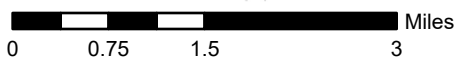


SOURCE: USGS TOPOGRAPHIC MAPS

FIGURE 13B
 USGS TOPOGRAPHIC MAPS
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA

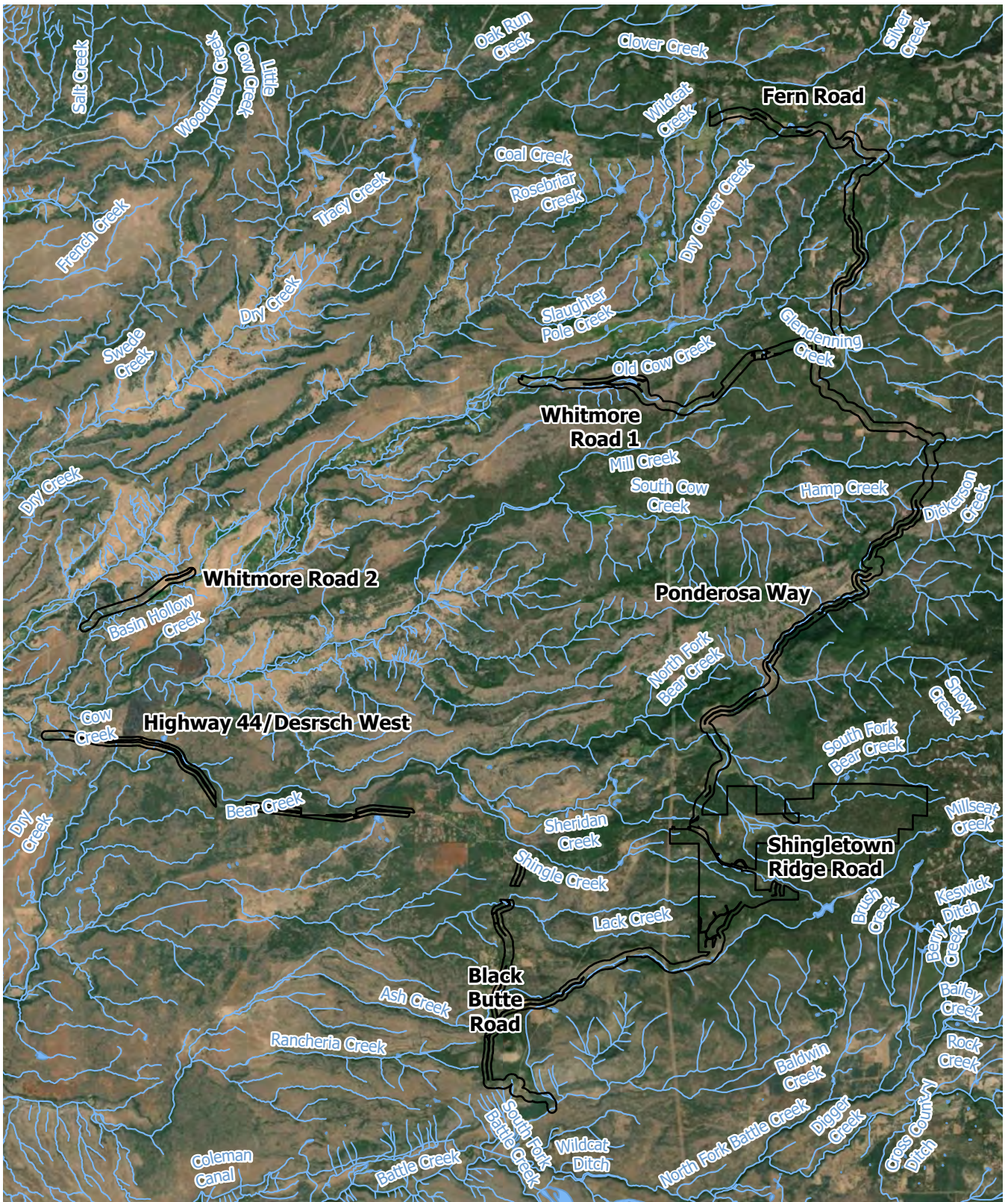


-  Watercourse
-  Waterbody
-  Project Treatment Boundary



SOURCE: USGS NHD 2020

**FIGURE 14A
HYDROLOGY**
WILDFIRE MITIGATION/HAZARDOUS
FUELS REDUCTION PROJECT
GRANT #4382
SHASTA COUNTY, CALIFORNIA



- Watercourse
- Waterbody
- Project Treatment Boundary

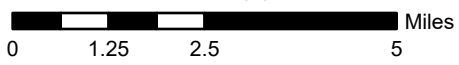
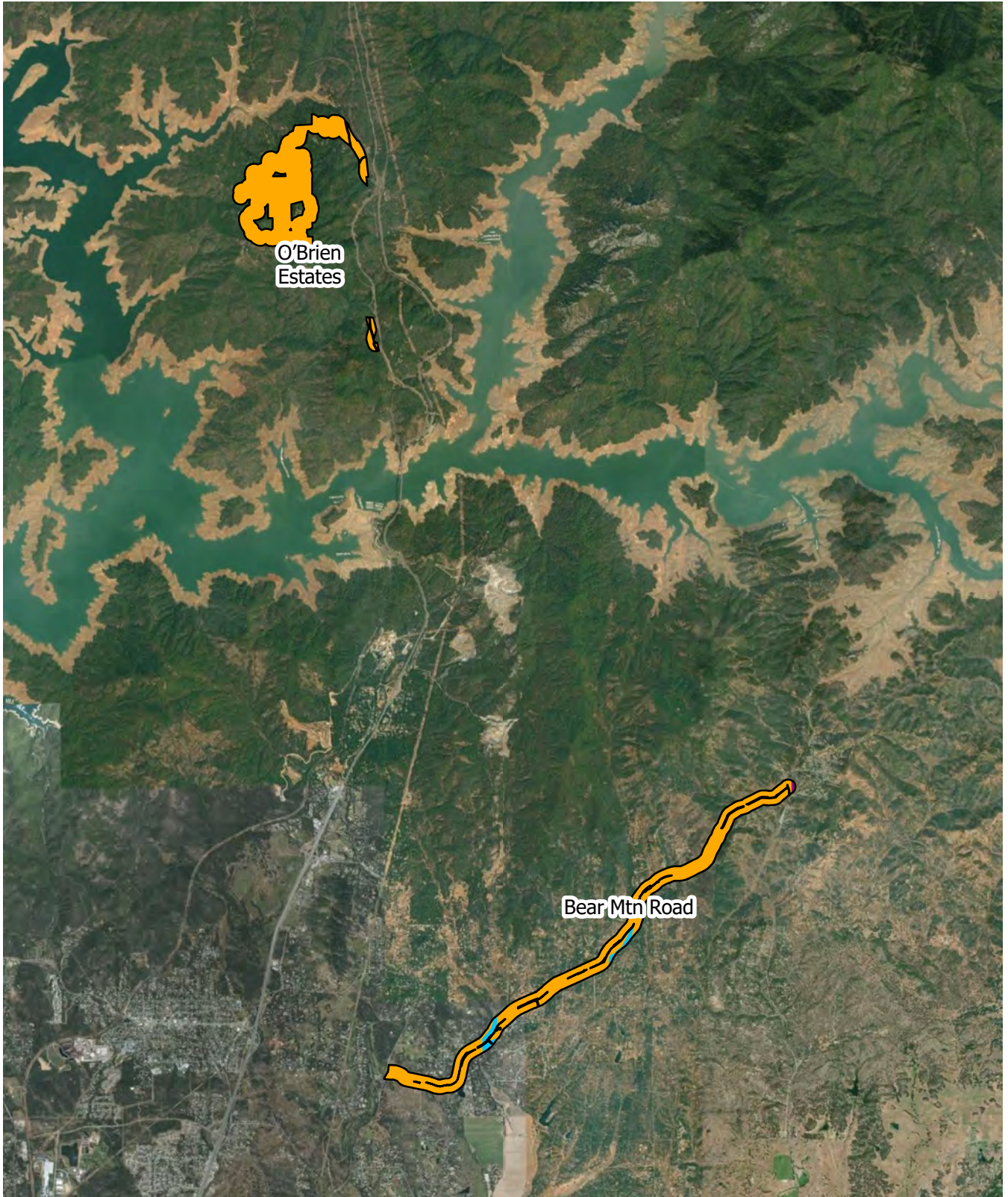






FIGURE 14B
HYDROLOGY
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



SOURCE: USGS NHD 2020



-  Project Treatment Boundary
-  Zone A: Area Subject to Inundation
-  Zone D: Flood Hazards Undetermined
-  Zone X: Area of Minimal Flood Hazard

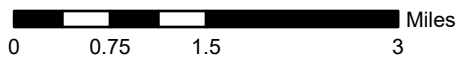
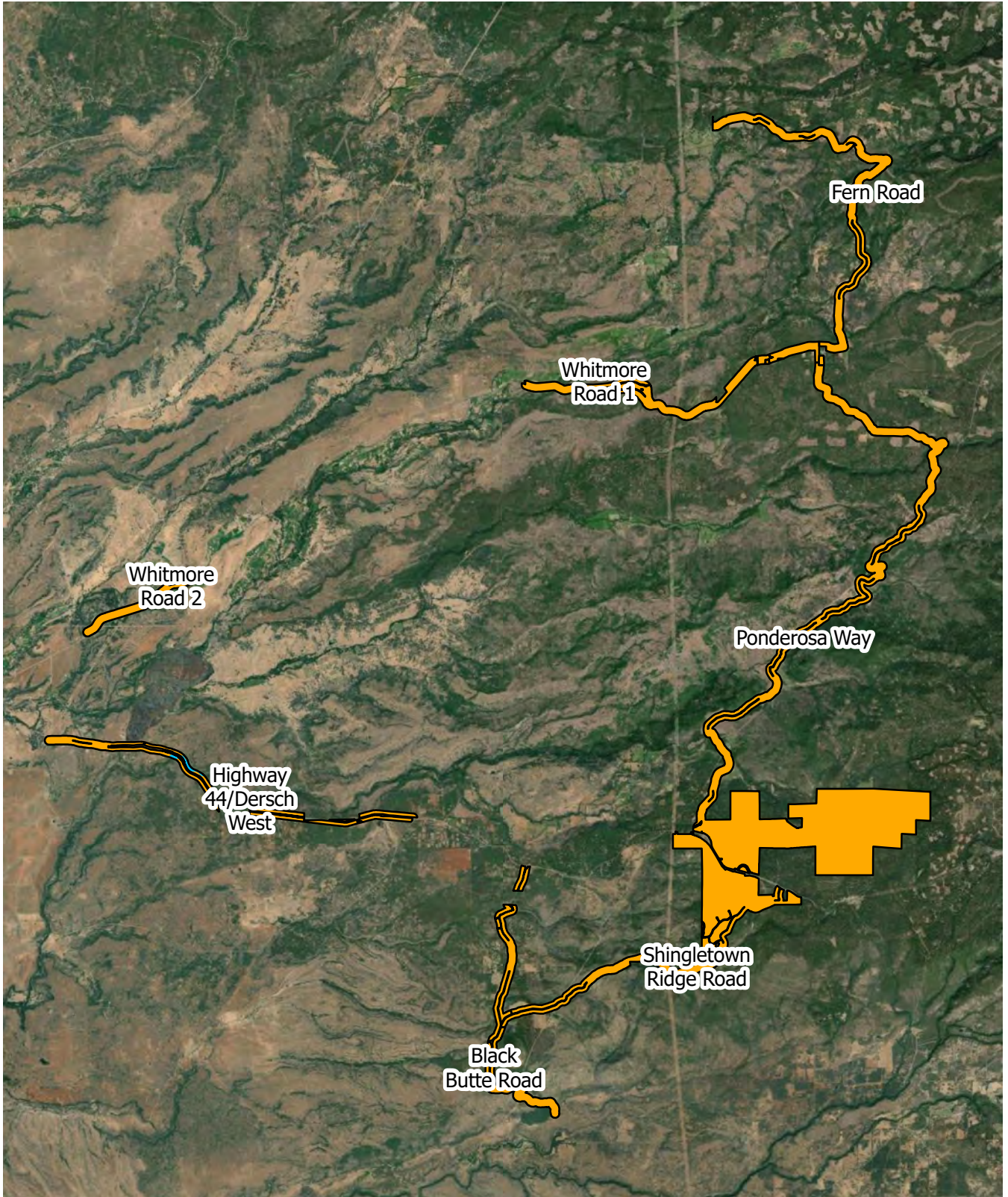






FIGURE 15A
FEMA FLOOD HAZARD ZONES
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 SHASTA COUNTY, CALIFORNIA



SOURCE: FEMA NFHL 2020



-  Project Treatment Boundary
-  Zone A: Area Subject to Inundation
-  Zone D: Flood Hazards Undetermined
-  Zone X: Area of Minimal Flood Hazard

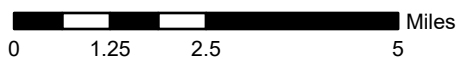


FIGURE 15B
FEMA FLOOD HAZARD ZONES
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 SHASTA COUNTY, CALIFORNIA



SOURCE: FEMA NFHL 2020



- Freshwater Emergent Wetland
- Riverine
- Freshwater Forested/Shrub Wetland
- Project Treatment Boundary
- Freshwater Pond

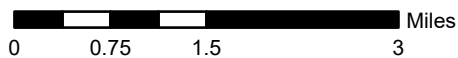
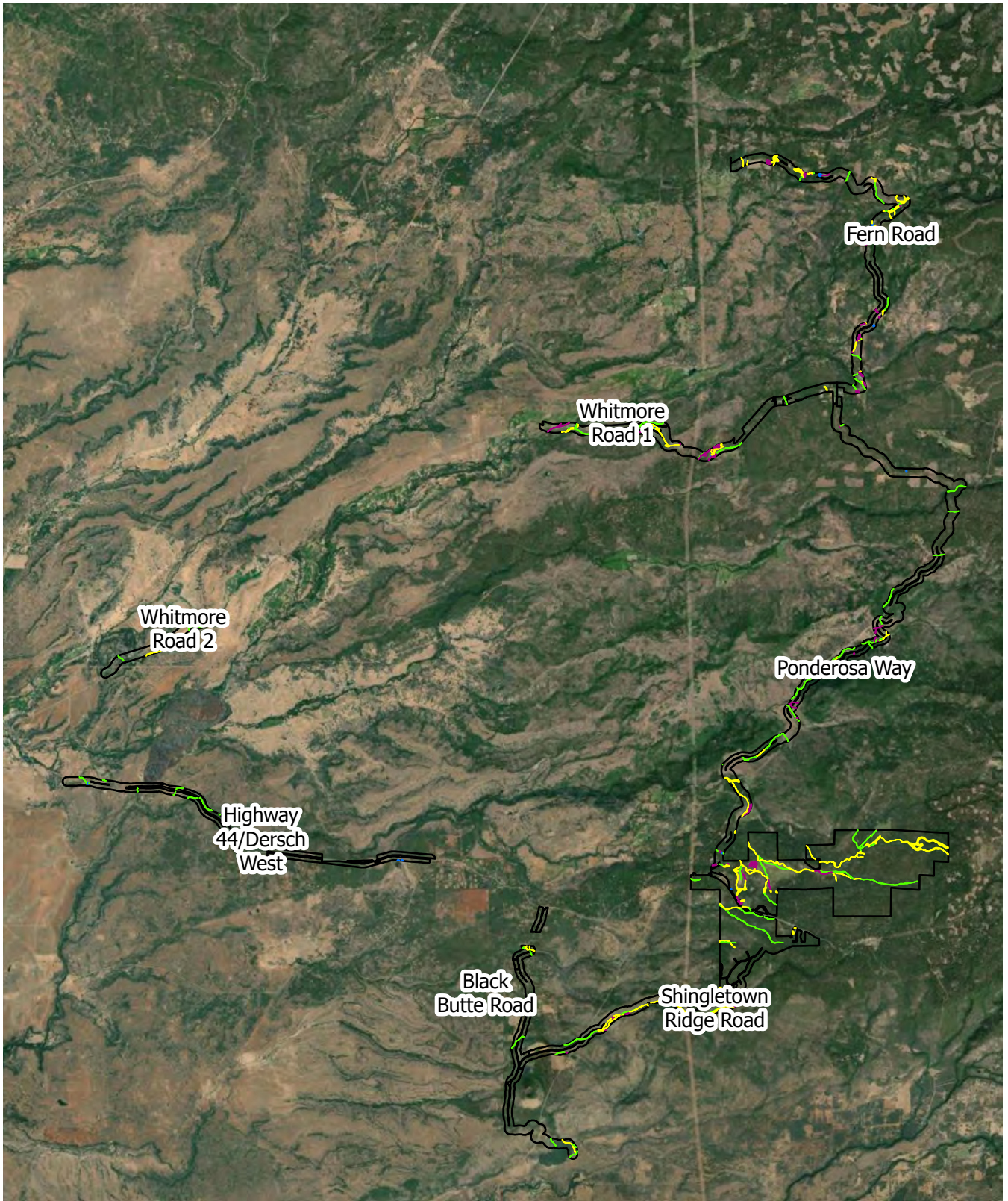


FIGURE 16A
USFWS WETLANDS
WILDFIRE MITIGATION/HAZARDOUS
FUELS REDUCTION PROJECT
GRANT #4382
SHASTA COUNTY, CALIFORNIA

SOURCE: USFWS NATIONAL WETLANDS INVENTORY 2022



- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine
- Project Treatment Boundary

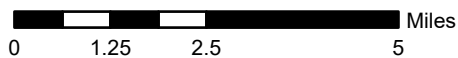
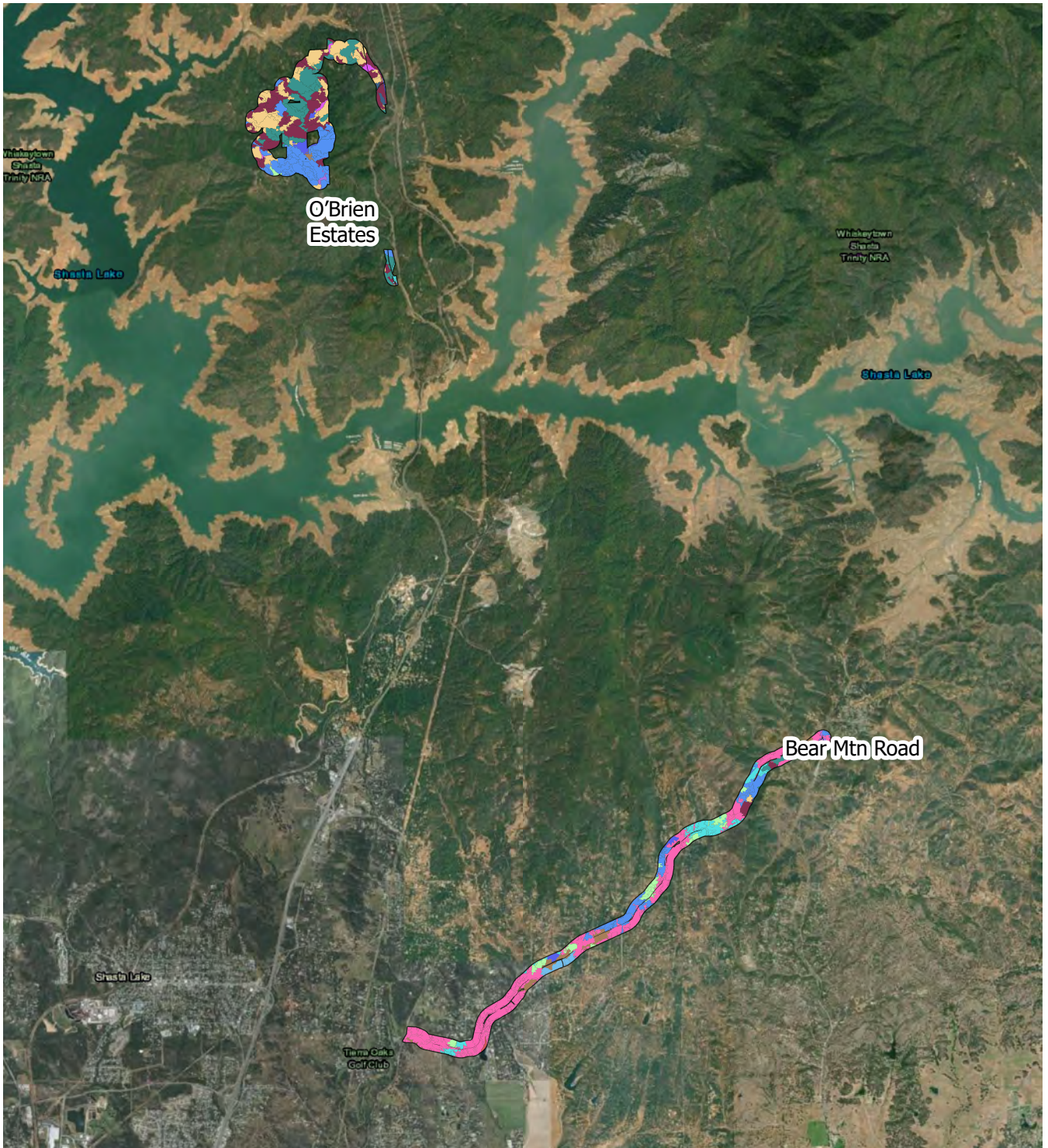


FIGURE 16B
USFWS WETLANDS
WILDFIRE MITIGATION/HAZARDOUS
FUELS REDUCTION PROJECT
GRANT #4382
SHASTA COUNTY, CALIFORNIA

SOURCE: USFWS NATIONAL WETLANDS INVENTORY 2022



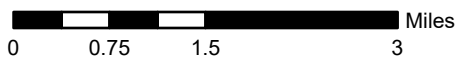
- Project Treatment Boundary
- AGS: Annual Grassland
- BAR: Barren
- BOP: Blue Oak-Foothill Pine
- BOW: Blue Oak Woodland
- CPC: Closed-Cone Pine-Cypress

- CRP: Cropland
- LAC: Lacustrine
- MCH: Mixed Chaparral
- MCP: Montane Chaparral
- MHC: Montane Hardwood-Conifer
- MHW: Montane Hardwood

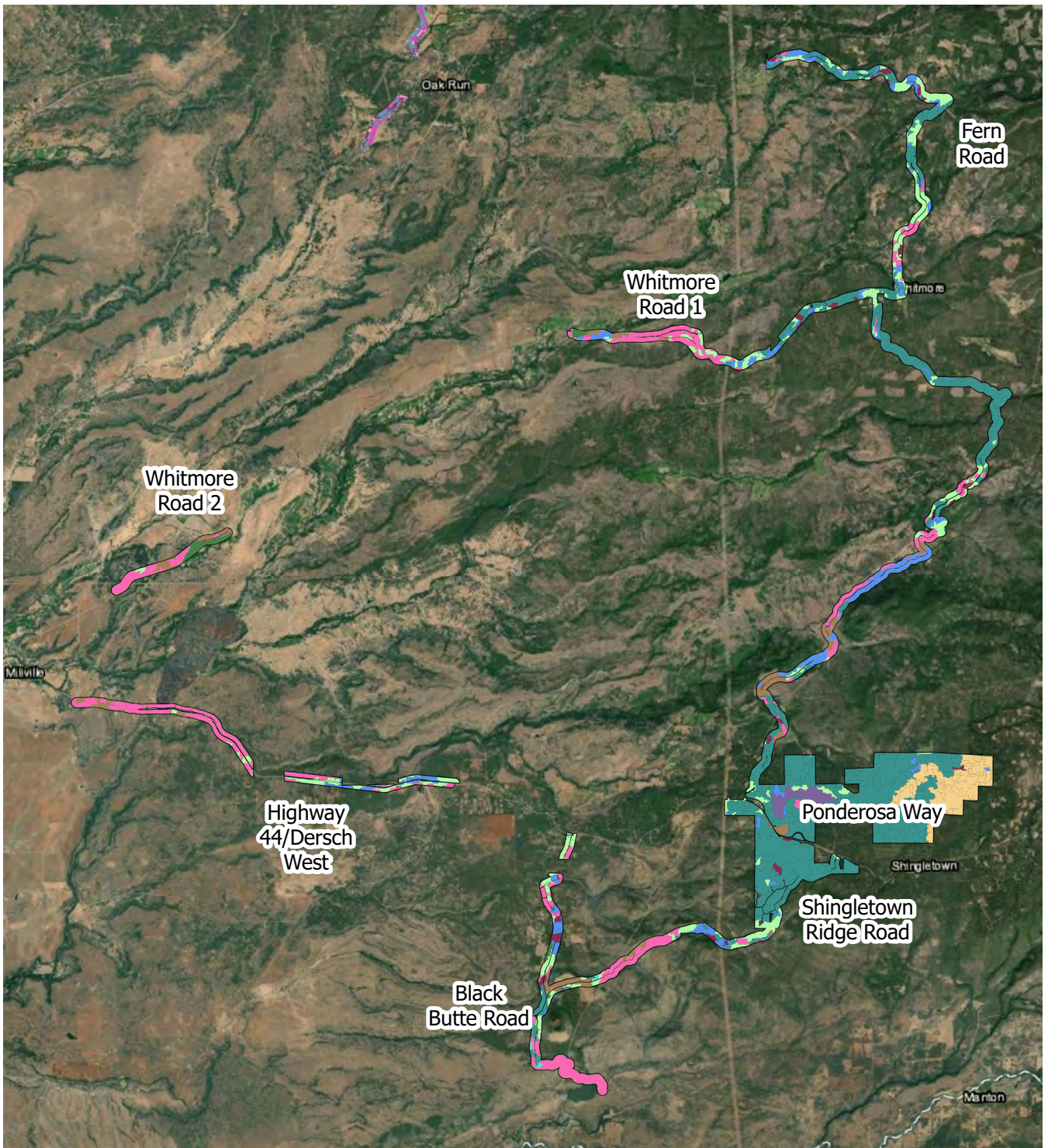
- PAS: Pasture
- PPN: Ponderosa Pine
- SMC: Sierran Mixed Conifer
- URB: Urban
- WTM: Wet Meadow



FIGURE 17A
VEGETATION TYPES
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



SOURCE: CALVEG 2022; CDFW VEGCAMP 2022



- | | | |
|-------------------------------|-------------------------------|----------------------------|
| Project Treatment Boundary | CRP: Cropland | PAS: Pasture |
| AGS: Annual Grassland | LAC: Lacustrine | PPN: Ponderosa Pine |
| BAR: Barren | MCH: Mixed Chaparral | SMC: Sierran Mixed Conifer |
| BOP: Blue Oak-Foothill Pine | MCP: Montane Chaparral | URB: Urban |
| BOW: Blue Oak Woodland | MHC: Montane Hardwood-Conifer | WTM: Wet Meadow |
| CPC: Closed-Cone Pine-Cypress | MHW: Montane Hardwood | |

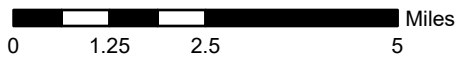




FIGURE 17B
VEGETATION TYPES
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA



SOURCE: CALVEG 2022; CDFW VEGCAMP 2022



-  Commercial Timberland
-  Project Treatment Boundary

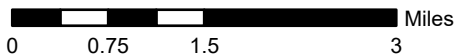
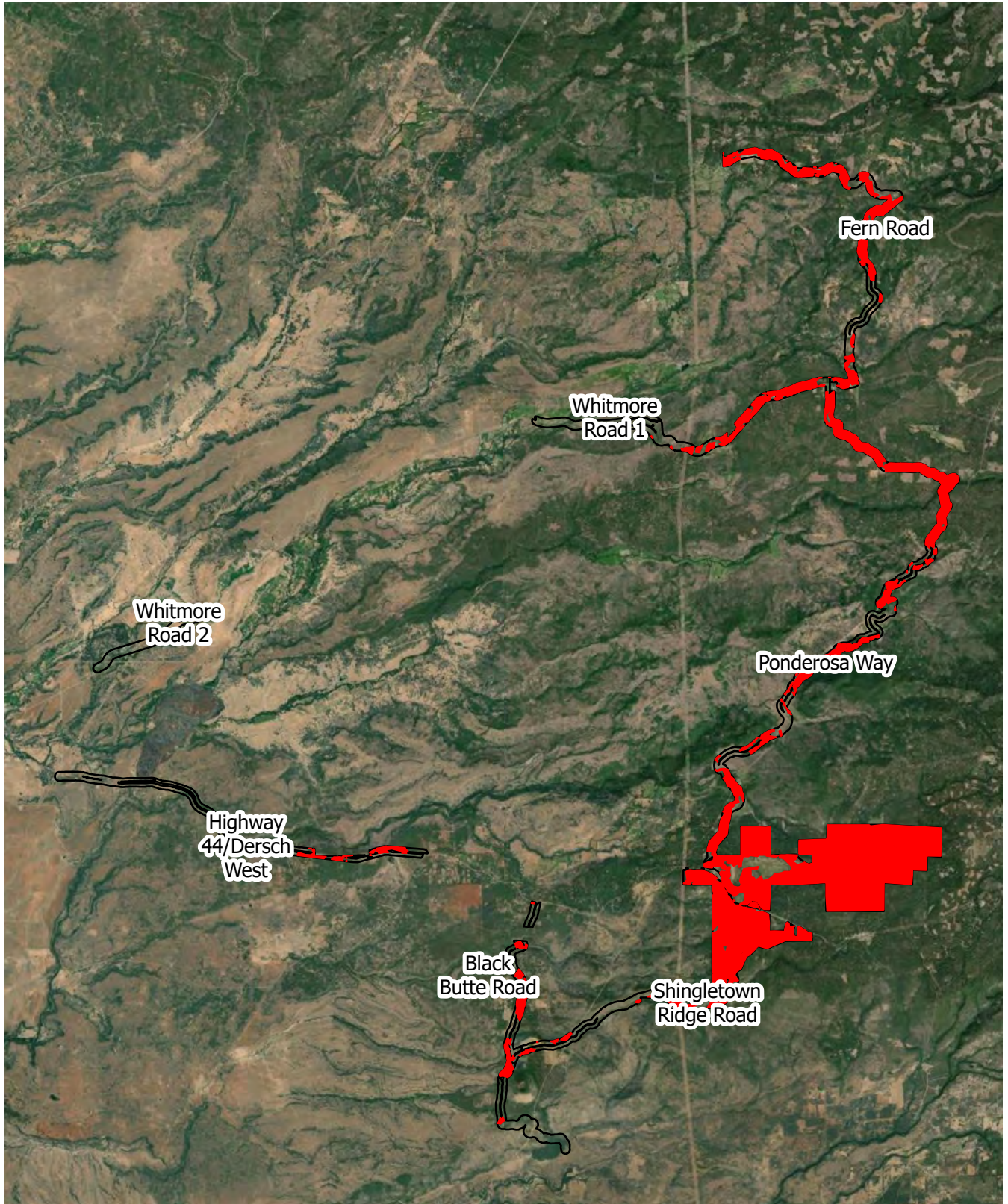


FIGURE 18A
COMMERCIAL TIMBERLAND
WILDFIRE MITIGATION/HAZARDOUS
FUELS REDUCTION PROJECT
SHASTA COUNTY, CALIFORNIA



SOURCE: SHASTA COUNTY 2022



- Commercial Timberland
- Project Treatment Boundary

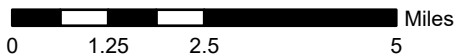
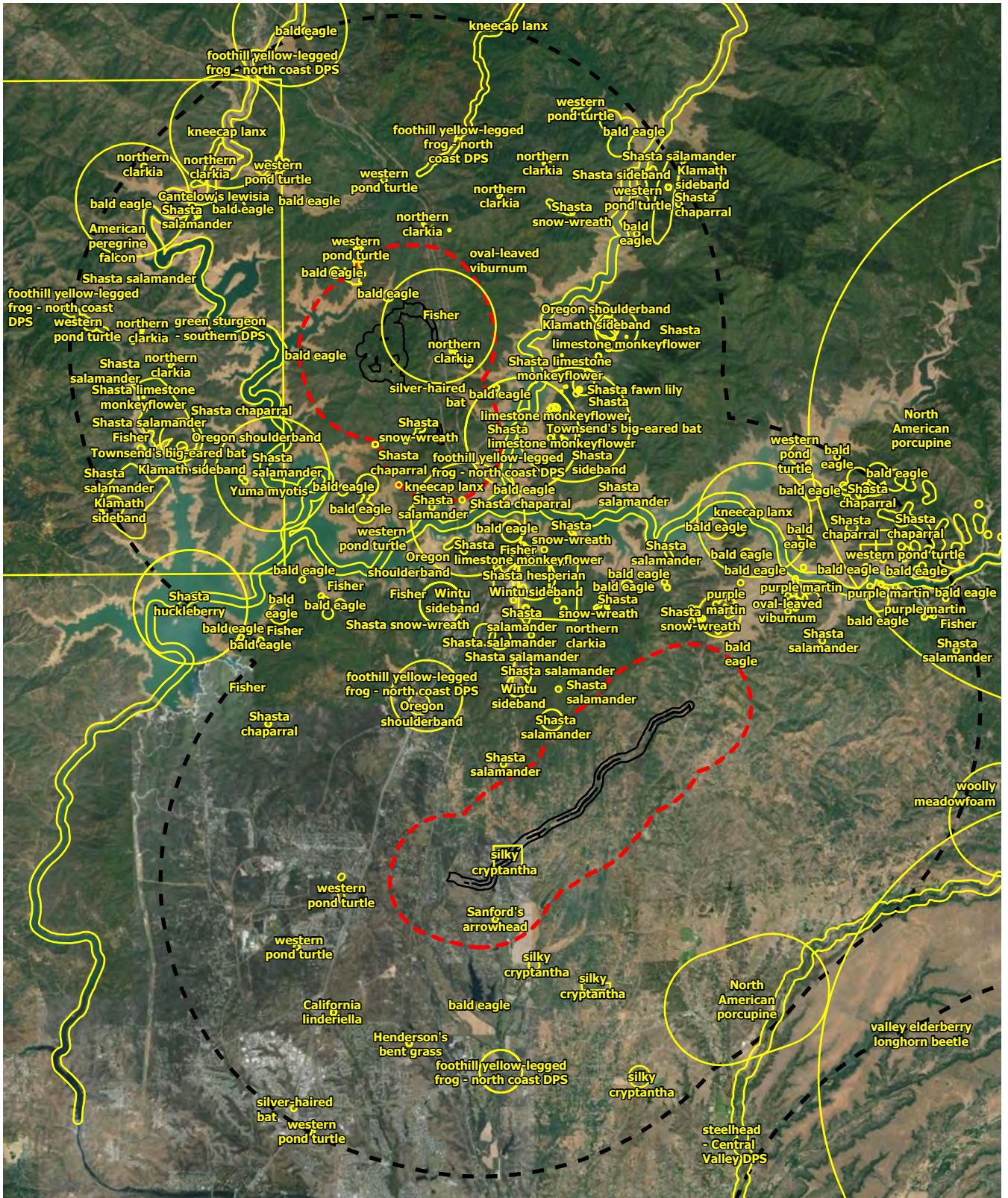






FIGURE 18B
COMMERCIAL TIMBERLAND
WILDFIRE MITIGATION/HAZARDOUS
FUELS REDUCTION PROJECT
SHASTA COUNTY, CALIFORNIA



SOURCE: SHASTA COUNTY 2022



-  Project Treatment Boundary
-  1-Mile Buffer Around Project Treatment Boundary
-  5-Mile Buffer Around Project Treatment Boundary
-  CNDDB Occurrence

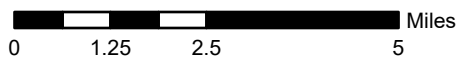
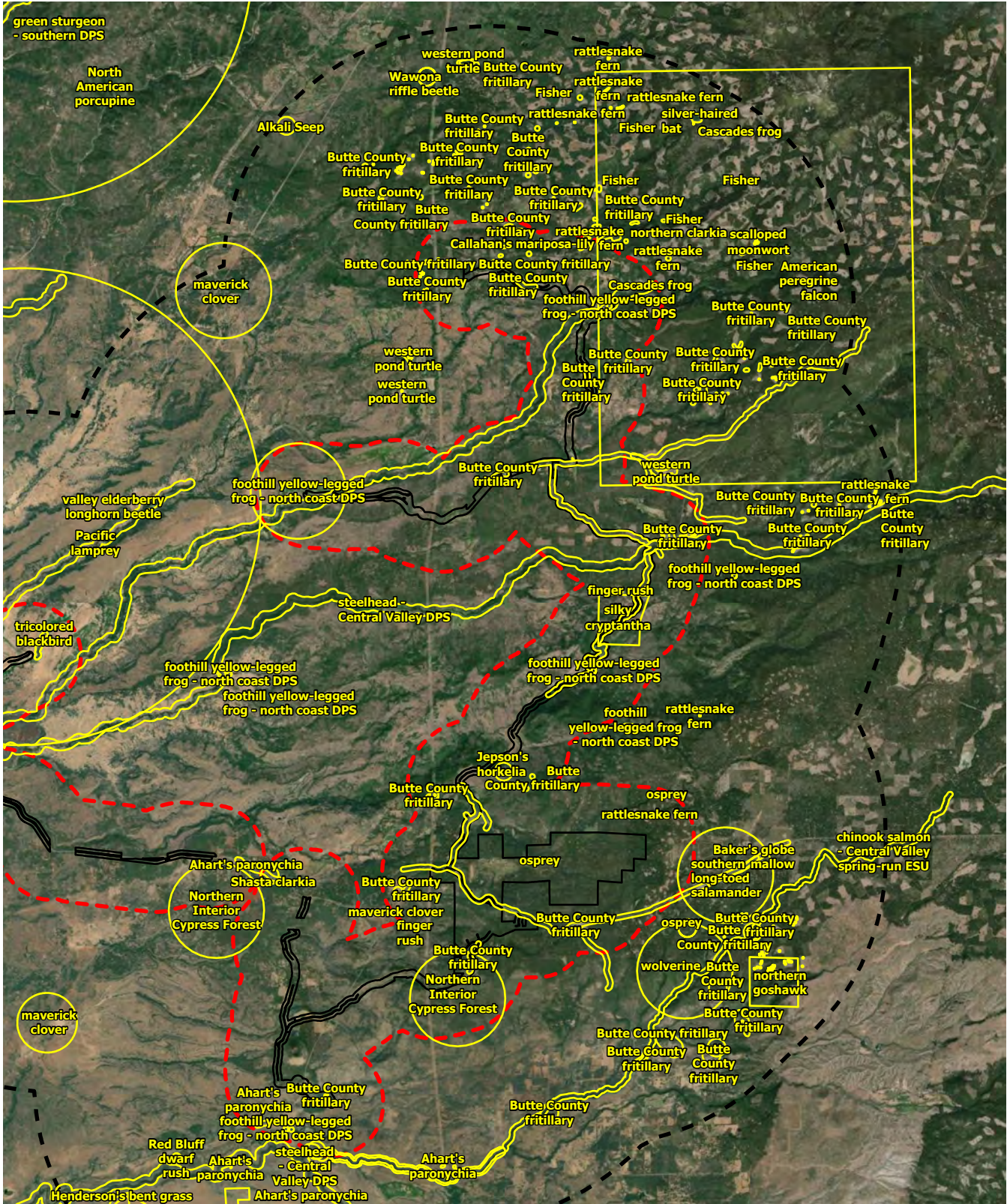


FIGURE 19A
CNDDB OCCURRENCES
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA

SOURCE: SHASTA COUNTY 2022; CDFW CNDDB OCTOBER 2022



- Project Treatment Boundary
- 1-Mile Buffer Around Project Treatment Boundary
- 5-Mile Buffer Around Project Treatment Boundary
- CNDDB Occurrence

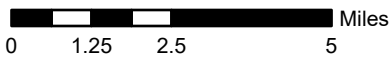
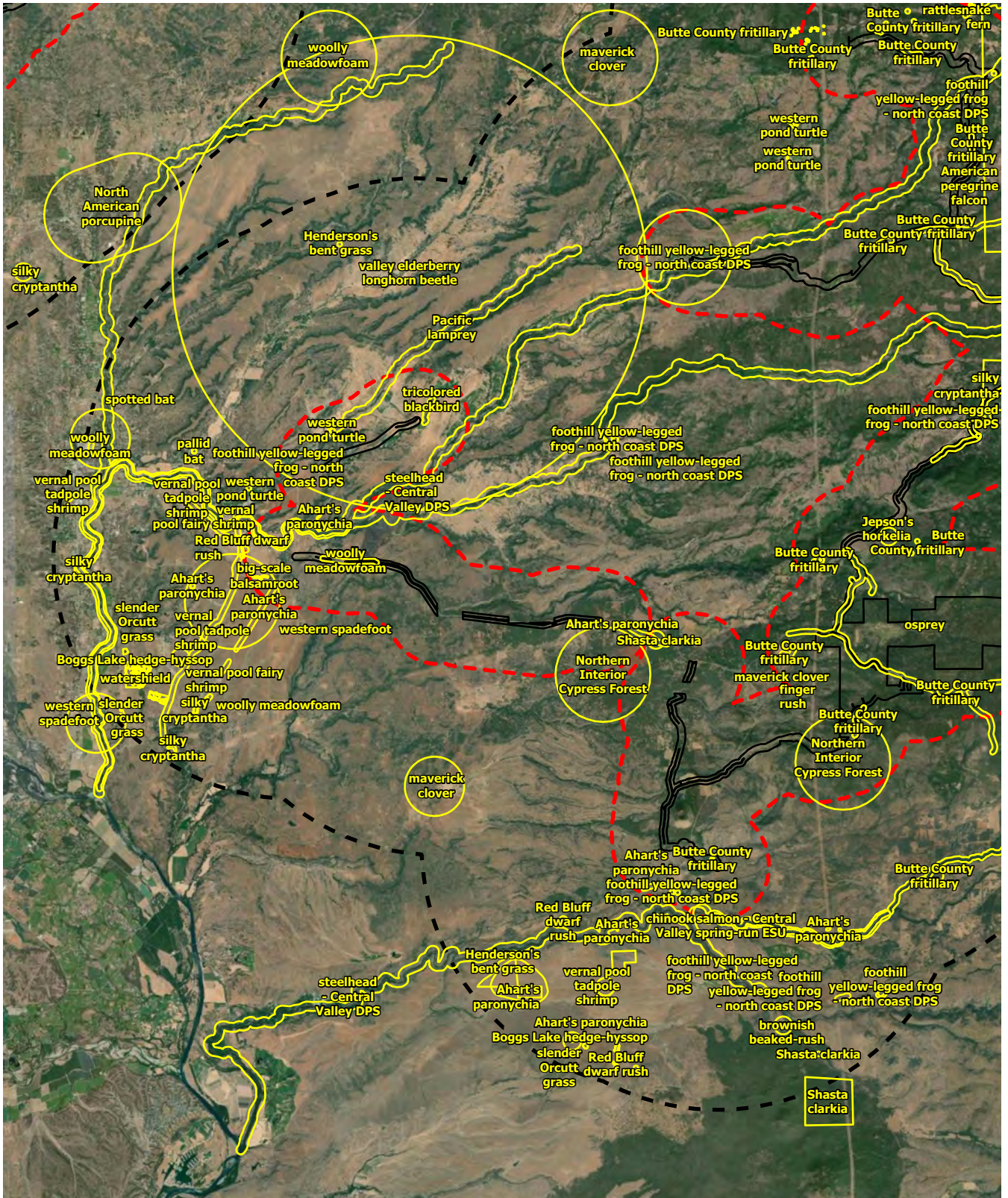


FIGURE 19B
CNDDB OCCURRENCES
 WILDFIRE MITIGATION/HAZARDOUS
 FUELS REDUCTION PROJECT
 GRANT #4382
 SHASTA COUNTY, CALIFORNIA

SOURCE: SHASTA COUNTY 2022; CDFW CNDDB OCTOBER 2022



- Project Treatment Boundary
- 1-Mile Buffer Around Project Treatment Boundary
- 5-Mile Buffer Around Project Treatment Boundary
- CNDDB Occurrence

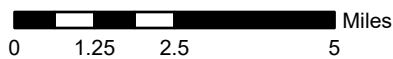
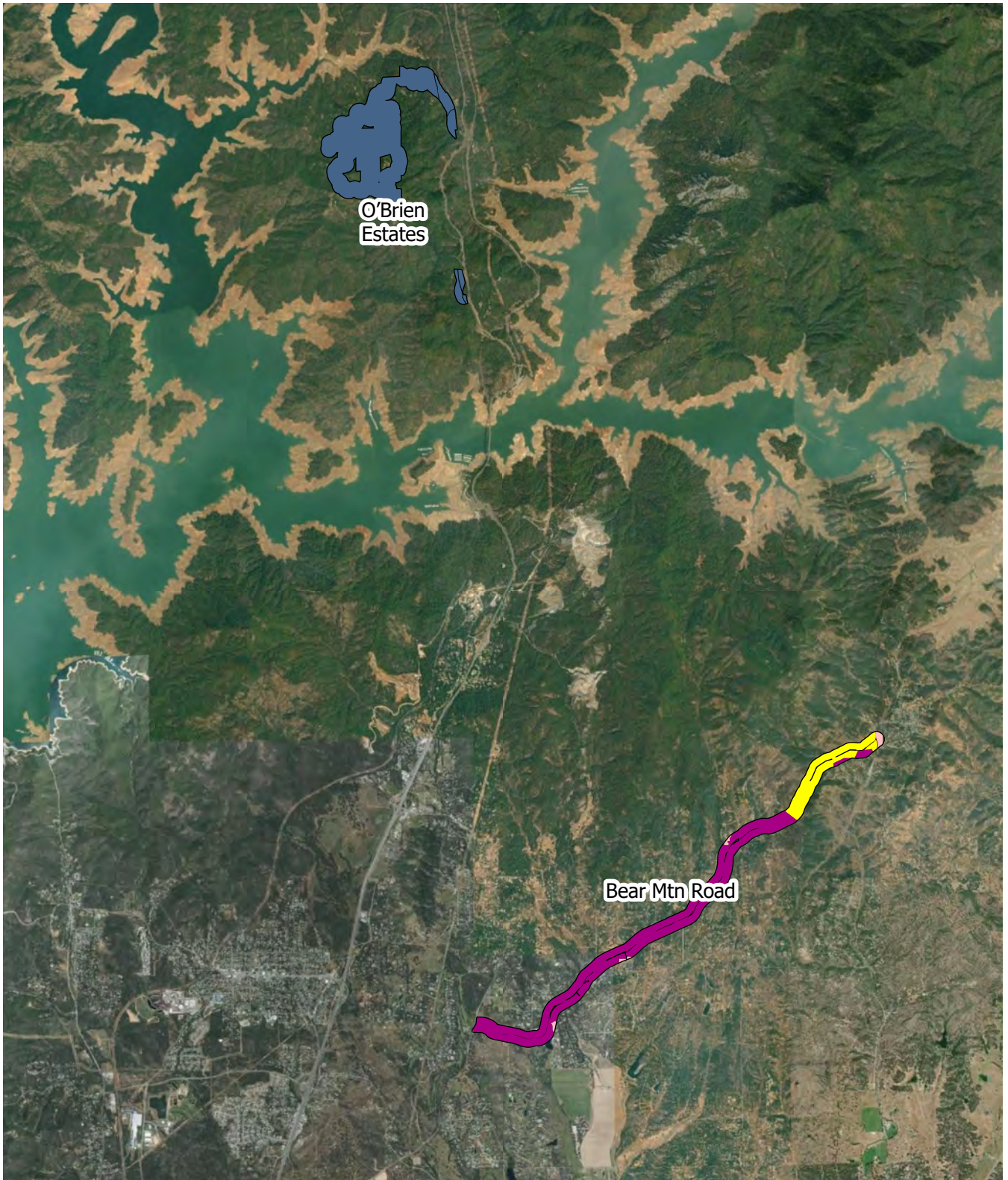











FIGURE 19C
CNDDB OCCURRENCES
WILDFIRE MITIGATION/HAZARDOUS
FUELS REDUCTION PROJECT
GRANT #4382
SHASTA COUNTY, CALIFORNIA

SOURCE: SHASTA COUNTY 2022; CDFW CNDDB OCTOBER 2022



- | | | |
|---|---|--|
|  D: Urban and Built-Up Land |  P: Prime Farmland |  X: Other Land |
|  G: Grazing Land |  S: Farmland of Statewide Importance |  Z: Unclassified |
|  L: Farmland of Local Importance |  U: Unique Farmland |  Project Treatment Boundary |

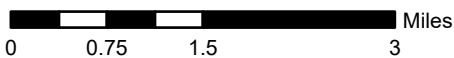
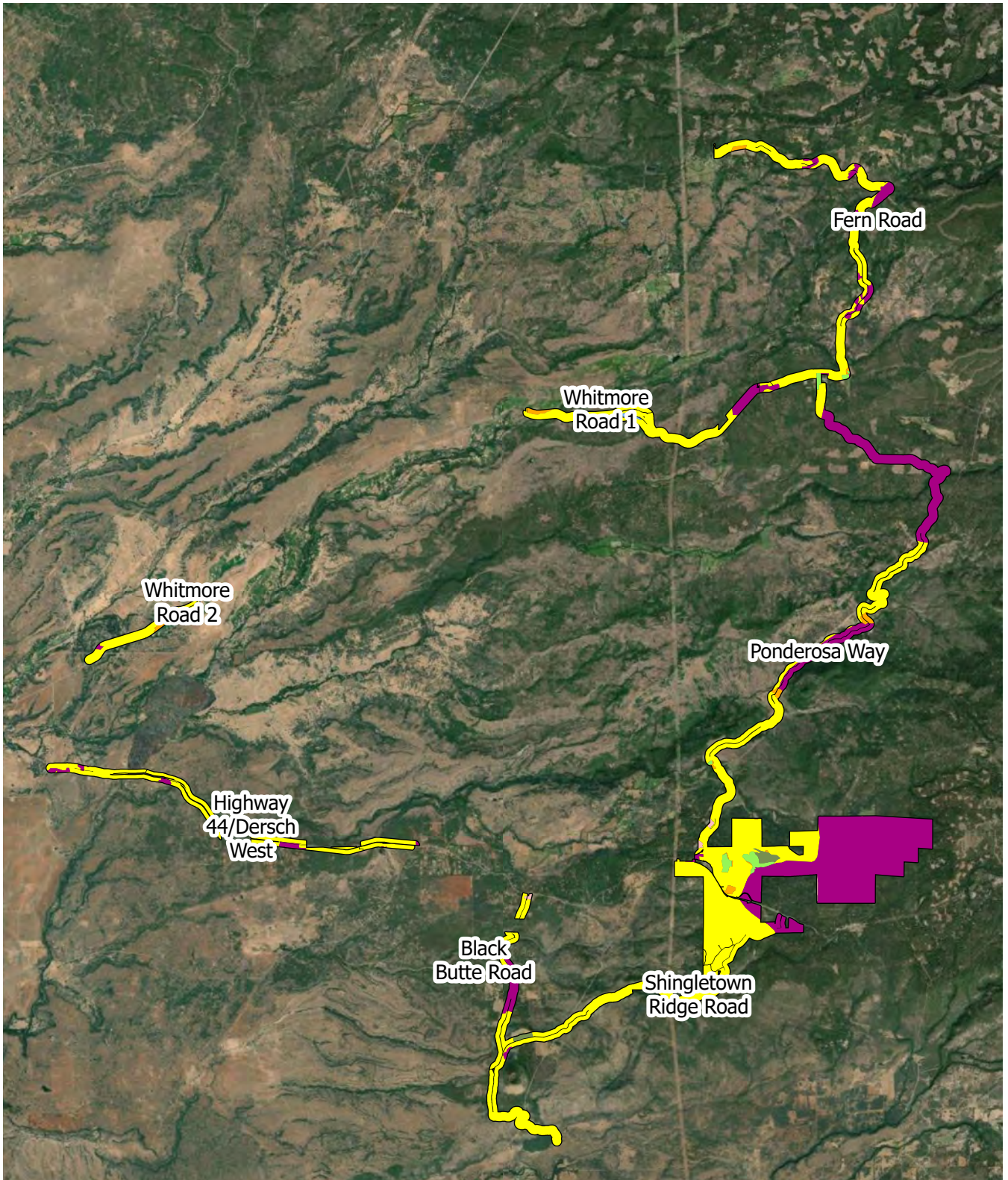


FIGURE 20A
IMPORTANT FARMLAND
WILDFIRE MITIGATION/HAZARDOUS
FUELS REDUCTION PROJECT
SHASTA COUNTY, CALIFORNIA



- | | | |
|---------------------------------|-------------------------------------|----------------------------|
| D: Urban and Built-Up Land | P: Prime Farmland | X: Other Land |
| G: Grazing Land | S: Farmland of Statewide Importance | Z: Unclassified |
| L: Farmland of Local Importance | U: Unique Farmland | Project Treatment Boundary |

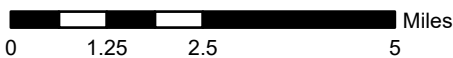


FIGURE 20B
IMPORTANT FARMLAND
WILDFIRE MITIGATION/HAZARDOUS
FUELS REDUCTION PROJECT
SHASTA COUNTY, CALIFORNIA

Initial Study-Mitigated Negative Declaration for the Proposed Shasta County Wildfire Mitigation/Hazardous Fuels Reduction Project



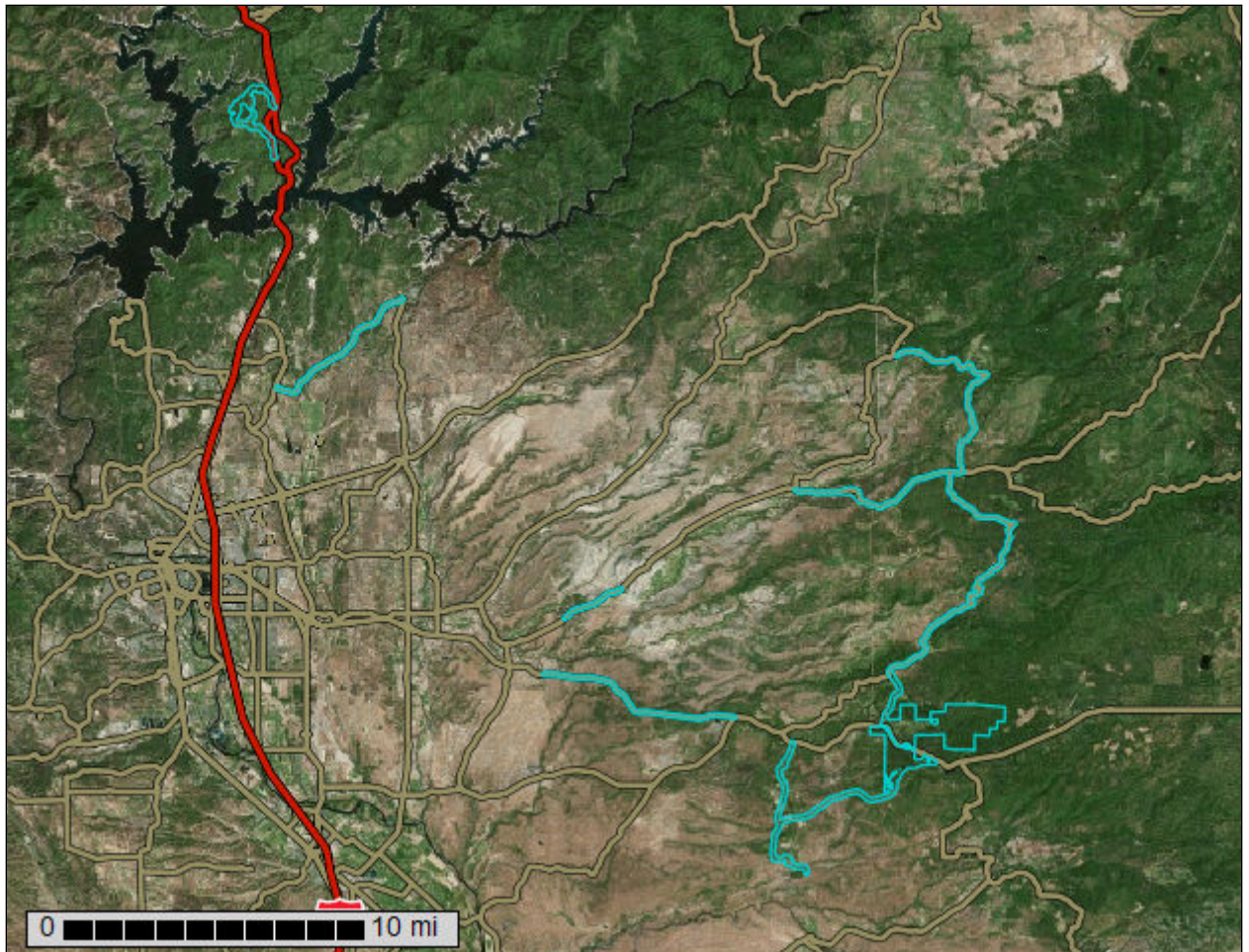
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Shasta County Area, California; and Shasta- Trinity National Forest Area, Parts of Humboldt, Siskiyou, Shasta, Tehama, and Trinity Counties, California



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

| | |
|---|----|
| Preface | 2 |
| How Soil Surveys Are Made | 7 |
| Soil Map | 10 |
| Soil Map..... | 11 |
| Legend..... | 12 |
| Map Unit Legend..... | 14 |
| Map Unit Descriptions..... | 18 |
| Shasta County Area, California; and Shasta-Trinity National Forest Area, Parts of Humboldt, Siskiyou, Shasta, Tehama, and Trinity Counties, California..... | 20 |
| 1hvdK—Water..... | 20 |
| 20q7p—Marpa gravelly loam, 30 to 50 percent slopes..... | 20 |
| 20q7w—Millsholm gravelly loam, 3 to 30 percent slopes..... | 21 |
| 2t7qd—Perkins gravelly loam, gravelly clay loam substratum, 0 to 3 percent slopes, MLRA 17..... | 23 |
| 2t7qq—Millsholm gravelly loam, 30 to 50 percent slopes, MLRA 15..... | 24 |
| 2t7r0—Red Bluff loam, 0 to 3 percent slopes, MLRA 17, moist..... | 26 |
| 2t7r4—Perkins loam, moist, 0 to 3 percent slopes, MLRA 17..... | 27 |
| 2t7r6—Perkins gravelly loam, gravelly clay loam substratum, 8 to 30 percent slopes, MLRA 17..... | 29 |
| 2w8b8—Vina loam, flood-plain steps, 0 to 5 percent slopes, MLRA 17..... | 30 |
| 2w8bv—Cohasset stony loam, 10 to 50 percent slopes, MLRA 22B..... | 32 |
| 2x29g—Sites loam, 15 to 30 percent slopes, low ffd..... | 34 |
| 2x29j—Sites loam, 30 to 50 percent slopes, low ffd..... | 35 |
| 2x8ky—Aiken loam, 2 to 9 percent slopes, low ffd..... | 37 |
| 2xhk8—Aiken loam, 15 to 30 percent slopes, low ffd..... | 38 |
| hfl6—Aiken loam, 8 to 15 percent slopes..... | 40 |
| hfl8—Aiken stony loam, 0 to 8 percent slopes..... | 41 |
| hfl9—Aiken stony loam, 8 to 15 percent slopes..... | 43 |
| hflb—Aiken stony loam, 15 to 30 percent..... | 44 |
| hflc—Aiken very stony loam, 30 to 50 percent slopes..... | 46 |
| hflg—Anita clay, 0 to 8 percent slopes..... | 47 |
| hflh—Anita very cobbly clay, 0 to 8 percent slopes..... | 49 |
| hflm—Auburn loam, 0 to 8 percent slopes..... | 50 |
| hflp—Auburn very stony loam, 8 to 30 percent slopes..... | 52 |
| hflq—Auburn clay loam, 8 to 30 percent slopes, eroded..... | 53 |
| hfmG—Churn gravelly loam, deep, 3 to 8 percent slopes..... | 55 |
| hfmj—Cobbly alluvial land..... | 56 |
| hfmm—Cohasset loam, 0 to 30 percent slopes..... | 57 |
| hfmn—Cohasset stony loam, 0 to 30 percent slopes..... | 59 |
| hfmq—Cohasset very stony loam, 50 to 70 percent slopes..... | 61 |
| hfmr—Cohasset very stony loam, moderately deep, 8 to 50 percent slopes..... | 63 |
| hfmx—Colluvial land..... | 64 |

Custom Soil Resource Report

| | |
|--|-----|
| hfmy—Cone gravelly loam, 3 to 15 percent slopes..... | 65 |
| hfmz—Cone gravelly loam, 15 to 30 percent slopes..... | 66 |
| hfn1—Cone very stony loam, 30 to 50 percent slopes..... | 68 |
| hfn2—Cone very stony loam, moderately deep, 15 to 60 percent slopes... | 69 |
| hfnf—Gaviota fine sandy loam, 3 to 15 percent slopes..... | 71 |
| hfnh—Gaviota very rocky sandy loam, 0 to 30 percent slopes..... | 72 |
| hfnj—Gaviota very rocky sandy loam, 30 to 50 percent slopes, eroded.... | 74 |
| hfnk—Goulding very stony loam, 10 to 30 percent slopes..... | 76 |
| hfnl—Goulding very rocky loam, 30 to 50 percent slopes, eroded..... | 78 |
| hfnn—Gravel pits..... | 79 |
| hfnp—Guenoc very stony loam, 0 to 30 percent slopes..... | 81 |
| hfnq—Guenoc very rocky loam, 0 to 30 percent slopes..... | 82 |
| hfnr—Guenoc very rocky loam, 30 to 50 percent slopes..... | 84 |
| hfnv—Honcut gravelly loam..... | 86 |
| hfp1—Honn fine sandy loam, 3 to 8 percent slopes..... | 88 |
| hfp4—Inks gravelly loam, 8 to 30 percent slopes..... | 89 |
| hfp5—Inks very stony loam, 3 to 30 percent slopes..... | 91 |
| hfp7—Inks-Pentz complex, 5 to 30 percent slopes..... | 92 |
| hfp8—Inks-Pentz complex, 30 to 50 percent slopes..... | 94 |
| hfp9—Josephine gravelly loam, 10 to 30 percent slopes..... | 96 |
| hfpb—Josephine gravelly loam, 30 to 50 percent slopes..... | 98 |
| hfpc—Josephine gravelly loam, 50 to 70 percent slopes..... | 99 |
| hfpd—Josephine gravelly loam, moderately deep, 10 to 30 percent slopes..... | 101 |
| hfpf—Josephine gravelly loam, moderately deep, 30 to 50 percent slopes..... | 102 |
| hfpq—Keefers gravelly loam, 0 to 3 percent slopes..... | 104 |
| hfpr—Keefers gravelly loam, 3 to 8 percent slopes..... | 105 |
| hfpv—Kilarc sandy clay loam, 2 to 15 percent slopes..... | 107 |
| hfpw—Kilarc sandy clay loam, 15 to 30 percent slopes..... | 109 |
| hfpz—Kilarc sandy clay loam, 30 to 50 percent slopes..... | 110 |
| hfp1—Kilarc very stony sandy clay loam, 10 to 30 percent slopes..... | 112 |
| hfp2—Kilarc very stony sandy clay loam, 30 to 50 percent slopes..... | 114 |
| hfq5—Los Robles loam, 3 to 8 percent..... | 115 |
| hfq9—Lyonsville-Jiggs complex, 10 to 50 percent slopes..... | 117 |
| hfqc—Lyonsville-Jiggs soils, 50 to 70 percent slopes..... | 119 |
| hfqd—Marpa gravelly loam, 30 to 50 percent slopes..... | 121 |
| hfql—Millsap very rocky loam, 10 to 50 percent slopes..... | 122 |
| hfqm—Millsholm gravelly loam, 3 to 30 percent slopes..... | 124 |
| hfqq—Millsholm gravelly loam, 50 to 75 percent slopes..... | 125 |
| hfqr—Millsholm very rocky loam, 30 to 50 percent slopes, eroded..... | 127 |
| hfqs—Millsholm very rocky loam, 50 to 70 percent slopes, eroded..... | 128 |
| hfr2—Nanny gravelly sandy loam, 0 to 8 percent slopes..... | 130 |
| hfr8—Newtown gravelly loam, 15 to 30 percent slopes..... | 132 |
| hfr1—Parrish loam, 8 to 30 percent slopes..... | 133 |
| hfrd—Parrish loam, 30 to 50 percent slopes..... | 135 |
| hfrl—Perkins gravelly loam, 8 to 15 percent slopes..... | 136 |
| hfrq—Perkins gravelly loam, moderately deep, 3 to 8 percent slopes..... | 138 |
| hfsc—Rockland..... | 139 |
| hfsg—Sehorn silty clay, 8 to 30 slopes..... | 140 |
| hfsh—Sehorn silty clay, 30 to 50 percent slopes..... | 141 |
| hfsl—Shingletown clay loam, 0 to 8 percent slopes..... | 143 |
| hfss—Sites loam, 5 to 15 percent slopes..... | 145 |
| hfth—Supan gravelly loam, 15 to 30 percent slopes..... | 146 |

Custom Soil Resource Report

| | |
|---|-----|
| hftc—Supan gravelly loam, 30 to 50 percent slopes..... | 148 |
| hftd—Supan very stony loam, 0 to 30 percent slopes..... | 149 |
| hftf—Supan very stony loam, 30 to 50 percent slopes..... | 151 |
| hftl—Toomes very rocky loam, 0 to 50 percent slopes..... | 152 |
| hftm—Toomes very stony loam, 0 to 30 percent slopes..... | 154 |
| hfttr—Tuscan cobbly loam, 3 to 8 percent slopes..... | 155 |
| hftv—Vina gravelly loam, 3 to 8 percent slopes..... | 157 |
| hftx—Windy and McCarthy stony sandy loams, 0 to 30 percent slopes... | 158 |
| hfty—Windy and McCarthy very stony sandy loams, 30 to 50 percent slopes..... | 160 |
| hftz—Windy and McCarthy very stony sandy loams, 50 to 75 percent slopes..... | 162 |
| hss5—Goulding family, 40 to 60 percent slopes..... | 164 |
| hssw—Holland-Goulding families association, 40 to 60 percent slopes... | 165 |
| hstb—Holland family, deep, 20 to 40 percent slopes..... | 167 |
| hstc—Holland family, deep, 40 to 60 percent slopes..... | 169 |
| hsw7—Marpa family, 40 to 60 percent slopes..... | 170 |
| hswb—Marpa-Goulding families association, 20 to 40 percent slopes..... | 171 |
| hswh—Marpa-holland, deep families complex, 40 to 60 percent slopes.. | 173 |
| References | 176 |

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

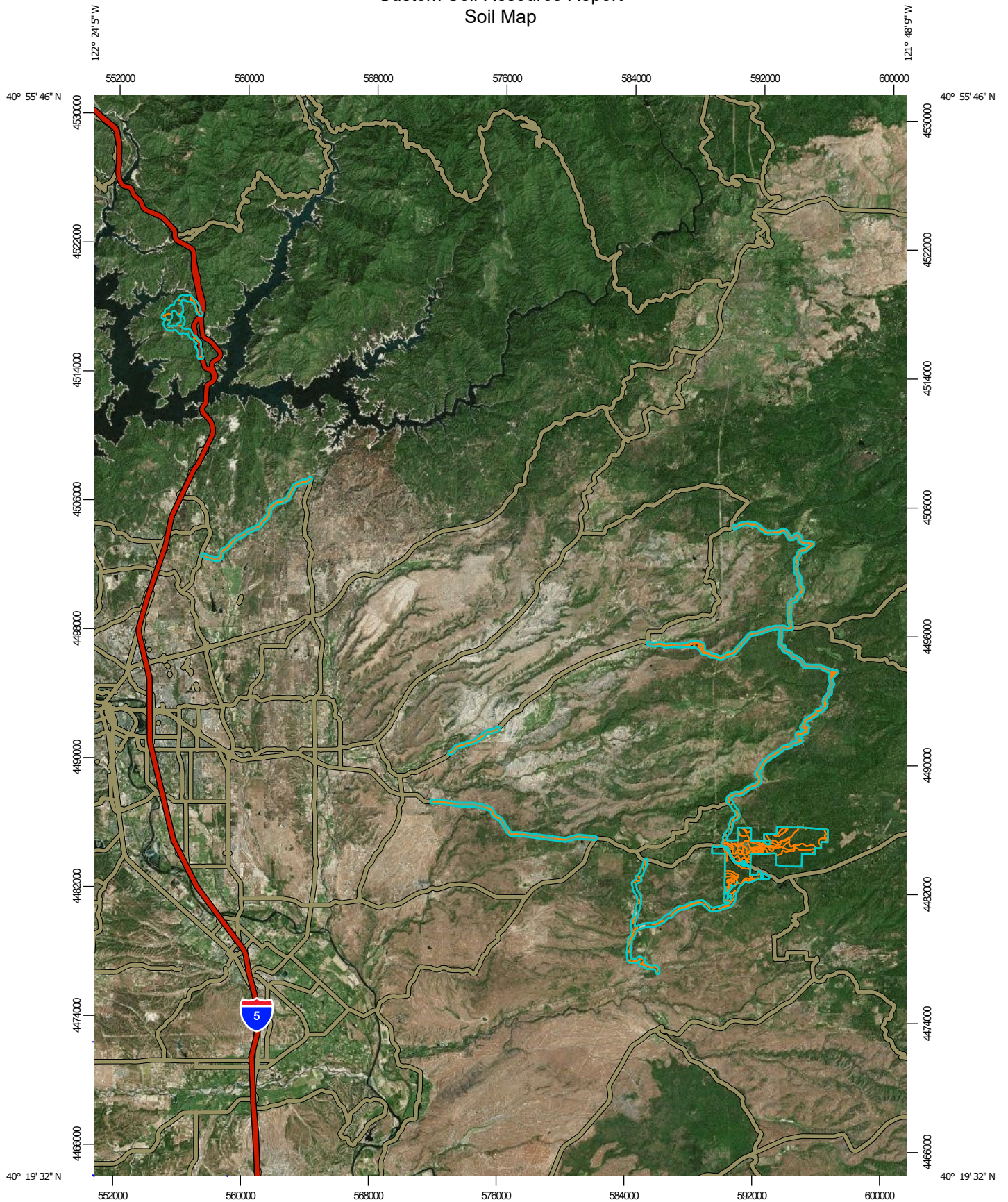
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




Map Scale: 1:327,000 if printed on A portrait (8.5" x 11") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Shasta County Area, California
 Survey Area Data: Version 18, Sep 2, 2022

Soil Survey Area: Shasta-Trinity National Forest Area, Parts of Humboldt, Siskiyou, Shasta, Tehama, and Trinity Counties, California
 Survey Area Data: Version 13, Sep 7, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

MAP LEGEND

MAP INFORMATION

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|-----------------|---|--------------|----------------|
| 1hvdk | Water | 4.9 | 0.1% |
| 20q7p | Marpa gravelly loam, 30 to 50 percent slopes | 0.6 | 0.0% |
| 20q7w | Millsholm gravelly loam, 3 to 30 percent slopes | 1.3 | 0.0% |
| 2t7qd | Perkins gravelly loam, gravelly clay loam substratum, 0 to 3 percent slopes, MLRA 17 | 45.3 | 0.5% |
| 2t7qq | Millsholm gravelly loam, 30 to 50 percent slopes, MLRA 15 | 21.6 | 0.2% |
| 2t7r0 | Red Bluff loam, 0 to 3 percent slopes, MLRA 17, moist | 3.7 | 0.0% |
| 2t7r4 | Perkins loam, moist, 0 to 3 percent slopes, MLRA 17 | 7.7 | 0.1% |
| 2t7r6 | Perkins gravelly loam, gravelly clay loam substratum, 8 to 30 percent slopes, MLRA 17 | 7.1 | 0.1% |
| 2w8b8 | Vina loam, flood-plain steps, 0 to 5 percent slopes, MLRA 17 | 24.8 | 0.3% |
| 2w8bv | Cohasset stony loam, 10 to 50 percent slopes, MLRA 22B | 440.5 | 4.7% |
| 2x29g | Sites loam, 15 to 30 percent slopes, low ffd | 5.8 | 0.1% |
| 2x29j | Sites loam, 30 to 50 percent slopes, low ffd | 22.4 | 0.2% |
| 2x8ky | Aiken loam, 2 to 9 percent slopes, low ffd | 613.5 | 6.6% |
| 2xhk8 | Aiken loam, 15 to 30 percent slopes, low ffd | 280.6 | 3.0% |
| hfl6 | Aiken loam, 8 to 15 percent slopes | 343.3 | 3.7% |
| hfl8 | Aiken stony loam, 0 to 8 percent slopes | 117.3 | 1.3% |
| hfl9 | Aiken stony loam, 8 to 15 percent slopes | 326.2 | 3.5% |
| hflb | Aiken stony loam, 15 to 30 percent | 482.4 | 5.2% |
| hflc | Aiken very stony loam, 30 to 50 percent slopes | 123.2 | 1.3% |
| hflg | Anita clay, 0 to 8 percent slopes | 58.3 | 0.6% |
| hflh | Anita very cobbly clay, 0 to 8 percent slopes | 0.6 | 0.0% |
| hflm | Auburn loam, 0 to 8 percent slopes | 91.9 | 1.0% |

Custom Soil Resource Report

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|-----------------|---|--------------|----------------|
| hflp | Auburn very stony loam, 8 to 30 percent slopes | 41.9 | 0.5% |
| hflq | Auburn clay loam, 8 to 30 percent slopes, eroded | 8.5 | 0.1% |
| hfmq | Churn gravelly loam, deep, 3 to 8 percent slopes | 20.4 | 0.2% |
| hfmj | Cobbly alluvial land | 9.6 | 0.1% |
| hfmm | Cohasset loam, 0 to 30 percent slopes | 984.4 | 10.6% |
| hfmn | Cohasset stony loam, 0 to 30 percent slopes | 532.7 | 5.7% |
| hfmq | Cohasset very stony loam, 50 to 70 percent slopes | 62.5 | 0.7% |
| hfmr | Cohasset very stony loam, moderately deep, 8 to 50 percent slopes | 12.1 | 0.1% |
| hfmx | Colluvial land | 5.2 | 0.1% |
| hfmy | Cone gravelly loam, 3 to 15 percent slopes | 287.0 | 3.1% |
| hfmz | Cone gravelly loam, 15 to 30 percent slopes | 58.0 | 0.6% |
| hfn1 | Cone very stony loam, 30 to 50 percent slopes | 11.5 | 0.1% |
| hfn2 | Cone very stony loam, moderately deep, 15 to 60 percent slopes | 0.1 | 0.0% |
| hfnf | Gaviota fine sandy loam, 3 to 15 percent slopes | 32.6 | 0.4% |
| hfnh | Gaviota very rocky sandy loam, 0 to 30 percent slopes | 76.9 | 0.8% |
| hfnj | Gaviota very rocky sandy loam, 30 to 50 percent slopes, eroded | 48.3 | 0.5% |
| hfnk | Goulding very stony loam, 10 to 30 percent slopes | 74.4 | 0.8% |
| hfnl | Goulding very rocky loam, 30 to 50 percent slopes, eroded | 0.1 | 0.0% |
| hfnm | Gravel pits | 8.8 | 0.1% |
| hfnp | Guenoc very stony loam, 0 to 30 percent slopes | 49.0 | 0.5% |
| hfnq | Guenoc very rocky loam, 0 to 30 percent slopes | 386.1 | 4.2% |
| hfnr | Guenoc very rocky loam, 30 to 50 percent slopes | 67.7 | 0.7% |
| hfnz | Honcut gravelly loam | 6.9 | 0.1% |
| hfp1 | Honn fine sandy loam, 3 to 8 percent slopes | 29.3 | 0.3% |
| hfp4 | Inks gravelly loam, 8 to 30 percent slopes | 16.1 | 0.2% |

Custom Soil Resource Report

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|-----------------|---|--------------|----------------|
| hfp5 | Inks very stony loam, 3 to 30 percent slopes | 13.2 | 0.1% |
| hfp7 | Inks-Pentz complex, 5 to 30 percent slopes | 62.9 | 0.7% |
| hfp8 | Inks-Pentz complex, 30 to 50 percent slopes | 7.3 | 0.1% |
| hfp9 | Josephine gravelly loam, 10 to 30 percent slopes | 78.8 | 0.8% |
| hfpb | Josephine gravelly loam, 30 to 50 percent slopes | 69.1 | 0.7% |
| hfpc | Josephine gravelly loam, 50 to 70 percent slopes | 0.3 | 0.0% |
| hfpd | Josephine gravelly loam, moderately deep, 10 to 30 percent slopes | 0.2 | 0.0% |
| hfpf | Josephine gravelly loam, moderately deep, 30 to 50 percent slopes | 26.9 | 0.3% |
| hfpg | Keefers gravelly loam, 0 to 3 percent slopes | 0.2 | 0.0% |
| hfpr | Keefers gravelly loam, 3 to 8 percent slopes | 20.2 | 0.2% |
| hfpv | Kilarc sandy clay loam, 2 to 15 percent slopes | 50.4 | 0.5% |
| hfpw | Kilarc sandy clay loam, 15 to 30 percent slopes | 112.4 | 1.2% |
| hfpx | Kilarc sandy clay loam, 30 to 50 percent slopes | 28.3 | 0.3% |
| hfpy | Kilarc very stony sandy clay loam, 10 to 30 percent slopes | 157.4 | 1.7% |
| hfpy | Kilarc very stony sandy clay loam, 30 to 50 percent slopes | 18.8 | 0.2% |
| hfq5 | Los Robles loam, 3 to 8 percent | 2.4 | 0.0% |
| hfq9 | Lyonsville-Jiggs complex, 10 to 50 percent slopes | 108.7 | 1.2% |
| hfqc | Lyonsville-Jiggs soils, 50 to 70 percent slopes | 10.1 | 0.1% |
| hfqd | Marpa gravelly loam, 30 to 50 percent slopes | 48.6 | 0.5% |
| hfql | Millsap very rocky loam, 10 to 50 percent slopes | 69.6 | 0.7% |
| hfqm | Millsholm gravelly loam, 3 to 30 percent slopes | 265.9 | 2.9% |
| hfqq | Millsholm gravelly loam, 50 to 75 percent slopes | 12.6 | 0.1% |
| hfqr | Millsholm very rocky loam, 30 to 50 percent slopes, eroded | 34.4 | 0.4% |
| hfqs | Millsholm very rocky loam, 50 to 70 percent slopes, eroded | 1.1 | 0.0% |

Custom Soil Resource Report

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|-----------------|--|--------------|----------------|
| hfr2 | Nanny gravelly sandy loam, 0 to 8 percent slopes | 7.7 | 0.1% |
| hfr8 | Newtown gravelly loam, 15 to 30 percent slopes | 12.2 | 0.1% |
| hfrc | Parrish loam, 8 to 30 percent slopes | 16.3 | 0.2% |
| hfrd | Parrish loam, 30 to 50 percent slopes | 11.7 | 0.1% |
| hfrl | Perkins gravelly loam, 8 to 15 percent slopes | 0.2 | 0.0% |
| hfrq | Perkins gravelly loam, moderately deep, 3 to 8 percent slopes | 64.0 | 0.7% |
| hfsc | Rockland | 106.6 | 1.1% |
| hfsg | Sehorn silty clay, 8 to 30 slopes | 65.0 | 0.7% |
| hfish | Sehorn silty clay, 30 to 50 percent slopes | 1.2 | 0.0% |
| hfsr | Shingletown clay loam, 0 to 8 percent slopes | 144.4 | 1.6% |
| hfsz | Sites loam, 5 to 15 percent slopes | 81.3 | 0.9% |
| hftb | Supan gravelly loam, 15 to 30 percent slopes | 76.3 | 0.8% |
| hftc | Supan gravelly loam, 30 to 50 percent slopes | 29.3 | 0.3% |
| hftd | Supan very stony loam, 0 to 30 percent slopes | 127.4 | 1.4% |
| hftf | Supan very stony loam, 30 to 50 percent slopes | 54.7 | 0.6% |
| hftl | Toomes very rocky loam, 0 to 50 percent slopes | 190.2 | 2.0% |
| hftm | Toomes very stony loam, 0 to 30 percent slopes | 141.5 | 1.5% |
| hftr | Tuscan cobbly loam, 3 to 8 percent slopes | 15.1 | 0.2% |
| hftv | Vina gravelly loam, 3 to 8 percent slopes | 18.7 | 0.2% |
| hftx | Windy and McCarthy stony sandy loams, 0 to 30 percent slopes | 335.6 | 3.6% |
| hfty | Windy and McCarthy very stony sandy loams, 30 to 50 percent slopes | 51.4 | 0.6% |
| hftz | Windy and McCarthy very stony sandy loams, 50 to 75 percent slopes | 12.3 | 0.1% |
| hss5 | Goulding family, 40 to 60 percent slopes. | 0.0 | 0.0% |

Custom Soil Resource Report

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|------------------------------------|---|----------------|----------------|
| hssw | Holland-Goulding families association, 40 to 60 percent slopes. | 197.4 | 2.1% |
| hstb | Holland family, deep, 20 to 40 percent slopes. | 159.7 | 1.7% |
| hstc | Holland family, deep, 40 to 60 percent slopes. | 147.1 | 1.6% |
| hsw7 | Marpa family, 40 to 60 percent slopes. | 42.4 | 0.5% |
| hswb | Marpa-Goulding families association, 20 to 40 percent slopes. | 130.7 | 1.4% |
| hswh | Marpa-holland, deep families complex, 40 to 60 percent slopes. | 10.3 | 0.1% |
| Totals for Area of Interest | | 9,303.7 | 100.0% |

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Shasta County Area, California; and Shasta-Trinity National Forest Area, Parts of Humboldt, Siskiyou, Shasta, Tehama, and Trinity Counties, California

1hvdk—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

20q7p—Marpa gravelly loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: 20q7p

Elevation: 1,500 to 5,000 feet

Mean annual precipitation: 20 to 50 inches

Mean annual air temperature: 48 to 57 degrees F

Frost-free period: 100 to 250 days

Farmland classification: Not prime farmland

Map Unit Composition

Marpa and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marpa

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from shale

Typical profile

H1 - 0 to 13 inches: gravelly loam

H2 - 13 to 26 inches: very gravelly clay loam

H3 - 26 to 30 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 26 to 30 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Custom Soil Resource Report

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F005XZ018CA - Moderately Deep Gravelly Mesic Mountains
40-60"ppt
Hydric soil rating: No

Minor Components

Josephine

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Maymen

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Sheetiron

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

20q7w—Millsholm gravelly loam, 3 to 30 percent slopes

Map Unit Setting

National map unit symbol: 20q7w
Elevation: 300 to 3,400 feet
Mean annual precipitation: 20 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 200 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Millsholm and similar soils: 85 percent
Minor components: 15 percent

Custom Soil Resource Report

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Millsholm

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 16 inches: gravelly loam
H2 - 16 to 20 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 30 percent
Depth to restrictive feature: 16 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R015XD093CA - SHALLOW LOAMY
Hydric soil rating: No

Minor Components

Gaviota

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Millsap

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

2t7qd—Perkins gravelly loam, gravelly clay loam substratum, 0 to 3 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2t7qd
Elevation: 390 to 890 feet
Mean annual precipitation: 27 to 43 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 220 to 310 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Perkins and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Perkins

Setting

Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 6 inches: gravelly loam
AB - 6 to 10 inches: gravelly loam
BAt1 - 10 to 18 inches: gravelly clay loam
BAt2 - 18 to 32 inches: gravelly clay loam
Bt1 - 32 to 41 inches: gravelly clay loam
Bt2 - 41 to 54 inches: gravelly clay loam
Bt3 - 54 to 60 inches: gravelly clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.3 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Red bluff

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Moda

Percent of map unit: 5 percent
Landform: Drainageways on stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Churn

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

2t7qq—Millsholm gravelly loam, 30 to 50 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2t7qq
Elevation: 690 to 3,540 feet
Mean annual precipitation: 28 to 45 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 200 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Millsholm and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Millsholm

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from sedimentary rock

Typical profile

A - 0 to 2 inches: gravelly loam
AB - 2 to 7 inches: gravelly loam
Bw - 7 to 16 inches: gravelly loam
R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.28 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.3 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R015XF008CA - Shallow Gravelly Foothills
Hydric soil rating: No

Minor Components

Gaviota

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Millsap

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

2t7r0—Red Bluff loam, 0 to 3 percent slopes, MLRA 17, moist

Map Unit Setting

National map unit symbol: 2t7r0
Elevation: 450 to 1,110 feet
Mean annual precipitation: 29 to 57 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 200 to 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Red bluff, moist, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Red Bluff, Moist

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 6 inches: loam
Bt1 - 6 to 18 inches: clay loam
Bt2 - 18 to 28 inches: clay loam
Bt3 - 28 to 44 inches: clay loam
Bt4 - 44 to 57 inches: clay
Bt5 - 57 to 67 inches: clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.3 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s

Custom Soil Resource Report

Hydrologic Soil Group: C
Ecological site: R017XD089CA - ACID TERRACE
Hydric soil rating: No

Minor Components

Perkins

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Redding

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Moda

Percent of map unit: 4 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Vernal pools
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Unnamed

Percent of map unit: 1 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Vernal pools
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

2t7r4—Perkins loam, moist, 0 to 3 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2t7r4
Elevation: 390 to 760 feet
Mean annual precipitation: 27 to 50 inches
Mean annual air temperature: 63 degrees F

Custom Soil Resource Report

Frost-free period: 220 to 310 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Perkins and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Perkins

Setting

Landform: Stream terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 6 inches: loam

AB - 6 to 10 inches: loam

BAt1 - 10 to 18 inches: clay loam

BAt2 - 18 to 32 inches: clay loam

Bt1 - 32 to 41 inches: clay loam

Bt2 - 41 to 54 inches: clay loam

Bt3 - 54 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.3 to 0.5 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2s

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: C

Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces

Hydric soil rating: No

Minor Components

Redding

Percent of map unit: 10 percent

Landform: Fan remnants

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Custom Soil Resource Report

Hydric soil rating: No

Red bluff

Percent of map unit: 5 percent

Landform: Fan remnants

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

2t7r6—Perkins gravelly loam, gravelly clay loam substratum, 8 to 30 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2t7r6

Elevation: 460 to 890 feet

Mean annual precipitation: 29 to 58 inches

Mean annual air temperature: 63 degrees F

Frost-free period: 220 to 310 days

Farmland classification: Not prime farmland

Map Unit Composition

Perkins and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Perkins

Setting

Landform: Fan remnants

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Riser

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 6 inches: gravelly loam

AB - 6 to 10 inches: gravelly loam

BAt1 - 10 to 18 inches: gravelly clay loam

BAt2 - 18 to 32 inches: gravelly clay loam

Bt1 - 32 to 41 inches: gravelly clay loam

Bt2 - 41 to 54 inches: gravelly clay loam

Bt3 - 54 to 60 inches: gravelly clay loam

Properties and qualities

Slope: 8 to 30 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Custom Soil Resource Report

Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.3 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Redding

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Churn

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Red bluff

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

2w8b8—Vina loam, flood-plain steps, 0 to 5 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2w8b8
Elevation: 360 to 2,340 feet
Mean annual precipitation: 26 to 54 inches

Custom Soil Resource Report

Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 250 to 325 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Vina and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vina

Setting

Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 3 inches: loam
A1 - 3 to 12 inches: loam
A2 - 12 to 24 inches: loam
A3 - 24 to 34 inches: loam
C1 - 34 to 49 inches: loam
C2 - 49 to 63 inches: loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: B
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Cobbly alluvial land

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Honn

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Los robles

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

2w8bv—Cohasset stony loam, 10 to 50 percent slopes, MLRA 22B

Map Unit Setting

National map unit symbol: 2w8bv
Elevation: 1,200 to 6,440 feet
Mean annual precipitation: 36 to 80 inches
Mean annual air temperature: 44 to 61 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Cohasset and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cohasset

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum and/or colluvium derived from volcanic rock

Typical profile

Oi - 0 to 3 inches: slightly decomposed plant material
A - 3 to 7 inches: stony loam
AB - 7 to 17 inches: stony loam
BAt - 17 to 32 inches: stony clay loam
Bt1 - 32 to 43 inches: stony clay loam
Bt2 - 43 to 58 inches: stony clay
Cr - 58 to 63 inches: cemented bedrock

Custom Soil Resource Report

Properties and qualities

Slope: 10 to 50 percent
Surface area covered with cobbles, stones or boulders: 4.0 percent
Depth to restrictive feature: 39 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.01 to 0.14 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Mccarthy

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Aiken

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lyonsville

Percent of map unit: 4 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Nanny

Percent of map unit: 1 percent
Landform: Fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Custom Soil Resource Report

Across-slope shape: Linear
Hydric soil rating: No

2x29g—Sites loam, 15 to 30 percent slopes, low ffd

Map Unit Setting

National map unit symbol: 2x29g
Elevation: 1,840 to 3,250 feet
Mean annual precipitation: 55 to 79 inches
Mean annual air temperature: 55 to 59 degrees F
Frost-free period: 200 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Sites and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sites

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metamorphic and sedimentary rock

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 7 inches: loam
AB - 7 to 15 inches: loam
Bt1 - 15 to 28 inches: clay loam
Bt2 - 28 to 42 inches: clay
BCt - 42 to 64 inches: clay loam
C - 64 to 79 inches: sandy loam

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 39 to 79 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Custom Soil Resource Report

Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Jocal

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kilarc

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Millsholm

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

2x29j—Sites loam, 30 to 50 percent slopes, low ffd

Map Unit Setting

National map unit symbol: 2x29j
Elevation: 1,660 to 4,000 feet
Mean annual precipitation: 39 to 75 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 200 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Sites and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sites

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metamorphic and sedimentary rock

Typical profile

O_i - 0 to 1 inches: slightly decomposed plant material
A - 1 to 7 inches: loam
AB - 7 to 15 inches: loam
B_{t1} - 15 to 28 inches: clay loam
B_{t2} - 28 to 42 inches: clay
B_{Ct} - 42 to 64 inches: clay loam
C - 64 to 79 inches: sandy loam

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 49 to 79 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (K_{sat}): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F022AW007CA - Deep Mesic Mountains >40"ppt
Hydric soil rating: No

Minor Components

Kilarc

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Jocal

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear

Custom Soil Resource Report

Across-slope shape: Linear
Hydric soil rating: No

Millsholm

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

2x8ky—Aiken loam, 2 to 9 percent slopes, low ffd

Map Unit Setting

National map unit symbol: 2x8ky
Elevation: 1,640 to 3,390 feet
Mean annual precipitation: 37 to 75 inches
Mean annual air temperature: 55 to 61 degrees F
Frost-free period: 205 to 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Aiken and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aiken

Setting

Landform: Lava flows
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium over residuum weathered from andesitic tuff breccia

Typical profile

Oi - 0 to 0 inches: slightly decomposed plant material
A - 0 to 11 inches: loam
BAt - 11 to 24 inches: clay loam
Bt - 24 to 91 inches: clay

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Custom Soil Resource Report

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains

Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 8 percent

Landform: Lava flows

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Mountaintop

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Mccarthy

Percent of map unit: 4 percent

Landform: Lava flows

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Mountaintop

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Guenoc

Percent of map unit: 3 percent

Landform: Lava flows

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Mountaintop

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

2xhk8—Aiken loam, 15 to 30 percent slopes, low ffd

Map Unit Setting

National map unit symbol: 2xhk8

Elevation: 1,820 to 3,490 feet

Mean annual precipitation: 38 to 63 inches

Mean annual air temperature: 54 to 59 degrees F

Frost-free period: 195 to 255 days

Farmland classification: Not prime farmland

Map Unit Composition

Aiken and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aiken

Setting

Landform: Lava flows

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Upper third of mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from volcanic rock

Typical profile

O_i - 0 to 0 inches: slightly decomposed plant material

A - 0 to 11 inches: loam

BAt - 11 to 24 inches: clay loam

Bt - 24 to 91 inches: clay

Properties and qualities

Slope: 15 to 30 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (K_{sat}): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: F005XZ024CA - Ridges

Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 8 percent

Landform: Lava flows

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Upper third of mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Mccarthy

Percent of map unit: 4 percent

Landform: Lava flows

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Upper third of mountainflank

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Guenoc

Percent of map unit: 3 percent
Landform: Lava flows
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

hfl6—Aiken loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: hfl6
Elevation: 1,200 to 1,500 feet
Mean annual precipitation: 30 to 65 inches
Mean annual air temperature: 50 to 61 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Aiken and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aiken

Setting

Landform: Lava flows
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 24 inches: clay loam
H3 - 24 to 90 inches: clay

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches

Custom Soil Resource Report

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: F005XZ024CA - Ridges

Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 8 percent

Landform: Lava flows

Landform position (two-dimensional): Shoulder, summit

Landform position (three-dimensional): Mountaintop

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Mccarthy

Percent of map unit: 4 percent

Landform: Lava flows

Landform position (two-dimensional): Shoulder, summit

Landform position (three-dimensional): Mountaintop

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Guenoc

Percent of map unit: 3 percent

Landform: Lava flows

Landform position (two-dimensional): Shoulder, summit

Landform position (three-dimensional): Mountaintop

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

hfl8—Aiken stony loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: hfl8

Elevation: 1,200 to 1,500 feet

Mean annual precipitation: 30 to 65 inches

Mean annual air temperature: 50 to 61 degrees F

Frost-free period: 150 to 225 days

Farmland classification: Not prime farmland

Map Unit Composition

Aiken and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aiken

Setting

Landform: Lava flows

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Mountaintop, mountainbase

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 10 inches: stony loam

H2 - 10 to 24 inches: stony clay loam

H3 - 24 to 90 inches: stony clay

Properties and qualities

Slope: 2 to 8 percent

Surface area covered with cobbles, stones or boulders: 2.0 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: F005XZ024CA - Ridges

Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 8 percent

Landform: Lava flows

Landform position (two-dimensional): Shoulder, summit

Landform position (three-dimensional): Mountaintop, mountainbase

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Mccarthy

Percent of map unit: 4 percent

Landform: Lava flows

Landform position (two-dimensional): Shoulder, summit

Landform position (three-dimensional): Mountaintop, mountainbase

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Guenoc

Percent of map unit: 3 percent
Landform: Lava flows
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountaintop, mountainbase
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

hfl9—Aiken stony loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: hfl9
Elevation: 1,200 to 1,500 feet
Mean annual precipitation: 30 to 65 inches
Mean annual air temperature: 50 to 61 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Aiken and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aiken

Setting

Landform: Lava flows
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 10 inches: stony loam
H2 - 10 to 24 inches: stony clay loam
H3 - 24 to 90 inches: stony clay

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Custom Soil Resource Report

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 8 percent
Landform: Lava flows
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mccarthy

Percent of map unit: 4 percent
Landform: Lava flows
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Guenoc

Percent of map unit: 3 percent
Landform: Lava flows
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

hflb—Aiken stony loam, 15 to 30 percent

Map Unit Setting

National map unit symbol: hflb
Elevation: 1,200 to 1,500 feet
Mean annual precipitation: 30 to 65 inches
Mean annual air temperature: 50 to 61 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Aiken and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aiken

Setting

Landform: Lava flows

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Upper third of mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 10 inches: stony loam

H2 - 10 to 24 inches: stony clay loam

H3 - 24 to 90 inches: stony clay

Properties and qualities

Slope: 15 to 30 percent

Surface area covered with cobbles, stones or boulders: 2.0 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: F005XZ024CA - Ridges

Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 8 percent

Landform: Lava flows

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Upper third of mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Mccarthy

Percent of map unit: 4 percent

Landform: Lava flows

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Upper third of mountainflank

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Guenoc

Percent of map unit: 3 percent
Landform: Lava flows
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

hflc—Aiken very stony loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hflc
Elevation: 1,200 to 1,500 feet
Mean annual precipitation: 30 to 65 inches
Mean annual air temperature: 50 to 61 degrees F
Frost-free period: 150 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Aiken and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aiken

Setting

Landform: Lava flows
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 10 inches: very stony loam
H2 - 10 to 24 inches: stony clay loam
H3 - 24 to 90 inches: stony clay

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Custom Soil Resource Report

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 5 percent
Landform: Lava flows
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mccarthy

Percent of map unit: 5 percent
Landform: Lava flows
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Guenoc

Percent of map unit: 5 percent
Landform: Lava flows
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Upper third of mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

hflg—Anita clay, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: hflg
Elevation: 150 to 1,500 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 280 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Anita and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Anita

Setting

Landform: Strath terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from andesite

Typical profile

H1 - 0 to 12 inches: clay

H2 - 12 to 22 inches: clay

H3 - 22 to 26 inches: indurated

Properties and qualities

Slope: 0 to 8 percent

Depth to restrictive feature: 22 to 26 inches to paralithic bedrock

Drainage class: Somewhat poorly drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): 3w

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: D

Ecological site: R017XY902CA - Duripan Vernal Pools

Hydric soil rating: Yes

Minor Components

Unnamed

Percent of map unit: 10 percent

Landform: Strath terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent

Landform: Strath terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

hflh—Anita very cobbly clay, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: hflh
Elevation: 150 to 1,500 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Anita and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Anita

Setting

Landform: Strath terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from andesite

Typical profile

H1 - 0 to 2 inches: very cobbly clay
H2 - 2 to 22 inches: gravelly clay
H3 - 22 to 26 inches: indurated

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 22 to 26 inches to paralithic bedrock
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: Yes

Minor Components

Toomes

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent
Landform: Strath terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Guenoc

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed, organic soils

Percent of map unit: 1 percent
Landform: Strath terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

hflm—Auburn loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: hflm
Elevation: 120 to 3,000 feet
Mean annual precipitation: 20 to 40 inches
Mean annual air temperature: 55 to 63 degrees F
Frost-free period: 175 to 275 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Auburn and similar soils: 85 percent

Custom Soil Resource Report

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Auburn

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metavolcanics

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 24 inches: gravelly loam
H3 - 24 to 28 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: 24 to 28 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R017XD086CA - SHALLOW LOAMY
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Auberry

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hflp—Auburn very stony loam, 8 to 30 percent slopes

Map Unit Setting

National map unit symbol: hflp
Elevation: 300 to 2,000 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 175 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

Auburn and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Auburn

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metavolcanics

Typical profile

H1 - 0 to 8 inches: very stony loam
H2 - 8 to 20 inches: gravelly loam
H3 - 20 to 24 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 30 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 20 to 24 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: R015XD093CA - SHALLOW LOAMY
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Tailings and placer diggings

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hflq—Auburn clay loam, 8 to 30 percent slopes, eroded

Map Unit Setting

National map unit symbol: hflq
Elevation: 120 to 3,000 feet
Mean annual precipitation: 20 to 40 inches
Mean annual air temperature: 55 to 63 degrees F
Frost-free period: 175 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

Auburn and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Auburn

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metavolcanics

Typical profile

H1 - 0 to 5 inches: clay loam
H2 - 5 to 27 inches: gravelly clay loam
H3 - 27 to 31 inches: unweathered bedrock

Custom Soil Resource Report

Properties and qualities

Slope: 8 to 30 percent

Depth to restrictive feature: 27 to 31 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R015XD093CA - SHALLOW LOAMY

Hydric soil rating: No

Minor Components

Goulding

Percent of map unit: 4 percent

Landform: Hillslopes

Landform position (two-dimensional): Shoulder, footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Tailings and placer diggings

Percent of map unit: 4 percent

Landform: Stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Boomer

Percent of map unit: 4 percent

Landform: Hillslopes

Landform position (two-dimensional): Shoulder, footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Maymen

Percent of map unit: 3 percent

Landform: Hillslopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Base slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

hfmfg—Churn gravelly loam, deep, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hfmfg
Elevation: 400 to 800 feet
Mean annual precipitation: 35 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 250 to 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Churn and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Churn

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 13 inches: gravelly loam
H2 - 13 to 40 inches: gravelly loam
H3 - 40 to 60 inches: stratified gravelly loam to gravelly clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Cobbly alluvial land

Percent of map unit: 5 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Honcut

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Perkins

Percent of map unit: 3 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Tehama

Percent of map unit: 3 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfmj—Cobbly alluvial land

Map Unit Setting

National map unit symbol: hfmj
Elevation: 20 to 2,400 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 200 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Cobbly alluvial land: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cobbly Alluvial Land

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

H1 - 0 to 12 inches: very cobbly sand
H2 - 12 to 60 inches: very cobbly loamy sand

Properties and qualities

Slope: 1 to 5 percent
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Frequency of flooding: Rare
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydric soil rating: No

Minor Components

Cobbly alluvial land

Percent of map unit: 10 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

hfmm—Cohasset loam, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfmm
Elevation: 2,000 to 5,000 feet
Mean annual precipitation: 50 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Cohasset and similar soils: 85 percent
Minor components: 15 percent

Custom Soil Resource Report

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cohasset

Setting

Landform: Lava flows
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 18 inches: loam
H2 - 18 to 27 inches: loam
H3 - 27 to 53 inches: gravelly loam
H4 - 53 to 68 inches: very cobbly clay loam
H5 - 68 to 72 inches: weathered bedrock

Properties and qualities

Slope: 2 to 30 percent
Depth to restrictive feature: 68 to 72 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Aiken

Percent of map unit: 6 percent
Landform: Lava flows
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mccarthy

Percent of map unit: 4 percent
Landform: Lava flows
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lyonsville

Percent of map unit: 3 percent
Landform: Lava flows
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Nanny

Percent of map unit: 2 percent
Landform: Fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfmn—Cohasset stony loam, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfmn
Elevation: 2,000 to 5,000 feet
Mean annual precipitation: 50 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Cohasset and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cohasset

Setting

Landform: Lava flows
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainflank, mountainbase
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 18 inches: stony loam
H2 - 18 to 60 inches: stony clay loam
H3 - 60 to 79 inches: weathered bedrock

Properties and qualities

Slope: 2 to 30 percent

Custom Soil Resource Report

Surface area covered with cobbles, stones or boulders: 2.0 percent
Depth to restrictive feature: 60 to 64 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Aiken

Percent of map unit: 6 percent
Landform: Lava flows
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainflank, mountainbase
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mccarthy

Percent of map unit: 4 percent
Landform: Lava flows
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, mountainflank, mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lyonsville

Percent of map unit: 3 percent
Landform: Lava flows
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainflank, mountainbase
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Nanny

Percent of map unit: 2 percent
Landform: Fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfmq—Cohasset very stony loam, 50 to 70 percent slopes

Map Unit Setting

National map unit symbol: hfmq
Elevation: 2,000 to 5,000 feet
Mean annual precipitation: 50 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Cohasset and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cohasset

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 15 inches: very stony loam
H2 - 15 to 55 inches: stony clay loam
H3 - 55 to 59 inches: weathered bedrock

Properties and qualities

Slope: 50 to 60 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 55 to 59 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Mccarthy

Percent of map unit: 6 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Unnamed

Percent of map unit: 4 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Nanny

Percent of map unit: 3 percent
Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Aiken

Percent of map unit: 1 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lyonsville

Percent of map unit: 1 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfmr—Cohasset very stony loam, moderately deep, 8 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfmr
Elevation: 2,000 to 5,500 feet
Mean annual precipitation: 45 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Cohasset and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cohasset

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 16 inches: very stony loam
H2 - 16 to 36 inches: stony clay loam
H3 - 36 to 40 inches: weathered bedrock

Properties and qualities

Slope: 8 to 50 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 36 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Lyonsville

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Aiken

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mccarthy

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

hfmX—Colluvial land

Map Unit Composition

Colluvial land: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Colluvial Land

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium

Typical profile

H1 - 0 to 6 inches: extremely gravelly sandy loam
H2 - 6 to 60 inches: extremely gravelly sandy loam

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Ecological site: F015XY015CA - Loamy Mountains >40"ppt
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfmy—Cone gravelly loam, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: hfmy
Elevation: 1,000 to 4,000 feet
Mean annual precipitation: 40 inches
Mean annual air temperature: 54 degrees F
Frost-free period: 125 to 225 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Cone and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cone

Setting

Landform: Pyroclastic flows
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 7 inches: gravelly loam
H2 - 7 to 58 inches: very gravelly sandy loam
H3 - 58 to 62 inches: very paragravelly cinders

Properties and qualities

Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: A

Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains

Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 10 percent

Landform: Lava flows

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Mountaintop

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Guenoc

Percent of map unit: 3 percent

Landform: Lava flows

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Mountaintop

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Toomes

Percent of map unit: 2 percent

Landform: Hillslopes

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Mountaintop

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

hfmz—Cone gravelly loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfmz

Elevation: 1,000 to 4,000 feet

Mean annual precipitation: 40 inches

Mean annual air temperature: 54 degrees F

Frost-free period: 125 to 225 days

Custom Soil Resource Report

Farmland classification: Not prime farmland

Map Unit Composition

Cone and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cone

Setting

Landform: Cinder cones

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainbase

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 7 inches: gravelly loam

H2 - 7 to 58 inches: very gravelly sandy loam

H3 - 58 to 62 inches: very paragravelly cinders

Properties and qualities

Slope: 15 to 30 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains

Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 10 percent

Landform: Lava flows

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Mountaintop

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Guenoc

Percent of map unit: 3 percent

Landform: Lava flows

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Mountaintop

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Toomes

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfn1—Cone very stony loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfn1
Elevation: 1,000 to 4,000 feet
Mean annual precipitation: 40 inches
Mean annual air temperature: 54 degrees F
Frost-free period: 125 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Cone and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cone

Setting

Landform: Cinder cones
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 7 inches: very stony loam
H2 - 7 to 58 inches: very gravelly loam
H3 - 58 to 62 inches: very paragravelly cinders

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Custom Soil Resource Report

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Toomes

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Guenoc

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

hfn2—Cone very stony loam, moderately deep, 15 to 60 percent slopes

Map Unit Setting

National map unit symbol: hfn2
Elevation: 1,000 to 4,000 feet
Mean annual precipitation: 40 inches
Mean annual air temperature: 54 degrees F
Frost-free period: 125 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Cone and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cone

Setting

Landform: Cinder cones

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 7 inches: very stony loam

H2 - 7 to 36 inches: very gravelly loam

H3 - 36 to 62 inches: very paragravelly cinders

Properties and qualities

Slope: 15 to 60 percent

Surface area covered with cobbles, stones or boulders: 5.0 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains

Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 10 percent

Landform: Mountain slopes

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Guenoc

Percent of map unit: 3 percent

Landform: Mountain slopes

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainflank

Custom Soil Resource Report

Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Toomes

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

hfnf—Gaviota fine sandy loam, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: hfnf
Elevation: 100 to 4,000 feet
Mean annual precipitation: 20 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 200 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Gaviota and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gaviota

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope, summit, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 17 inches: fine sandy loam
H2 - 17 to 21 inches: unweathered bedrock

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: 17 to 21 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Custom Soil Resource Report

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Ecological site: R015XF008CA - Shallow Gravelly Foothills

Hydric soil rating: No

Minor Components

Lodo

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Millsholm

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Footslope, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Millsap

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Footslope, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

hfnh—Gaviota very rocky sandy loam, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfnh

Elevation: 100 to 4,000 feet

Mean annual precipitation: 20 inches

Mean annual air temperature: 61 degrees F

Frost-free period: 200 to 250 days

Farmland classification: Not prime farmland

Map Unit Composition

Gaviota and similar soils: 65 percent

Custom Soil Resource Report

Rock outcrop: 20 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gaviota

Setting

Landform: Hillslopes

Landform position (two-dimensional): Shoulder, footslope, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 17 inches: sandy loam

H2 - 17 to 21 inches: unweathered bedrock

Properties and qualities

Slope: 5 to 30 percent

Depth to restrictive feature: 17 to 21 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Low

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)*

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Ecological site: R015XF008CA - Shallow Gravelly Foothills

Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 4 inches: unweathered bedrock

Properties and qualities

Slope: 5 to 30 percent

Depth to restrictive feature: 0 to 4 inches to lithic bedrock

Drainage class: Excessively drained

*Capacity of the most limiting layer to transmit water (Ksat): Low to very high (0.01
to 19.98 in/hr)*

Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydric soil rating: No

Minor Components

Millsholm

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Shoulder, footslope, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Millsap

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Lodo

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

hfnj—Gaviota very rocky sandy loam, 30 to 50 percent slopes, eroded

Map Unit Setting

National map unit symbol: hfnj

Elevation: 100 to 4,000 feet

Mean annual precipitation: 20 inches

Mean annual air temperature: 61 degrees F

Frost-free period: 200 to 250 days

Farmland classification: Not prime farmland

Map Unit Composition

Gaviota and similar soils: 65 percent

Rock outcrop: 20 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gaviota

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 15 inches: sandy loam
H2 - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 15 to 19 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R015XF008CA - Shallow Gravelly Foothills
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone

Typical profile

H1 - 0 to 4 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Low to very high (0.01 to 19.98 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s

Custom Soil Resource Report

Hydric soil rating: No

Minor Components

Millsap

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lodo

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Millsholm

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

hfnk—Goulding very stony loam, 10 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfnk
Elevation: 1,500 to 5,000 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 150 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Goulding and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Goulding

Setting

Landform: Hillslopes

Custom Soil Resource Report

Landform position (two-dimensional): Shoulder, backslope, footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Residuum weathered from greenstone

Typical profile

H1 - 0 to 5 inches: very stony loam

H2 - 5 to 16 inches: gravelly loam

H3 - 16 to 20 inches: unweathered bedrock

Properties and qualities

Slope: 10 to 30 percent

Surface area covered with cobbles, stones or boulders: 5.0 percent

Depth to restrictive feature: 16 to 20 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D

Ecological site: R015XD096CA - STEEP GRAVELLY LOAM

Hydric soil rating: No

Minor Components

Auburn

Percent of map unit: 10 percent

Landform: Hillslopes

Landform position (two-dimensional): Shoulder, backslope, footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Diamond springs

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

hfnl—Goulding very rocky loam, 30 to 50 percent slopes, eroded

Map Unit Setting

National map unit symbol: hfnl
Elevation: 1,500 to 5,000 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 150 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Goulding and similar soils: 65 percent
Rock outcrop: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Goulding

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from greenstone

Typical profile

H1 - 0 to 5 inches: very stony loam
H2 - 5 to 16 inches: gravelly loam
H3 - 16 to 20 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 16 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R015XD096CA - STEEP GRAVELLY LOAM
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from greenstone

Typical profile

H1 - 0 to 10 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Low to very high (0.01 to 19.98 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Auburn

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Diamond springs

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfnn—Gravel pits

Map Unit Composition

Gravel pits: 80 percent

Custom Soil Resource Report

Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gravel Pits

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

H1 - 0 to 6 inches: extremely gravelly sand
H2 - 6 to 60 inches: very gravelly sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydric soil rating: No

Minor Components

Cobbly alluvial land, flooded

Percent of map unit: 10 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Cobbly alluvial land

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Tailings and placer diggings

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Anderson

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Reiff

Percent of map unit: 2 percent

Custom Soil Resource Report

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfnp—Guenoc very stony loam, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfnp
Elevation: 400 to 3,000 feet
Mean annual precipitation: 25 to 50 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 200 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Guenoc and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Guenoc

Setting

Landform: Lava flows
Landform position (two-dimensional): Shoulder, backslope, summit, footslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 5 inches: very stony loam
H2 - 5 to 23 inches: very cobbly clay
H3 - 23 to 25 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 30 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 23 to 25 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high
(0.01 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e

Custom Soil Resource Report

Hydrologic Soil Group: C

Ecological site: R018XA103CA - Shallow Thermic Volcanic Ridges

Hydric soil rating: No

Minor Components

Supan

Percent of map unit: 7 percent

Landform: Hillslopes

Landform position (two-dimensional): Shoulder, backslope, summit, footslope

Landform position (three-dimensional): Interfluvium, side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent

Landform: Lava flows

Landform position (two-dimensional): Footslope, summit, backslope, shoulder

Landform position (three-dimensional): Interfluvium, side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Aiken

Percent of map unit: 3 percent

Landform: Hillslopes

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluvium

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

hfnq—Guenoc very rocky loam, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfnq

Elevation: 400 to 3,000 feet

Mean annual precipitation: 25 to 50 inches

Mean annual air temperature: 57 degrees F

Frost-free period: 200 to 225 days

Farmland classification: Not prime farmland

Map Unit Composition

Guenoc and similar soils: 70 percent

Rock outcrop: 15 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Guenoc

Setting

Landform: Lava flows

Landform position (two-dimensional): Shoulder, backslope, summit, footslope

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 5 inches: very stony loam

H2 - 5 to 23 inches: very cobbly clay

H3 - 23 to 27 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 30 percent

Depth to restrictive feature: 23 to 27 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high
(0.01 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Ecological site: R018XA103CA - Shallow Thermic Volcanic Ridges

Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Lava flows

Landform position (two-dimensional): Backslope, footslope, summit, shoulder

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 10 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 30 percent

Depth to restrictive feature: 0 to 4 inches to lithic bedrock

Drainage class: Excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Low to very high (0.01
to 19.98 in/hr)

Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Toomes

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope, summit, footslope
Landform position (three-dimensional): Interflue, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Supan

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope, summit, footslope
Landform position (three-dimensional): Interflue, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Aiken

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope, summit, footslope
Landform position (three-dimensional): Side slope, interflue
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfnr—Guenoc very rocky loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfnr
Elevation: 400 to 3,000 feet
Mean annual precipitation: 25 to 50 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 200 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Guenoc and similar soils: 70 percent
Rock outcrop: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Guenoc

Setting

Landform: Lava flows
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 5 inches: very stony loam
H2 - 5 to 23 inches: very cobbly clay
H3 - 23 to 27 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 23 to 27 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: R018XA103CA - Shallow Thermic Volcanic Ridges
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Lava flows
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 4 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Low to very high (0.01 to 19.98 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Aiken

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Supan

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Toomes

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

hfny—Honcut gravelly loam

Map Unit Setting

National map unit symbol: hfny
Elevation: 2,000 feet
Mean annual precipitation: 29 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Honcut and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Honcut

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 22 inches: gravelly loam
H2 - 22 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Churn

Percent of map unit: 8 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Anderson

Percent of map unit: 7 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfp1—Honn fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hfp1
Elevation: 300 to 800 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Honn and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Honn

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from volcanic rock

Typical profile

H1 - 0 to 17 inches: fine sandy loam
H2 - 17 to 46 inches: gravelly sandy clay loam
H3 - 46 to 56 inches: very gravelly sandy clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Anderson

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hillgate

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfp4—Inks gravelly loam, 8 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfp4
Elevation: 200 to 2,000 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 175 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Inks and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Inks

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Custom Soil Resource Report

Typical profile

H1 - 0 to 14 inches: gravelly loam
H2 - 14 to 19 inches: very gravelly loam
H3 - 19 to 23 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 30 percent
Depth to restrictive feature: 19 to 23 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R017XD086CA - SHALLOW LOAMY
Hydric soil rating: No

Minor Components

Tuscan

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Supan

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Pentz

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

hfp5—Inks very stony loam, 3 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfp5
Elevation: 200 to 2,000 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 175 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Inks and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Inks

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 14 inches: very stony loam
H2 - 14 to 19 inches: very cobbly loam
H3 - 19 to 23 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 30 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 19 to 23 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R018XA103CA - Shallow Thermic Volcanic Ridges
Hydric soil rating: No

Minor Components

Tuscan

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Pentz

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Supan

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

hfp7—Inks-Pentz complex, 5 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfp7
Elevation: 200 to 3,500 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 175 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Inks and similar soils: 50 percent
Pentz and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Inks

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder

Custom Soil Resource Report

Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 14 inches: gravelly loam
H2 - 14 to 19 inches: very gravelly loam
H3 - 19 to 23 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 30 percent
Depth to restrictive feature: 19 to 23 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R018XA103CA - Shallow Thermic Volcanic Ridges
Hydric soil rating: No

Description of Pentz

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 5 inches: very stony sandy loam
H2 - 5 to 18 inches: sandy loam
H3 - 18 to 22 inches: weathered bedrock

Properties and qualities

Slope: 5 to 30 percent
Depth to restrictive feature: 18 to 22 inches to paralithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: R015XF008CA - Shallow Gravelly Foothills
Hydric soil rating: No

Minor Components

Supan

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Tuscan

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfp8—Inks-Pentz complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfp8
Elevation: 200 to 3,500 feet
Mean annual precipitation: 25 to 30 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 175 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Inks and similar soils: 50 percent
Pentz and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Inks

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear

Custom Soil Resource Report

Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 14 inches: very stony loam

H2 - 14 to 19 inches: very cobbly loam

H3 - 19 to 23 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 19 to 23 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: R017XD086CA - SHALLOW LOAMY

Hydric soil rating: No

Description of Pentz

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Nose slope

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 5 inches: very stony sandy loam

H2 - 5 to 18 inches: sandy loam

H3 - 18 to 22 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 18 to 22 inches to paralithic bedrock

Drainage class: Somewhat excessively drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: R015XF008CA - Shallow Gravelly Foothills

Custom Soil Resource Report

Hydric soil rating: No

Minor Components

Supan

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Tuscan

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfp9—Josephine gravelly loam, 10 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfp9
Elevation: 1,200 to 5,000 feet
Mean annual precipitation: 50 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 125 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Josephine and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Josephine

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metasedimentary rock

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 45 inches: gravelly clay loam

Custom Soil Resource Report

H3 - 45 to 60 inches: very stony clay loam

H4 - 60 to 64 inches: weathered bedrock

Properties and qualities

Slope: 10 to 30 percent

Depth to restrictive feature: 60 to 64 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: F005XZ024CA - Ridges

Hydric soil rating: No

Minor Components

Marpa

Percent of map unit: 5 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

Sheetiron

Percent of map unit: 5 percent

Landform: Mountain slopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Sites

Percent of map unit: 5 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

hfpb—Josephine gravelly loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfpb
Elevation: 1,200 to 5,000 feet
Mean annual precipitation: 50 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 125 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Josephine and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Josephine

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metasedimentary rock

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 45 inches: gravelly clay loam
H3 - 45 to 60 inches: very stony clay loam
H4 - 60 to 64 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 60 to 64 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F005XZ024CA - Ridges
Hydric soil rating: No

Minor Components

Sheetiron

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Sites

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Marpa

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

hfpc—Josephine gravelly loam, 50 to 70 percent slopes

Map Unit Setting

National map unit symbol: hfpc
Elevation: 1,200 to 5,000 feet
Mean annual precipitation: 50 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 125 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Josephine and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Josephine

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metasedimentary rock

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 45 inches: gravelly clay loam
H3 - 45 to 60 inches: very stony clay loam
H4 - 60 to 64 inches: weathered bedrock

Properties and qualities

Slope: 50 to 70 percent
Depth to restrictive feature: 60 to 64 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: F005XZ024CA - Ridges
Hydric soil rating: No

Minor Components

Marpa

Percent of map unit: 7 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Sheetiron

Percent of map unit: 6 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Sites

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

hfpd—Josephine gravelly loam, moderately deep, 10 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfpd
Elevation: 1,500 feet
Mean annual precipitation: 10 to 35 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 245 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Josephine and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Josephine

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metasedimentary rock

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 36 inches: gravelly clay loam
H3 - 36 to 40 inches: weathered bedrock

Properties and qualities

Slope: 10 to 30 percent
Depth to restrictive feature: 36 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F005XZ024CA - Ridges
Hydric soil rating: No

Minor Components

Marpa

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Sheetiron

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Sites

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

hfpf—Josephine gravelly loam, moderately deep, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfpf
Elevation: 1,500 feet
Mean annual precipitation: 10 to 35 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 245 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Josephine and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Josephine

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope

Custom Soil Resource Report

Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metasedimentary rock

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 36 inches: gravelly clay loam
H3 - 36 to 40 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 36 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F005XZ024CA - Ridges
Hydric soil rating: No

Minor Components

Marpa

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Sites

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Sheetiron

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

hfpq—Keefers gravelly loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hfpq

Elevation: 200 to 1,000 feet

Mean annual precipitation: 25 inches

Mean annual air temperature: 63 degrees F

Frost-free period: 230 to 280 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Keefers and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Keefers

Setting

Landform: Stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from volcanic rock

Typical profile

H1 - 0 to 7 inches: gravelly loam

H2 - 7 to 21 inches: clay loam

H3 - 21 to 60 inches: very gravelly clay

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 21 to 60 inches to duripan

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: C

Ecological site: R017XY902CA - Duripan Vernal Pools

Hydric soil rating: No

Minor Components

Tuscan

Percent of map unit: 4 percent
Landform: Fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Inks

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Supan

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Unnamed, ponded

Percent of map unit: 3 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Swales
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

hfpr—Keefers gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hfpr
Elevation: 200 to 1,000 feet
Mean annual precipitation: 25 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 280 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Keefers and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Keefers

Setting

Landform: Stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from volcanic rock

Typical profile

H1 - 0 to 7 inches: gravelly loam

H2 - 7 to 21 inches: clay loam

H3 - 21 to 60 inches: very gravelly clay

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 21 to 60 inches to duripan

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R017XY902CA - Duripan Vernal Pools

Hydric soil rating: No

Minor Components

Supan

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Inks

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Convex

Custom Soil Resource Report

Hydric soil rating: No

Tuscan

Percent of map unit: 5 percent

Landform: Fan remnants

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

hfpv—Kilarc sandy clay loam, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: hfpv

Elevation: 1,000 to 3,600 feet

Mean annual precipitation: 30 to 65 inches

Mean annual air temperature: 52 to 54 degrees F

Frost-free period: 120 to 225 days

Farmland classification: Not prime farmland

Map Unit Composition

Kilarc and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kilarc

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainbase

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 9 inches: sandy clay loam

H2 - 9 to 22 inches: clay

H3 - 22 to 44 inches: clay loam

H4 - 44 to 48 inches: weathered bedrock

Properties and qualities

Slope: 2 to 15 percent

Depth to restrictive feature: More than 80 inches; 44 to 48 inches to paralithic bedrock

Drainage class: Moderately well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Custom Soil Resource Report

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R022AC058CA - FINE LOAMY

Hydric soil rating: No

Minor Components

Sites

Percent of map unit: 5 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainbase

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Parrish

Percent of map unit: 5 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainbase

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

Supan

Percent of map unit: 3 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Inks

Percent of map unit: 2 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

hfpw—Kilarc sandy clay loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfpw
Elevation: 1,000 to 3,600 feet
Mean annual precipitation: 30 to 65 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 120 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Kilarc and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kilarc

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 9 inches: sandy clay loam
H2 - 9 to 22 inches: clay
H3 - 22 to 44 inches: clay loam
H4 - 44 to 48 inches: weathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches; 44 to 48 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Parrish

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Sites

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Supan

Percent of map unit: 3 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Inks

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

hfx—Kilarc sandy clay loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfx
Elevation: 1,000 to 3,600 feet
Mean annual precipitation: 30 to 65 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 120 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Kilarc and similar soils: 85 percent

Custom Soil Resource Report

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kilarc

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 9 inches: sandy clay loam
H2 - 9 to 22 inches: clay
H3 - 22 to 44 inches: clay loam
H4 - 44 to 48 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: More than 80 inches; 44 to 48 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Sites

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Parrish

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex

Custom Soil Resource Report

Hydric soil rating: No

Supan

Percent of map unit: 3 percent

Landform: Mountain slopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Mountaintop

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Inks

Percent of map unit: 2 percent

Landform: Mountain slopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Mountaintop

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

hfy—Kilarc very stony sandy clay loam, 10 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfy

Elevation: 1,000 to 3,600 feet

Mean annual precipitation: 30 to 65 inches

Mean annual air temperature: 52 to 54 degrees F

Frost-free period: 120 to 225 days

Farmland classification: Not prime farmland

Map Unit Composition

Kilarc and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kilarc

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 9 inches: very stony sandy clay loam

H2 - 9 to 22 inches: clay

H3 - 22 to 44 inches: clay loam

H4 - 44 to 48 inches: weathered bedrock

Custom Soil Resource Report

Properties and qualities

Slope: 10 to 30 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: More than 80 inches; 44 to 48 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Parrish

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Sites

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Supan

Percent of map unit: 3 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Inks

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex

Custom Soil Resource Report

Across-slope shape: Convex
Hydric soil rating: No

hfpz—Kilarc very stony sandy clay loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfpz
Elevation: 1,000 to 3,600 feet
Mean annual precipitation: 30 to 65 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 120 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Kilarc and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kilarc

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 9 inches: very stony sandy clay loam
H2 - 9 to 22 inches: clay
H3 - 22 to 44 inches: clay loam
H4 - 44 to 48 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: More than 80 inches; 44 to 48 inches to paralithic bedrock
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s

Custom Soil Resource Report

Hydrologic Soil Group: C

Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains

Hydric soil rating: No

Minor Components

Parrish

Percent of map unit: 5 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

Sites

Percent of map unit: 5 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Supan

Percent of map unit: 3 percent

Landform: Mountain slopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Upper third of mountainflank

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

Inks

Percent of map unit: 2 percent

Landform: Mountain slopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Upper third of mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

hfq5—Los Robles loam, 3 to 8 percent

Map Unit Setting

National map unit symbol: hfq5

Elevation: 100 to 1,000 feet

Mean annual precipitation: 25 inches

Mean annual air temperature: 63 degrees F

Frost-free period: 200 to 250 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Los robles and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Los Robles

Setting

Landform: Stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: loam

H2 - 8 to 54 inches: loam

H3 - 54 to 65 inches: sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans

Hydric soil rating: No

Minor Components

Molinos

Percent of map unit: 5 percent

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Vina

Percent of map unit: 5 percent

Landform: Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Honn

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfq9—Lyonsville-Jiggs complex, 10 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfq9
Elevation: 3,000 to 6,500 feet
Mean annual precipitation: 50 inches
Mean annual air temperature: 45 degrees F
Frost-free period: 100 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

Lyonsville and similar soils: 46 percent
Jiggs and similar soils: 44 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyonsville

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 12 inches: very stony sandy loam
H2 - 12 to 18 inches: gravelly sandy clay loam
H3 - 18 to 30 inches: gravelly sandy clay loam
H4 - 30 to 33 inches: very gravelly sandy loam
H5 - 33 to 43 inches: unweathered bedrock

Properties and qualities

Slope: 10 to 50 percent
Depth to restrictive feature: 33 to 37 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Custom Soil Resource Report

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Ecological site: F022BF201CA - Ash-influenced, warm (FFD>100) rocky mountains

Hydric soil rating: No

Description of Jiggs

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 12 inches: gravelly sandy loam

H2 - 12 to 27 inches: gravelly sandy loam

H3 - 27 to 37 inches: unweathered bedrock

Properties and qualities

Slope: 10 to 50 percent

Depth to restrictive feature: 27 to 31 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B

Ecological site: F022BF201CA - Ash-influenced, warm (FFD>100) rocky mountains

Hydric soil rating: No

Minor Components

Windy

Percent of map unit: 10 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

hfqc—Lyonsville-Jiggs soils, 50 to 70 percent slopes

Map Unit Setting

National map unit symbol: hfqc
Elevation: 3,000 to 6,500 feet
Mean annual precipitation: 50 inches
Mean annual air temperature: 45 degrees F
Frost-free period: 100 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

Lyonsville and similar soils: 46 percent
Jiggs and similar soils: 44 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyonsville

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 12 inches: very stony sandy loam
H2 - 12 to 30 inches: gravelly sandy clay loam
H4 - 30 to 33 inches: very gravelly sandy loam
H5 - 33 to 43 inches: unweathered bedrock

Properties and qualities

Slope: 50 to 70 percent
Depth to restrictive feature: 33 to 37 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B

Custom Soil Resource Report

Ecological site: F022BF201CA - Ash-influenced, warm (FFD>100) rocky mountains
Hydric soil rating: No

Description of Jiggs

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 12 inches: gravelly sandy loam
H2 - 12 to 27 inches: gravelly sandy loam
H3 - 27 to 37 inches: unweathered bedrock

Properties and qualities

Slope: 50 to 70 percent
Depth to restrictive feature: 27 to 31 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F022BF201CA - Ash-influenced, warm (FFD>100) rocky mountains
Hydric soil rating: No

Minor Components

Windy

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

hfqd—Marpa gravelly loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfqd
Elevation: 1,500 to 5,000 feet
Mean annual precipitation: 20 to 50 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 100 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Marpa and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marpa

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from shale

Typical profile

H1 - 0 to 13 inches: gravelly loam
H2 - 13 to 26 inches: very gravelly clay loam
H3 - 26 to 30 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 26 to 30 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F005XZ018CA - Moderately Deep Gravelly Mesic Mountains
40-60"ppt
Hydric soil rating: No

Minor Components

Josephine

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Maymen

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Sheetiron

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

hfql—Millsap very rocky loam, 10 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfql
Elevation: 80 to 4,000 feet
Mean annual precipitation: 8 to 30 inches
Mean annual air temperature: 45 to 63 degrees F
Frost-free period: 110 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Millsap and similar soils: 65 percent
Rock outcrop: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Millsap

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope

Custom Soil Resource Report

Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 11 inches: loam
H2 - 11 to 33 inches: clay
H3 - 33 to 37 inches: unweathered bedrock

Properties and qualities

Slope: 10 to 50 percent
Depth to restrictive feature: 33 to 37 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R015XY009CA - Hills 20-40"ppt
Other vegetative classification: LOAMY (015XD047CA_1)
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 4 inches: unweathered bedrock

Properties and qualities

Slope: 10 to 50 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Low to very high (0.01 to 19.98 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Gaviota

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Millsholm

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

hfqm—Millsholm gravelly loam, 3 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfqm
Elevation: 300 to 3,400 feet
Mean annual precipitation: 20 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 200 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Millsholm and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Millsholm

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 16 inches: gravelly loam
H2 - 16 to 20 inches: unweathered bedrock

Custom Soil Resource Report

Properties and qualities

Slope: 3 to 30 percent
Depth to restrictive feature: 16 to 20 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R015XD093CA - SHALLOW LOAMY
Hydric soil rating: No

Minor Components

Gaviota

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Millsap

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

hfqq—Millsholm gravelly loam, 50 to 75 percent slopes

Map Unit Setting

National map unit symbol: hfqq
Elevation: 300 to 3,400 feet
Mean annual precipitation: 20 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 200 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Millsholm and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Millsholm

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 16 inches: gravelly loam

H2 - 16 to 20 inches: unweathered bedrock

Properties and qualities

Slope: 50 to 75 percent

Depth to restrictive feature: 16 to 20 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)*

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: R015XF008CA - Shallow Gravelly Foothills

Hydric soil rating: No

Minor Components

Gaviota

Percent of map unit: 8 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

Millsap

Percent of map unit: 7 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

hfqr—Millsholm very rocky loam, 30 to 50 percent slopes, eroded

Map Unit Setting

National map unit symbol: hfqr
Elevation: 300 to 3,400 feet
Mean annual precipitation: 20 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 200 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Millsholm and similar soils: 65 percent
Rock outcrop: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Millsholm

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 14 inches: gravelly loam
H2 - 14 to 18 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 14 to 18 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R015XF008CA - Shallow Gravelly Foothills
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 4 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Low to very high (0.01 to 19.98 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Gaviota

Percent of map unit: 8 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Millsap

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

hfqs—Millsholm very rocky loam, 50 to 70 percent slopes, eroded

Map Unit Setting

National map unit symbol: hfqs

Custom Soil Resource Report

Elevation: 300 to 3,400 feet
Mean annual precipitation: 20 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 200 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Millsholm and similar soils: 65 percent
Rock outcrop: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Millsholm

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 14 inches: gravelly loam
H2 - 14 to 16 inches: unweathered bedrock

Properties and qualities

Slope: 50 to 70 percent
Depth to restrictive feature: 14 to 16 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R015XF008CA - Shallow Gravelly Foothills
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 4 inches: unweathered bedrock

Custom Soil Resource Report

Properties and qualities

Slope: 50 to 70 percent

Depth to restrictive feature: 0 to 4 inches to lithic bedrock

Drainage class: Excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Low to very high (0.01 to 19.98 in/hr)

Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydric soil rating: No

Minor Components

Gaviota

Percent of map unit: 8 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope, shoulder

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

Millsap

Percent of map unit: 7 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

hfr2—Nanny gravelly sandy loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: hfr2

Elevation: 4,000 to 6,000 feet

Mean annual precipitation: 45 to 60 inches

Mean annual air temperature: 45 to 50 degrees F

Frost-free period: 80 to 150 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Nanny and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nanny

Setting

Landform: Fan remnants
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from volcanic rock

Typical profile

H1 - 0 to 20 inches: gravelly sandy loam
H2 - 20 to 66 inches: very cobbly loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F022BF201CA - Ash-influenced, warm (FFD>100) rocky mountains
Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Windy

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

hfr8—Newtown gravelly loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfr8
Elevation: 600 to 1,000 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 200 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Newtown and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newtown

Setting

Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 10 inches: gravelly loam
H2 - 10 to 18 inches: very gravelly clay loam
H3 - 18 to 35 inches: clay loam
H4 - 35 to 65 inches: silty clay loam
H5 - 65 to 72 inches: gravelly silty clay loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R017XD088CA - UPLAND TERRACE
Hydric soil rating: No

Minor Components

Perkins

Percent of map unit: 10 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Red bluff

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfrc—Parrish loam, 8 to 30 percent slopes

Map Unit Setting

National map unit symbol: hfrc
Elevation: 1,200 to 4,000 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 150 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Parrish and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Parrish

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metamorphic and sedimentary rock

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 30 inches: gravelly clay loam
H3 - 30 to 38 inches: gravelly loam
H4 - 38 to 42 inches: unweathered bedrock

Custom Soil Resource Report

Properties and qualities

Slope: 8 to 30 percent
Depth to restrictive feature: 38 to 42 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XD045CA - LOAMY
Hydric soil rating: No

Minor Components

Millsholm

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Gaviota

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Auburn

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

hfrd—Parrish loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfrd
Elevation: 1,200 to 4,000 feet
Mean annual precipitation: 30 inches
Mean annual air temperature: 55 degrees F
Frost-free period: 150 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Parrish and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Parrish

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Residuum weathered from metamorphic and sedimentary rock

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 30 inches: gravelly clay loam
H3 - 30 to 38 inches: gravelly loam
H4 - 38 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 38 to 42 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R015XY014CA - Loamy Mountains 20-40"ppt
Other vegetative classification: LOAMY (015XD047CA_1)
Hydric soil rating: No

Minor Components

Auburn

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Gaviota

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Millsholm

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

hfri—Perkins gravelly loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: hfri
Elevation: 60 to 1,700 feet
Mean annual precipitation: 14 to 35 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 220 to 310 days
Farmland classification: Not prime farmland

Map Unit Composition

Perkins and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Perkins

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear

Custom Soil Resource Report

Across-slope shape: Linear

Parent material: Alluvium

Typical profile

H1 - 0 to 10 inches: gravelly loam

H2 - 10 to 60 inches: gravelly clay loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces

Hydric soil rating: No

Minor Components

Redding

Percent of map unit: 5 percent

Landform: Fan remnants

Landform position (two-dimensional): Backslope, summit

Landform position (three-dimensional): Tread, riser

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Red bluff

Percent of map unit: 5 percent

Landform: Fan remnants

Landform position (two-dimensional): Backslope, summit

Landform position (three-dimensional): Tread, riser

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Churn

Percent of map unit: 5 percent

Landform: Stream terraces

Landform position (three-dimensional): Riser, tread

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

hfrq—Perkins gravelly loam, moderately deep, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hfrq
Elevation: 60 to 1,700 feet
Mean annual precipitation: 14 to 35 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 220 to 310 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Perkins and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Perkins

Setting

Landform: Stream terraces, fan remnants
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Riser, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 10 inches: gravelly loam
H2 - 10 to 30 inches: gravelly clay loam
H3 - 30 to 60 inches: cemented

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 30 to 60 inches to densic material
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Red bluff

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Redding

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Newtown

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hfsc—Rockland

Map Unit Setting

National map unit symbol: hfsc
Elevation: 650 to 4,000 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 110 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Rock land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Land

Setting

Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum

Typical profile

H1 - 0 to 10 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 70 percent

Depth to restrictive feature: 0 to 10 inches to lithic bedrock

Drainage class: Excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Low to very high (0.01 to 19.98 in/hr)

Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydric soil rating: No

hfsg—Sehorn silty clay, 8 to 30 slopes

Map Unit Setting

National map unit symbol: hfsg

Elevation: 100 to 2,000 feet

Mean annual precipitation: 15 to 35 inches

Mean annual air temperature: 57 to 64 degrees F

Frost-free period: 200 to 340 days

Farmland classification: Not prime farmland

Map Unit Composition

Sehorn and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sehorn

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 20 inches: silty clay

H2 - 20 to 35 inches: clay

H3 - 35 to 39 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 30 percent

Depth to restrictive feature: 35 to 39 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Very high

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Ecological site: R015XD001CA - CLAYEY

Hydric soil rating: No

Minor Components

Lodo

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Nose slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Kilarc

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Millsholm

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

hfsh—Sehorn silty clay, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfsh

Elevation: 1,800 to 3,000 feet

Mean annual precipitation: 9 inches

Mean annual air temperature: 57 degrees F

Frost-free period: 180 to 250 days

Custom Soil Resource Report

Farmland classification: Not prime farmland

Map Unit Composition

Sehorn and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sehorn

Setting

Landform: Hillslopes

Landform position (two-dimensional): Foothlope, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 20 inches: silty clay

H2 - 20 to 35 inches: clay

H3 - 35 to 39 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent

Depth to restrictive feature: 35 to 39 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Ecological site: R015XD091CA - GRAZEABLE WOODLAND

Hydric soil rating: No

Minor Components

Millsholm

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

Millsap

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lodo

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

hfsr—Shingletown clay loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: hfsr
Elevation: 1,500 to 5,500 feet
Mean annual precipitation: 45 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 100 to 225 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Shingletown and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shingletown

Setting

Landform: Drainageways
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 16 inches: clay loam
H2 - 16 to 46 inches: loam
H3 - 46 to 59 inches: sandy clay loam
H4 - 59 to 65 inches: gravelly clay loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 inches

Custom Soil Resource Report

Frequency of flooding: RareNone

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2w

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: C/D

Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains

Hydric soil rating: No

Minor Components

Kilarc

Percent of map unit: 5 percent

Landform: Mountain slopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Mountainbase

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Cohasset

Percent of map unit: 5 percent

Landform: Mountain slopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Mountainbase

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Mccarthy

Percent of map unit: 4 percent

Landform: Mountain slopes

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Mountainbase

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent

Landform: Drainageways

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: Yes

hfsz—Sites loam, 5 to 15 percent slopes

Map Unit Setting

National map unit symbol: hfsz
Elevation: 600 to 5,000 feet
Mean annual precipitation: 30 to 85 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 130 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Sites and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sites

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from metamorphic and sedimentary rock

Typical profile

H1 - 0 to 14 inches: loam
H2 - 14 to 41 inches: clay
H3 - 41 to 63 inches: clay loam

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: 39 to 63 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Millsholm

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainbase
Down-slope shape: Convex
Across-slope shape: Linear

Kilarc

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Linear
Across-slope shape: Convex

Josephine

Percent of map unit: 5 percent
Landform: Mountain slopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Linear
Across-slope shape: Concave

hftb—Supan gravelly loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hftb
Elevation: 800 to 4,000 feet
Mean annual precipitation: 35 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 175 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Supan and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Supan

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from tuff breccia

Custom Soil Resource Report

Typical profile

H1 - 0 to 10 inches: gravelly loam
H2 - 10 to 33 inches: clay loam
H3 - 33 to 43 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 33 to 37 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high
(0.01 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F018XA202CA - Deep Mesic Mountain Slopes & Summits
Hydric soil rating: No

Minor Components

Aiken

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Toomes

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Inks

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

hftc—Supan gravelly loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hftc
Elevation: 800 to 4,000 feet
Mean annual precipitation: 35 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 175 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Supan and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Supan

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from tuff breccia

Typical profile

H1 - 0 to 10 inches: gravelly loam
H2 - 10 to 33 inches: clay loam
H3 - 33 to 43 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 33 to 37 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high
(0.01 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F018XA202CA - Deep Mesic Mountain Slopes & Summits
Hydric soil rating: No

Minor Components

Inks

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Toomes

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Aiken

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

hftd—Supan very stony loam, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: hftd
Elevation: 800 to 4,000 feet
Mean annual precipitation: 35 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 175 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Supan and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Supan

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from tuff breccia

Typical profile

H1 - 0 to 10 inches: very stony loam
H2 - 10 to 33 inches: clay loam
H3 - 33 to 43 inches: unweathered bedrock

Properties and qualities

Slope: 5 to 30 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 33 to 37 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high
(0.01 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F018XA202CA - Deep Mesic Mountain Slopes & Summits
Hydric soil rating: No

Minor Components

Toomes

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Pentz

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Cohasset

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

hfff—Supan very stony loam, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfff
Elevation: 800 to 4,000 feet
Mean annual precipitation: 35 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 175 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Supan and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Supan

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from tuff breccia

Typical profile

H1 - 0 to 10 inches: very stony loam
H2 - 10 to 33 inches: clay loam
H3 - 33 to 43 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 33 to 37 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high
(0.01 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F018XA202CA - Deep Mesic Mountain Slopes & Summits
Hydric soil rating: No

Minor Components

Toomes

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Pentz

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Cohasset

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

hftl—Toomes very rocky loam, 0 to 50 percent slopes

Map Unit Setting

National map unit symbol: hftl
Elevation: 600 to 3,500 feet
Mean annual precipitation: 25 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Toomes and similar soils: 70 percent
Rock outcrop: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Toomes

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder, backslope

Custom Soil Resource Report

Landform position (three-dimensional): Side slope, interfluvial
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from tuff breccia

Typical profile

H1 - 0 to 11 inches: very stony loam
H2 - 11 to 21 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 50 percent
Depth to restrictive feature: 11 to 15 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R018XA103CA - Shallow Thermic Volcanic Ridges
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from tuff breccia

Typical profile

H1 - 0 to 10 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 50 percent
Depth to restrictive feature: 0 to 4 inches to lithic bedrock
Drainage class: Excessively drained
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Supan

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope

Custom Soil Resource Report

Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Guenoc

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluvium, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hftm—Toomes very stony loam, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: hftm
Elevation: 600 to 3,500 feet
Mean annual precipitation: 25 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Toomes and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Toomes

Setting

Landform: Hillslopes
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Side slope, interfluvium
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from tuff breccia

Typical profile

H1 - 0 to 11 inches: very stony loam
H2 - 11 to 15 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 30 percent
Surface area covered with cobbles, stones or boulders: 15.0 percent
Depth to restrictive feature: 11 to 15 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: R018XA103CA - Shallow Thermic Volcanic Ridges

Hydric soil rating: No

Minor Components

Guenoc

Percent of map unit: 10 percent

Landform: Hillslopes

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Side slope, interfluvium

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Supan

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: No

hftr—Tuscan cobbly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hftr

Elevation: 200 to 1,000 feet

Mean annual precipitation: 30 inches

Mean annual air temperature: 63 degrees F

Frost-free period: 225 to 250 days

Farmland classification: Not prime farmland

Map Unit Composition

Tuscan and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tuscan

Setting

Landform: Strath terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 3 inches: cobbly loam
H2 - 3 to 16 inches: cobbly clay loam
H3 - 16 to 26 inches: indurated

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 16 to 26 inches to duripan
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 5 percent
Landform: Strath terraces
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Swales
Down-slope shape: Linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Igo

Percent of map unit: 5 percent
Landform: Strath terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Keefers

Percent of map unit: 5 percent

Hydric soil rating: No

hftv—Vina gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: hftv
Elevation: 100 to 1,000 feet
Mean annual precipitation: 25 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 225 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Vina and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vina

Setting

Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 34 inches: gravelly loam
H2 - 34 to 60 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Honn

Percent of map unit: 10 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Los robles

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

hftx—Windy and McCarthy stony sandy loams, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: hftx
Elevation: 2,000 to 9,000 feet
Mean annual precipitation: 35 to 70 inches
Mean annual air temperature: 43 to 57 degrees F
Frost-free period: 45 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Windy and similar soils: 41 percent
Mccarthy and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windy

Setting

Landform: Lava flows
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Mountaintop, mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 14 inches: stony sandy loam
H2 - 14 to 48 inches: very gravelly sandy loam
H3 - 48 to 58 inches: unweathered bedrock

Custom Soil Resource Report

Properties and qualities

Slope: 5 to 30 percent
Depth to restrictive feature: 48 to 52 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F022BF202CA - West-Side, Steep (15% or greater), Ash-influenced, Frigid Gravelley (FFD<100) Mountains
Hydric soil rating: No

Description of Mccarthy

Setting

Landform: Lava flows
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from basalt

Typical profile

H1 - 0 to 20 inches: stony sandy loam
H2 - 20 to 44 inches: very cobbly sandy loam
H3 - 44 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 30 percent
Depth to restrictive feature: 44 to 48 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 10 percent
Landform: Lava flows
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lydon

Percent of map unit: 10 percent
Landform: Lava flows
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

hfty—Windy and McCarthy very stony sandy loams, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: hfty
Elevation: 2,000 to 9,000 feet
Mean annual precipitation: 35 to 70 inches
Mean annual air temperature: 43 to 57 degrees F
Frost-free period: 45 to 225 days
Farmland classification: Not prime farmland

Map Unit Composition

Windy and similar soils: 41 percent
Mccarthy and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windy

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from volcanic rock

Custom Soil Resource Report

Typical profile

H1 - 0 to 14 inches: very stony sandy loam
H2 - 14 to 48 inches: very gravelly sandy loam
H3 - 48 to 58 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 48 to 52 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: F022BF202CA - West-Side, Steep (15% or greater), Ash-influenced, Frigid Gravelley (FFD<100) Mountains
Hydric soil rating: No

Description of Mccarthy

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from basalt

Typical profile

H1 - 0 to 20 inches: very cobbly sandy loam
H2 - 20 to 44 inches: very cobbly sandy loam
H3 - 44 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 44 to 48 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s

Custom Soil Resource Report

Hydrologic Soil Group: A

Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains

Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 10 percent

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Lydon

Percent of map unit: 10 percent

Landform: Mountain slopes

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

hftz—Windy and McCarthy very stony sandy loams, 50 to 75 percent slopes

Map Unit Setting

National map unit symbol: hftz

Elevation: 2,000 to 9,000 feet

Mean annual precipitation: 35 to 70 inches

Mean annual air temperature: 43 to 57 degrees F

Frost-free period: 45 to 225 days

Farmland classification: Not prime farmland

Map Unit Composition

Windy and similar soils: 41 percent

Mccarthy and similar soils: 39 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windy

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Linear

Across-slope shape: Convex

Custom Soil Resource Report

Parent material: Residuum weathered from volcanic rock

Typical profile

H1 - 0 to 14 inches: very stony sandy loam
H2 - 14 to 48 inches: very gravelly sandy loam
H3 - 48 to 58 inches: unweathered bedrock

Properties and qualities

Slope: 50 to 75 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 48 to 52 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F022BF202CA - West-Side, Steep (15% or greater), Ash-influenced, Frigid Gravelley (FFD<100) Mountains
Hydric soil rating: No

Description of Mccarthy

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from basalt

Typical profile

H1 - 0 to 20 inches: very cobbly sandy loam
H2 - 20 to 44 inches: very cobbly sandy loam
H3 - 44 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 50 to 75 percent
Surface area covered with cobbles, stones or boulders: 5.0 percent
Depth to restrictive feature: 44 to 48 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F022BG201CA - Mesic Ash-Influenced Mountains
Hydric soil rating: No

Minor Components

Cohasset

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Lydon

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

hss5—Goulding family, 40 to 60 percent slopes.

Map Unit Setting

National map unit symbol: hss5
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 55 to 59 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Goulding family and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Goulding Family

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex

Custom Soil Resource Report

Parent material: Residuum weathered from metasedimentary rock and/or
residuum weathered from metavolcanics

Typical profile

H1 - 0 to 7 inches: very gravelly loam

H2 - 7 to 15 inches: very gravelly loam

H3 - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 40 to 60 percent

Depth to restrictive feature: 15 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to
1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: F005XZ014CA - Mesic Mountains <40"ppt

Hydric soil rating: No

Minor Components

Typic xerorthents

Percent of map unit: 10 percent

Hydric soil rating: No

Chawanakee family

Percent of map unit: 5 percent

Hydric soil rating: No

Etsel family

Percent of map unit: 5 percent

Hydric soil rating: No

Rock outcrop, metamorphic

Percent of map unit: 5 percent

Hydric soil rating: No

hssw—Holland-Goulding families association, 40 to 60 percent slopes.

Map Unit Setting

National map unit symbol: hssw

Elevation: 2,000 to 4,580 feet

Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 54 to 59 degrees F

Custom Soil Resource Report

Frost-free period: 130 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Holland family and similar soils: 60 percent

Goulding family and similar soils: 30 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Holland Family

Setting

Landform: Mountains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from granite and/or residuum weathered from metavolcanics and/or residuum weathered from metasedimentary rock

Typical profile

H1 - 0 to 3 inches: gravelly loam

H2 - 3 to 26 inches: gravelly clay loam

H3 - 26 to 59 inches: weathered bedrock

Properties and qualities

Slope: 40 to 60 percent

Depth to restrictive feature: 26 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Hydric soil rating: No

Description of Goulding Family

Setting

Landform: Mountains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from metavolcanics and/or residuum weathered from metasedimentary rock

Typical profile

H1 - 0 to 7 inches: very gravelly loam

H2 - 7 to 15 inches: very gravelly loam

Custom Soil Resource Report

H3 - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 40 to 60 percent

Depth to restrictive feature: 15 inches to lithic bedrock

Drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Ecological site: F005XZ014CA - Mesic Mountains <40"ppt

Hydric soil rating: No

Minor Components

Rock outcrop, metamorphic

Percent of map unit: 3 percent

Hydric soil rating: No

Deadwood family

Percent of map unit: 3 percent

Hydric soil rating: No

Rubble land

Percent of map unit: 3 percent

Hydric soil rating: No

Neuns family

Percent of map unit: 1 percent

Hydric soil rating: No

hstb—Holland family, deep, 20 to 40 percent slopes.

Map Unit Setting

National map unit symbol: hstb

Elevation: 1,500 to 5,500 feet

Mean annual precipitation: 35 to 70 inches

Mean annual air temperature: 52 to 55 degrees F

Frost-free period: 130 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Holland family, deep, and similar soils: 75 percent

Custom Soil Resource Report

Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Holland Family, Deep

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from metavolcanics and/or residuum weathered from metasedimentary rock and/or residuum weathered from granite

Typical profile

H1 - 0 to 3 inches: gravelly loam
H2 - 3 to 46 inches: gravelly clay loam
H3 - 46 to 50 inches: extremely cobbly clay loam
H4 - 50 to 59 inches: weathered bedrock

Properties and qualities

Slope: 20 to 40 percent
Depth to restrictive feature: 39 to 59 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Holland family

Percent of map unit: 10 percent
Hydric soil rating: No

Marpa family, deep

Percent of map unit: 10 percent
Hydric soil rating: No

Marpa family

Percent of map unit: 5 percent
Hydric soil rating: No

hstc—Holland family, deep, 40 to 60 percent slopes.

Map Unit Setting

National map unit symbol: hstc
Elevation: 1,500 to 5,500 feet
Mean annual precipitation: 35 to 70 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Holland family, deep, and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Holland Family, Deep

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from metasedimentary rock and/or
residuum weathered from metavolcanics and/or residuum weathered from
granite

Typical profile

H1 - 0 to 3 inches: gravelly loam
H2 - 3 to 46 inches: gravelly clay loam
H3 - 46 to 50 inches: extremely cobbly clay loam
H4 - 50 to 59 inches: weathered bedrock

Properties and qualities

Slope: 40 to 60 percent
Depth to restrictive feature: 39 to 59 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately
low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Marpa family, deep

Percent of map unit: 5 percent
Hydric soil rating: No

Hugo family

Percent of map unit: 5 percent
Hydric soil rating: No

Ovall family

Percent of map unit: 5 percent
Hydric soil rating: No

Marpa family

Percent of map unit: 5 percent
Hydric soil rating: No

Holland family, moderately deep

Percent of map unit: 5 percent
Hydric soil rating: No

hsw7—Marpa family, 40 to 60 percent slopes.

Map Unit Setting

National map unit symbol: hsw7
Elevation: 1,000 to 5,500 feet
Mean annual precipitation: 40 to 70 inches
Mean annual air temperature: 55 to 59 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Marpa family and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marpa Family

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from metamorphic and sedimentary rock

Typical profile

H1 - 0 to 13 inches: gravelly loam
H2 - 13 to 26 inches: very gravelly clay loam
H3 - 26 to 36 inches: unweathered bedrock

Custom Soil Resource Report

Properties and qualities

Slope: 40 to 60 percent
Depth to restrictive feature: 26 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high
(0.01 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F005XZ018CA - Moderately Deep Gravelly Mesic Mountains
40-60"ppt
Hydric soil rating: No

Minor Components

Neuns family

Percent of map unit: 10 percent
Hydric soil rating: No

Holland family

Percent of map unit: 5 percent
Hydric soil rating: No

Deadwood family

Percent of map unit: 5 percent
Hydric soil rating: No

Rock outcrop, metamorphic

Percent of map unit: 5 percent
Hydric soil rating: No

hswb—Marpa-Goulding families association, 20 to 40 percent slopes.

Map Unit Setting

National map unit symbol: hswb
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 55 to 59 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Marpa family and similar soils: 50 percent
Goulding family and similar soils: 30 percent

Custom Soil Resource Report

Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marpa Family

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from metamorphic and sedimentary rock

Typical profile

H1 - 0 to 13 inches: gravelly loam
H2 - 13 to 26 inches: very gravelly clay loam
H3 - 26 to 36 inches: unweathered bedrock

Properties and qualities

Slope: 20 to 40 percent
Depth to restrictive feature: 26 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high
(0.01 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F005XZ018CA - Moderately Deep Gravelly Mesic Mountains
40-60"ppt
Hydric soil rating: No

Description of Goulding Family

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from metavolcanics and/or residuum weathered from metasedimentary rock

Typical profile

H1 - 0 to 7 inches: very gravelly loam
H2 - 7 to 15 inches: very gravelly loam
H3 - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 20 to 40 percent
Depth to restrictive feature: 15 inches to lithic bedrock
Drainage class: Well drained

Custom Soil Resource Report

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Ecological site: F005XZ014CA - Mesic Mountains <40"ppt

Hydric soil rating: No

Minor Components

Neuns family

Percent of map unit: 10 percent

Hydric soil rating: No

Deadwood family

Percent of map unit: 5 percent

Hydric soil rating: No

Rock outcrop, metamorphic

Percent of map unit: 5 percent

Hydric soil rating: No

hsw—Marpa-holland, deep families complex, 40 to 60 percent slopes.

Map Unit Setting

National map unit symbol: hsw

Elevation: 2,500 to 5,000 feet

Mean annual precipitation: 40 to 70 inches

Mean annual air temperature: 52 to 59 degrees F

Frost-free period: 130 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Marpa family and similar soils: 60 percent

Holland family, deep, and similar soils: 30 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marpa Family

Setting

Landform: Mountains

Landform position (two-dimensional): Backslope

Custom Soil Resource Report

Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from metamorphic and sedimentary rock

Typical profile

H1 - 0 to 13 inches: gravelly loam

H2 - 13 to 26 inches: very gravelly clay loam

H3 - 26 to 36 inches: unweathered bedrock

Properties and qualities

Slope: 40 to 60 percent

Depth to restrictive feature: 26 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high
(0.01 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: F005XZ018CA - Moderately Deep Gravelly Mesic Mountains
40-60"ppt

Hydric soil rating: No

Description of Holland Family, Deep

Setting

Landform: Mountains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Mountainflank

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Residuum weathered from metasedimentary rock and/or
residuum weathered from metavolcanics and/or residuum weathered from
granite

Typical profile

H1 - 0 to 3 inches: gravelly loam

H2 - 3 to 46 inches: gravelly clay loam

H3 - 46 to 50 inches: extremely cobbly clay loam

H4 - 50 to 59 inches: weathered bedrock

Properties and qualities

Slope: 40 to 60 percent

Depth to restrictive feature: 39 to 59 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately
low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Custom Soil Resource Report

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Holland family

Percent of map unit: 3 percent

Hydric soil rating: No

Forbes family

Percent of map unit: 3 percent

Hydric soil rating: No

Neuns family

Percent of map unit: 3 percent

Hydric soil rating: No

Hugo family

Percent of map unit: 1 percent

Hydric soil rating: No

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Custom Soil Resource Report

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M e m o r a n d u m

To: Mike Battles
Local Development Review Coordinator
Caltrans District 2
1657 Riverside Drive
Redding, CA 96001

Date: 2/6/2024

Telephone: (916) 653-7772

Website: www.fire.ca.gov

From: Len Nielson
Staff Chief of Prescribed Fire and Environmental Protection

California Department of Forestry and Fire Protection (CAL FIRE)

Subject: Shasta County Wildfire Mitigation/Haz Fuels Reduction Project #4382

This memorandum is in response to your comments made, via email on 1/17/2024 regarding the Initial Study Mitigated Negative Declaration titled Shasta County Wildfire Mitigation/Haz Fuels Reduction Project (5293). Below are your comments.

- 1) If there is any work taking place within the Caltrans Right-of-Way, an Encroachment Permit is required. This may include access points if the access is not already permitted.
- 2) A request to have Attachment "A" of the MND sent to Caltrans was submitted via email to Calfire, but this Attachment was never sent for review. Please submit Attachment A to the Caltrans District 2 Local Development Review Coordinator so that it can be distributed to Caltrans functional units for review.
- 3) The project proponent should protect Caltrans assets, including but not limited to, highway culverts and highway water channels.
- 4) The IS/MND report states that trees cut down during work will be sold and hauled off-site. The report also states that the project will produce a large quantity of biomass, some of which is to be hauled to off-site biomass facilities. These activities will create a number of transport vehicles hauling off this material, that will have to access the State Highway System. If hauling of materials from the site requires direct access to the State Highway System, the project proponent shall conduct a safety/operational analysis of the stopping sight distance according to Section 201.3 of the California Highway Design Manual at the access point. If hauling in excess of 20 trucks a day from any site, the project proponent shall conduct a safety/operation analysis at the intersection where trucks enter the State Highway System. Alternatively, the project proponent may propose an approvable alternative process.

The responses to your comments are as follows and each answer correlates to the numbered question above:

- 1) No work can be conducted on government owned parcels or easements. Only existing roads with existing encroachment permits are to be utilized in the project.
- 2) The document will be resubmitted, 2/6/2024, in the State Clearinghouse with the appropriate attachments for full transparency. Attachment A are the maps of the project area and will be available with resubmittal.
- 3) No work can be or will be conducted on government owned parcels or easements. Only existing roads with existing encroachment permits are to be utilized in the project. Care will be taken not to damage Caltrans infrastructure. In the event the contractor damages any of CALTRANS infrastructure, the contractor will repair any damage with the instruction of CALTRANS.
- 4) The Project will not produce more than 20 trucks per day from any individual parcel or roadway. Any tree harvesting will be conducted under a harvest document and all information pertaining to that effort will be detailed in that document. The mention of potential tree harvesting was mentioned in the ISMND for full disclosure.

This memorandum will be emailed to the submitter and filed in the State Clearinghouse for another 30-day review period.