ENVIRONMENTAL ASSESSMENT FOR WILDLAND FIRE MANAGEMENT ACTIONS AT NAVAL BASE CORONADO, REMOTE TRAINING SITE WARNER SPRINGS

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ENVIRONMENTAL ASSESSMENT FOR WILDLAND FIRE MANAGEMENT ACTIONS AT REMOTE TRAINING SITE WARNER SPRINGS

Lead Agency: United States Department of the Navy
Title of the Proposed Action: Wildland Fire Management Actions at Remote Training Site Warner Springs
Designation: Environmental Assessment

Abstract

The Remote Training Site Warner Springs (RTSWS) is located approximately 45 miles (mi.) northeast of San Diego and located on land owned by the U.S. Forestry Service, the U.S. Department of the Interior, Bureau of Land Management, and the Vista Irrigation District, a local water utility. The lands within these various jurisdictions are used by the U.S. Department of the Navy (Navy) and U.S. Marine Corps for training purposes, including the Survival, Evasion, Resistance, and Escape field school; and training by Naval Special Warfare, 1st Marine Special Operations Battalion, Amphibious Construction Battalion One Seabees, and other military units.

The purpose of the Proposed Action is to implement projects to reduce fuel load, restore habitat, and prevent erosion, and the Proposed Action is needed to sustain mission functions at RTSWS to meet ongoing Navy requirements. Treatments to reduce wildland fuels are primarily needed to protect people and property, and to prevent loss of military training opportunities that would result from a large fire. Vegetation treatment to protect occupied structures and high-value facilities will improve fire resistance and survivability of buildings, utilities, and other infrastructure. Additionally, restoration efforts will ensure post-fire resource recovery and prevent high-value natural resources from being lost.

The Proposed Action and the No Action Alternative were analyzed in the EA. Under the Proposed Action, the Navy would: (1) design and maintain vegetation treatment (defense zones) around designated developed areas, (2) maintain treatment zone along the entry road into the SERE compound, (3) maintain the fuelbreak on the Navy exclusive use area that interfaces with the Stone Ridge – Warner Springs Estates, (4) conduct stabilization of burned areas to prevent erosion, (5) evaluate probability of success for rehabilitation and restoration efforts to meet current and anticipated environmental conditions, and (6) implement fire prevention and escaped fire measures. Under the No Action Alternative, only fire prevention and escaped fire measures would be conducted.

Resources that have the potential to be impacted by the Proposed Action are described and analyzed in this EA and include topography, geology, and soils; water resources; biological resources; noise; and public health and safety. The results of the analysis conclude that no significant impacts would occur to any resource by implementing the Proposed Action.

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ACRONYMS AND ABBREVIATIONS

ac.	acre(s)
ACB-1	Amphibious Construction Battalion One
BA	Biological Assessment
BLM	Bureau of Land Management
CAA	Clean Air Act
CALFIRE	California Department of Forestry and Fire Protection
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
cm	centimeter(s)
CNDDB	California National Diversity Database
CNF	Cleveland National Forest
CNO	Chief of Naval Operations
CO_2	Carbon Dioxide
CRPM	Cultural (Heritage) Resources Program Manager
CWA	Clean Water Act
dB	Decibel(s)
dBA	A-weighted Decibel(s)
DNL	Day-Night Level
DoD	Department of Defense
DODI	Department of Defense Instruction
DPS	Distinct Population Segment
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
EO	Executive Order
FSH	Forest Service Handbook
FMP	Fire Management Plan
FONSI	Finding of No Significant Impact
FR	Federal Register
ft.	foot/feet
GPS	Global Positioning System
ha	hectare(s)
in.	inch(es)
INRMP	Integrated Natural Resources Management Plan
km	kilometer(s)
km^2	square kilometer(s)
Leq	Sound level equivalent
LZ	Landing Zone
mi	mile(s)
$mi.^2$	square mile(s)
MBTA	Migratory Bird Treaty Act
MEF	Marine Expeditionary Force
MSOB	Marine Special Operations Battalion
NAAQS	National Ambient Air Quality Standards
NAVFAC SW	Naval Facilities Southwest
Navy	United States Department of the Navy
NBC	Naval Base Coronado
NEPA	National Environmental Policy Act
NFDRS	National Fire Danger Rating System
NHPA	National Historic Preservation Act
NSW	Naval Special Warfare
OEIS	Overseas EIS
OHV	Off Highway Vehicle
OIC	Officer in Charge
OPNAVINST	Office of the Chief of Naval Operations Instruction
ROW	Right-of-Way
RTSWS	Remote Training Site Warner Springs
SAAQS	State Ambient Air Quality Standards
SEL	Sound Exposure Level
SERE	Survival, Evasion, Resistance, and Escape
SIP	State Implementation Plan
SOF	Special Operations Forces
SR	State Route
SUP	Special Use Permit
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDI	U.S. Department of the Interior
USEPA	U.S. Environmental Protection Agency
USFS	United States Forest Service
USFWS	U.S. Fish and Wildlife Service
VID	Vista Irrigation District

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1 PURPOSE OF AND NEED FOR PROPOSED ACTION

1.1 INTRODUCTION AND BACKGROUND

The United States (U.S.) Department of the Navy (Navy) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 and other applicable laws and regulations. It presents an analysis of the potential environmental impacts of a Proposed Action pertaining to the actions associated with implementing projects to reduce fuel load, restore habitat, and prevent erosion to sustain mission functions at Remote Training Site Warner Springs (RTSWS) to meet ongoing Navy requirements. To assist in achieving the objectives of the Naval Base Coronado (NBC) Integrated Natural Resource Management Plan (INRMP), the Navy evaluated the following values at risk from wildfire: human life, RTSWS facilities, infrastructure, military training, natural resources, and cultural resources. From these values at risk, the following goals and management activities to achieve these ends were identified:

- Reduce wildfire potential, and protect human life in the event of a fire.
- Protect Navy assets, including military training integrity and capacity, through pre-emptive strategies addressing problem fire scenarios.
- Ensure ecosystem sustainability and health, including desired natural plant community structure and native biodiversity, and preservation of cultural resources by managing the adverse effects of wildland fire in concert with landowner goals and objectives.
- Cultivate and strengthen relationships with landowners, the local community, cooperators, and the public for more effective fire protection and achievement of fire management goals and objectives.

The actions covered in this EA include those that currently take place on U.S. Forest Service (USFS) lands and Vista Irrigation District (VID) Lands, and future wildland fire management activities that are proposed to occur on USFS Cleveland National Forest (CNF), VID, and Bureau of Land Management (BLM) lands, which may impact threatened or endangered biological resources. Table 1-1 presents those actions that are analyzed in this EA.

Table 1-1: Fire Management Activity Descriptions

Summary Name	Description and Activity	Location within RTSWS
Vegetation Treatment to Protect Occupied Structures and High-Value Facilities	Design and maintain vegetation treatment (defense zones) around all developed areas.	SERE Compound/ Prisoner of War Compound
	Maintain treatment zone along entry road into SERE Compound.	Entry Road
Stone Ridge Fuelbreak	Maintain the fuelbreak on the Navy exclusive use area that interfaces with Stone Ridge.	Stone Ridge
Implement post-fire erosion controls	Conduct stabilization of burned areas to prevent erosion.	Fire Location
Perform restoration of burned sites at RTSWS	Evaluate probability of success for rehabilitation and restoration efforts to meet current and anticipated environmental conditions.	Fire Location

Notes: RTSWS = Remote Training Site Warner Springs; SERE = Survival, Evasion, Resistance, and Escape

1.2 Location and Description of Remote Training Site Warner Springs

The RTSWS is located approximately 45 miles (mi.) (72 kilometers [km]) northeast of San Diego and occupies 12,544 acres (ac.) (5,076 hectares [ha]) within the extreme upper San Luis Rey River drainage northwest of Warner Springs, in northern San Diego County, California (U.S. Department of the Navy 2010) (Figure 1-1). It is located on land owned by the USFS, the U.S. Department of the Interior (USDI) BLM, and the VID, a local water utility. The lands within these various jurisdictions are used by the Navy and U.S. Marine Corps for training purposes, including the Survival, Evasion, Resistance, and Escape (SERE) field school; and training by Naval Special Warfare (NSW), 1st Marine Special Operations Battalion (MSOB), Amphibious Construction Battalion One (ACB-1) Seabees, and other military units. The primary Navy tenant and user is the SERE School West.

The three non-Navy jurisdictions—the USFS, the BLM, and the VID—have different but overlapping land use and planning frameworks. Under a Special Use Permit (SUP) between the USFS and the Navy, there are 6,430 ac. (2,602 ha) of land in the CNF that are allowed for use by the Navy and U.S. Marine Corps for training purposes. Sixty ac. (24 ha) of the total are reserved for exclusive use by the Navy; the remaining 6,370 ac. (2,578 ha) are Non-Exclusive Use. The Navy has a Non-Exclusive Use Right-of-Way (ROW) grant from the BLM on 609 ac. (247 ha) of land on the extreme northeastern slope of the Palomar Divide. VID and the Navy have land use agreements for approximately 5,505 ac. (2,228 ha) adjacent to the USFS lands, generally used for SERE field training. Of this acreage, the Navy has an exclusive use lease for 1,198 ac. east of State Route (SR) 79 for military training and a non-exclusive license agreement for 4,307 ac. west of SR 79 that is co-used under VID license agreements for grazing and hunting concessions (Table 1-2, Figure 1-1).

Table 1-2: Remote Training Site Warner Springs Land Ownership, Acreage, and Use Agreements

Land Ownership	Acreage	Use Agreements
USFS–CNF	60 ac. (24 ha)	Special Use Permit: Permit Area 1–Exclusive Use
	6370 ac. (2,578 ha)	Special Use Permit: Permit Area 2–Non-Exclusive Use
BLM	609 ac. (247 ha)	Right Of Way Grant: Non-Exclusive Use
VID	1,198 ac. (485 ha)	Lease: Non-Exclusive Use
	4,307 ac. (1,743 ha)	License agreement
Total RTSWS Training Area	**12,544 acres (5,076 ha)**	**Exclusive and Non-Exclusive Use**

Notes: ac. = acres, BLM = Bureau of Land Management, ha = hectares, RTSWS = Remote Training Site Warner Springs, USFS-CNF = United States Forest Service-Cleveland National Forest, VID = Vista Irrigation District

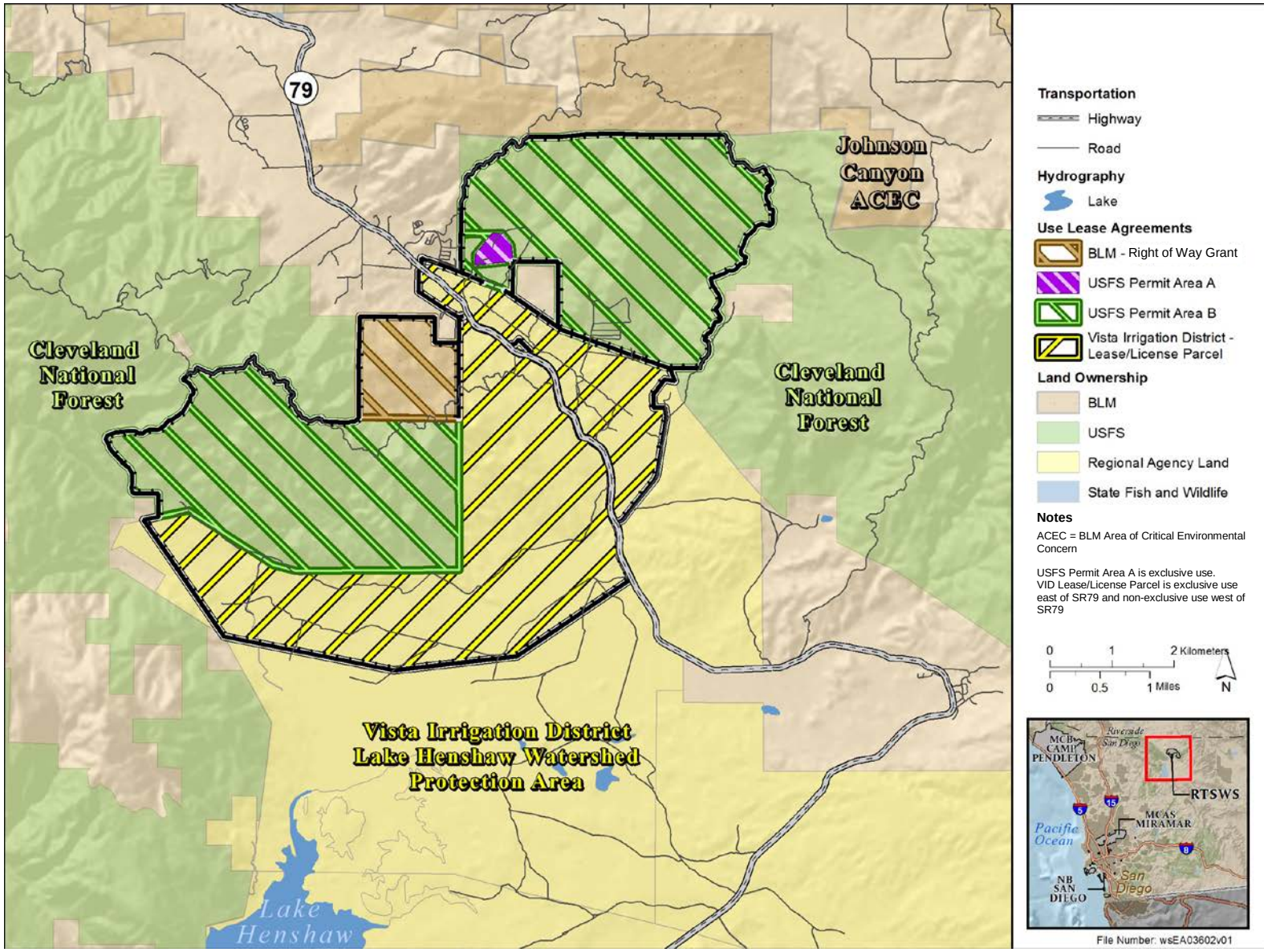

Figure 1-1: Regional Map of the Remote Training Site Warner Springs

1.3 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to implement projects to reduce fuel load, restore habitat, and prevent erosion, and is needed to sustain mission functions at RTSWS to meet ongoing Navy requirements. Treatments to reduce wildland fuels are primarily needed to protect people and property, and to prevent loss of military training opportunities that would result from a large fire. Vegetation treatment to protect occupied structures and high-value facilities will improve fire resistance and survivability of buildings, utilities, and other infrastructure. Additionally, restoration efforts will ensure post-natural resource recovery and prevent high-value natural resources from being lost.

1.4 Decision to be Made

The decision to be made as a result of the analysis in this EA is whether an Environmental Impact Statement (EIS) needs to be prepared. An EIS would need to be prepared if it is determined that the Proposed Action would have significant impacts on the human or natural environment. Should an EIS be deemed unnecessary, the Proposed Action from this EA would be selected for implementation and would be documented in a Finding of No Significant Impact (FONSI).

1.5 Scope of the Environmental Analysis

In this EA, the Navy assesses the implementation of wildfire management activities conducted at RTSWS that could potentially impact the human and natural environment. The range of alternatives includes the No Action Alternative and one Action Alternative. In this EA, the Navy analyzes direct, indirect, cumulative, short-term, long-term, irreversible, and irretrievable impacts. Resources evaluated in detail include topography, geology, and soils; water resources; biological resources; noise; and public health and safety.

Council on Environmental Quality (CEQ) regulations require an Environmental Assessment (EA) to identify and evaluate all the relevant issues associated with a proposed action. The following environmental issues were evaluated in an initial screening process and found to be not applicable to the Proposed Action and were therefore eliminated from detailed analysis.

1.5.1 Land Use, Recreation, and Utilities

Implementation of the Proposed Action would not adversely affect land use as there would be no land use category changes as a result of the Proposed Action. The Proposed Action would not introduce any new land use controls, and public access will remain unchanged. The Proposed Action will not require water, electricity, or sewage systems beyond existing capacities and will not affect public services. No new facilities are planned. Accordingly, the Navy has omitted further detailed examination of land use, recreation, or utilities in this EA.

1.5.2 Air Quality

All of the assessed sites are within the National/State Ambient Air Quality Standards (NAAQS/SAAQS) attainment area. The natural resources plans and projects would introduce no new sources of mobile or stationary emissions that could change attainment status.

1.5.3 Cultural

The Proposed Action would not result in any negative impacts on or alter the cultural resources of surrounding areas. Additionally, the area of proposed actions (i.e. surrounding existing structures and

fuelbreaks/roads) has been disturbed over the years and has a low probability of containing undisturbed archaeological material. Therefore, this resource area was not carried forward for detailed analysis.

1.5.4 TRANSPORTATION

Transportation of students and instructors to the RTSWS currently represents less than 1 percent of the total average monthly peak traffic volume along SR-79. The addition of additional vehicle trips associated with implementation of the Proposed Action would not substantially increase this volume. Thus, impacts of the Proposed Action on traffic and circulation are not carried forward for detailed analysis.

1.5.5 SOCIOECONOMICS/ENVIRONMENTAL JUSTICE

Implementation of the Proposed Action would not adversely affect socioeconomic resources and would comply with Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority and Low-income Populations; and EO 13045, Protection of Children from Environmental Health Risks and Safety Risks. No disproportionate impacts to schools, children, or minority populations would occur, and the scale of the alternatives would result in only minor effects to the economy. No minority or low-income communities are known to exist in the vicinity of the Project Area, and no such groups would be disproportionately affected. Accordingly, the Navy eliminated further detailed examination of socioeconomics and environmental justice in this EA.

1.6 AGENCY COORDINATION

The Navy is the action proponent and the lead agency for preparation of the EA. The Navy is coordinating with the U.S. Fish and Wildlife Service (USFWS) in support of this EA. The U.S. Navy is requesting an amendment to the Remote Training Site Warner Springs (RTSWS) Biological Opinion (BO) (FWS-SDG-09B0277-09F0806).

1.7 PUBLIC INVOLVEMENT

NEPA requirements help ensure that environmental information is made available to the public during the decision-making process and before actions are taken. The premise of NEPA is that the quality of federal decisions will be enhanced if federal proponents of an action provide information to state and local governments and the public and involve them in the planning process. The public involvement process augments the Navy's opportunity to cooperate with and consider state and local views in implementing a federal proposal.

A Notice of Availability announcing the availability of the Draft EA was published in a local newspaper (*San Diego Union-Tribune*) to initiate a 15-day public review period. The Notice of Availability solicited comments on the Draft EA and involved the public in the decision-making process. The Draft EA was also made available on the Navy Region Southwest website (http://www.piersystem.com) and at the Ramona and Borrego Springs Libraries.

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2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVE

CEQ Regulations for Implementing the Procedural Provisions of NEPA establish a number of policies for federal agencies, including "using the NEPA process to identify and assess the reasonable alternatives to the Proposed Action that will avoid or minimize adverse effects of these actions on the quality of the human environment" (40 Code of Federal Regulations [C.F.R.] 1500.2(e)).

This EA carries forward for detailed analysis only those alternatives that would meet the purpose of and need for the project, as defined in Chapter 1 (Purpose of and Need for the Proposed Action) and that meet the requirements outlined in a set of criteria defined below in Section 2.2 (Alternative Development and Selection Criteria). This chapter provides a detailed description of the Proposed Action, and Section 2.2 (Alternative Development and Selection Criteria) describes alternatives to the Proposed Action.

2.1 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is to implement wildland fire management actions and is needed to sustain mission functions at RTSWS to meet ongoing Navy requirements. The Proposed Action consists of:

- Design and maintain vegetation treatment (defense zones) around designated developed areas (Figure 2-1).
- Maintain roadside vegetation treatment on SERE compound entry road (Figure 2-1).
- Maintain Stone Ridge Cooperative Fuelbreak (Figure 2-1).
- Implement post-fire erosion controls and perform restoration of burned sites at RTSWS.
- Continue to implement fire prevention measures.

2.1.1 DESIGN AND MAINTAIN VEGETATION TREATMENT (DEFENSE ZONES) AROUND DESIGNATED DEVELOPED AREAS

Vegetation treatments to reduce wildland fuels are needed to protect people and property, and to prevent loss of military training opportunities that would result from a large fire. Vegetation treatment (defense zone) to protect occupied structures and high-value facilities will improve fire resistance and survivability of buildings, utilities, and other infrastructure. The bulleted list below represents future vegetation management strategies. NEPA analysis is being conducted through this document and the final EA will include the Section 7 consultation documentation.

Vegetation treatments in the central compound and the prisoner of war compound of RTSWS within the USFS Exclusive Permit Area A will be performed to create defense zone around occupied or potentially occupied buildings and high-value facilities in this area (except on a case-by-case basis when specifically exempted by NBC Natural Resources Manager). Vegetation treatment for defense zones around these structures are based on site-specific conditions, and final vegetation treatment will be coordinated with the landowners and California Department of Forestry and Fire (CALFIRE) before the Navy takes any action. While defense zone treatments will vary based on site-specific conditions, the analysis of this implementation action will assume all requirements are met for all sites.

In general, a 100-foot (ft.) vegetationmanagement zone has been designated around occupied and high value structures, but cannot cause additional erosion issues. Zone A comprises the first 30 ft. out from the structures. Zone B extends from the edge of Zone A out to 100 ft. as measured horizontally from all sides of each structure, but cannot extend into open space. Figure 2-2 shows the two zones surrounding assets within the SERE compound and the prisoner of war compound. Figure 2-2 also presents the

defense zone area calculations (note that developed surface area has been subtracted from defense zone acreags).

The following are requirements for both Zone A and B:

- Reduce continuous ground fuels by removing dead or dry biomass and leaving "wildlife" logs (e.g., Quino checkerspot butterfly larvae may be under logs). The NBC Natural Resources Manager will be consulted prior to work commencing.
- Perform weed control annually to prevent the accumulation of thatch from invasive non-native plants.
- Vegetation "islands" (i.e., irregularly grouped plants) can be created by creating horizontal and vertical spacing between plants to interrupt continuous ground fuels. Leave the root structure intact. Do not completely remove all vegetation and leave the ground bare.
- Where re-vegetation efforts are required, the re-vegetation plant palette will be approved by the NBC Natural Resources Manager. It should consist of native plants that have a low probability of contributing to fuel hazards (e.g., through providing fuel ladders) while supporting habitat for federally listed plants and animals and blending with adjacent native vegetation communities.
- All vegetation treatments during bird breeding season (15 February–15 September) must utilize nest clearance surveys to comply with the Migratory Bird Treaty Act (MBTA).
- Quino checkerspot butterfly is a Federally endangered species present within RTSWS. Work must be conducted outside of Quino checkerspot butterfly flight season. Work shall be restricted and will only occur from 15 August to 31 January using methods that will exert minimal ground disturbance.
- Native vegetation (fuel) treatments will not occur in riparian areas.
- Prior to commencing any potentially ground-disturbing work, Installation Biologists will review proposed sites and details with the responsible agency Cultural (Heritage) Resources Program Manager (CRPM) to avoid direct effects to cultural resources.
- Where necessary to stabilize the soil and prevent erosion, grass and other vegetation need not be removed; other measures can be considered to reduce fuel continuity (e.g., trimming or creating islands of vegetation).
- On a case-by-case basis, trim shrubs up away from the ground to create space between shrubs and any nearby trees such that flames could not spread as easily from one tree to the other.
- Perform year-round maintenance, inspection, and enforcement of all vegetation treatment (defense zones) and vegetation treatments.

Additional Zone A (0–30 ft.) requirements are:

- Remove all dead wood from trees adjacent to or overhanging a building.
- To reduce the risk of a vertical fire ladder where continuous ground fuels are adjacent to the tree, remove limbs from bottom third of tree, up to a maximum of 6 ft. above the ground. Remove all limbs within 10-ft. radius of a chimney stack opening.
- Remove leaves, needles, or other dead vegetative growth from all roofs and gutters and under trees.

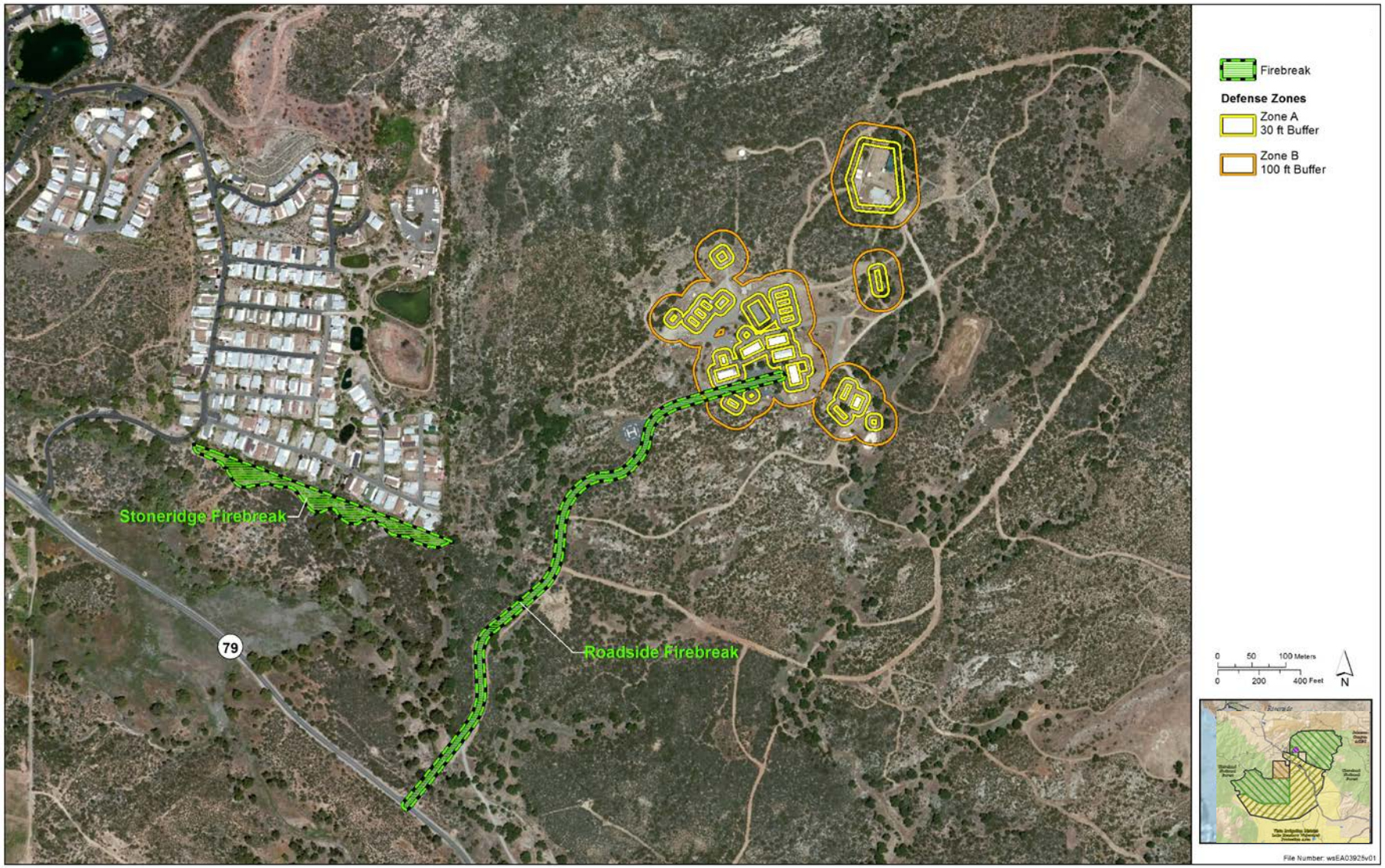

Figure 2-1: Vegetation Treatment Projects

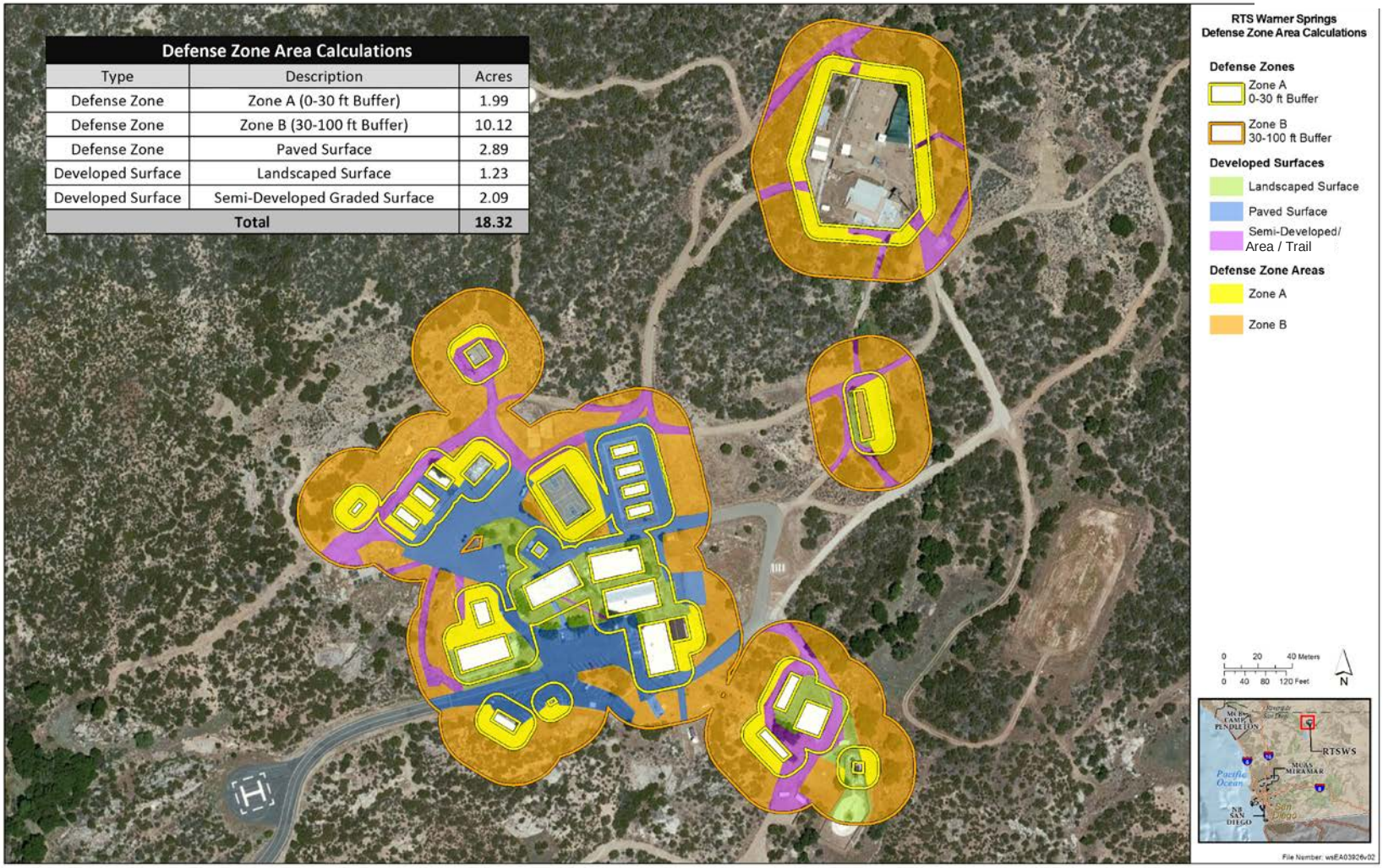

Figure 2-2: Remote Training Site Warner Springs Vegetation Treatment (Defense Zone)

- Locate firewood, propane tanks, and combustible material a minimum of 30 ft. from all structures.
- Construct any future structures (e.g., windbreaks, decks, and storage sheds) with non-combustible materials. Wood fencing should not be used.
- Use existing non-flammable paved parking/storage lots, patios, driveways, walkways, boulders, rock, and gravel to break up fuel continuity.

2.1.2 Maintain Roadside Vegetation Treatment on SERE Compound Entry Road

- Roadside vegetation treatments will be maintained within the current footprint (10–15 ft. on both sides of the RTSWS entry road from the SR 79 gate to the compound).
- The helipad will be used for emergency vehicle turnaround.
- Year-round maintenance will be performed on all roadside vegetation treatments and fuel modification work.
- Inspection and enforcement of these zones will be by NBC in consultation with landowners (USFS).

2.1.3 Stone Ridge Cooperative Fuelbreak

Under the Proposed Action, the fuelbreak on the Navy exclusive use area that interfaces with Stone Ridge will be maintained on an annual basis. USFS best practices will be employed for fuelbreak treatment and maintenance (United States Forest Service 2010). The vegetation will be treated through vegetation removal, or thinning. Site-specific conditions would determine design, but treated areas would range from 100 to 300 ft. in width.

2.1.4 Implement Post-Fire Erosion Controls and Perform Restoration of Burned Sites at RTSWS

Following a fire, burned areas will be assessed to determine suitable and effective stabilization and rehabilitation needs to meet current and anticipated environmental conditions. Stabilization of burned areas would be conducted to prevent erosion, and could include bio-engineered bank stabilization techniques, gravel, fabrics, riprap, and recycled concrete and pavement that are environmentally safe and compatible with the site. Where bare ground is necessary, other erosion control methods would be implemented (e.g., check dams, wind breaks, diversions). Other examples of work include installing trash racks above culvert inlets to keep them from plugging up during winter storms, mulching using straw bales, and sand bagging. Evaluation of the need for habitat restoration will be conducted by the landowners and the Navy.

Post-fire erosion control through seeding or fertilization will not be conducted as a general practice, but only with proper justification in a written rehabilitation plan that contains success criteria. Reestablishment of vegetative cover after a fire is the most effective form of soil stabilization. Generally, seeding of burned areas is not recommended due to concerns related to non-natives interfering with the establishment of the native plant species. In addition, after a cool fire where plenty of mulch is left over, there may be more than adequate natural seed supply left in the ground and many chaparral species are vigorous resprouters following a fire. However, there are several factors that influence whether an area should be allowed to revegetate naturally or be artificially aided. Evaluation of the need to revegetate will be conducted by the landowners and the Navy for RTSWS and will be completed within the first few weeks of a fire, and soon enough before winter rains, so that necessary arrangements can be made.

The evaluation will consider:

- Estimated desired vegetation cover and actual vegetation cover post-fire. Revegetation would be considered if cover remains less than 30 percent.
- Invasive plant condition. Revegetation would be considered if cover of weeds is 20–80 percent.
- Steepness of slope, inherent erodibility of soil, and proximity to drainages.
- Threat to rare plant populations.
- Other uses of the site (e.g., heavily used by special status species, recreationists, or grazed by livestock).
- Rehabilitation of sites affected by suppression so that there is no permanent loss of cultural resource values.
- Effects monitoring by responsible agency CRPM.

Site revegetation with native plant species and weed control activities would be overseen by a qualified biological monitor. Any activity that could potentially impact listed species would be monitored by a qualified biologist. Revegetation efforts would include plants that attract pollinators, and include pollinator-friendly plants with native species contained on the Naval Facilities Southwest (NAVFAC SW) recommended plant list. Watering, if determined to be necessary, would utilize potable or reclaimed sources that have been approved for irrigation and be applied by hand, hose, sprinkler, drip line, or soaker line. The use of herbicides, insecticides, and pesticides will be restricted wherever possible. If necessary, the following restrictions will be placed on their use:

- All herbicides will be used in accordance with the instruction label and DoD regulations.
- Treatment within or adjacent to restoration areas will use appropriately labeled products only.
- Herbicides will not be sprayed when wind velocities at the site exceed 5 miles per hour (mph) (8 kilometers per hour [kph]), or in foggy or rainy conditions when ground moisture becomes excessive. Non-target species, especially native species, will be avoided during spraying. A biological monitor familiar with the site and the natural resources present will train and direct herbicide applicators. The biological monitor will directly supervise herbicide applications within sensitive habitats.

2.1.5 Fire Prevention and Escaped Fire Measures

2.1.5.1 Fire Prevention Measures

- The Navy conducts an annual meeting between BLM, USFS, VID, Navy staff, CALFIRE and the USFS, CNF Palomar Ranger District to review/develop/update fire prevention and control plans and procedures.
- The USFS's Emergency Command Center is contacted by the Duty Petty Officer on the SERE Quarterdeck, the training Unit Officer in Charge (OIC), or their designated authority prior to a training event to ascertain the National Fire Danger Rating System (NFDRS) fire rating for the day for the project site, including those portions of VID, BLM, and USFS property. Once information is obtained, it is relayed to the OIC and Assistant OIC, who provide approval for the use of pyrotechnic devices, blank-firing weapons, or cooking/warming fires at the beginning of each training day, based on the precautions provided by the NFDRS (Table 2-1). Instructors are contacted in the field if conditions change during the course of the day and require this approval to be rescinded.
- All instructors, unit personnel, and students are briefed on fire prevention measures, reporting procedures, fire danger levels, and fire safety. The RTSWS Training Area User Manual, Naval

Base Coronado Instruction (NBCINST) 3550.1, stipulates fire mitigation measures to be used during training. This Navy instruction is the range regulation and shall be complied with by all range users.

- All fire building and the use of blank-firing weapons and pyrotechnics are under the supervision of a field instructor. The instructor notifies the SERE Quarterdeck when a fire is to be started or pyrotechnics and blank-firing weapons are to be used and reports when all fires are extinguished or training activities have ceased.
- Wood fires for demonstration cooking and warming are built only in designated fire rings/sites.
- All vehicular units in the field have fire suppression equipment available while training in the event an unplanned ignition occurs. Suppression equipment consists of one backpack type water pump (approximate 5-gallon capacity), shovels, fire extinguisher (chemical carbon dioxide [CO_2]), bucket, and radio.
- Flares/pencil flares are only used in pre-designated cleared sandy/dirt areas. The pencil flare has a maximum 15-second burn time and burns out before it hits the ground. Mk124 Day and Night flares have a 20-second burn time. The Day and Night flares remain in the dirt until they cool off and are then disposed of or saved for reuse at a later time.
- Smokes are only to be used in pre-designated training sites and landing zones. The smoke has a concentrated smoke burn of approximately 8 seconds and is placed in a container of water after use.

Table 2-1: Fire Danger Ratings and Precautions

Fire Danger Rating (Hazard)	Caution To Be Exercised	Necessary Precautions
0-30 (Low)	Use normal caution.	• Blank 5.56 mm or 7.62 mm rounds, pencil flares, day/night flares, simulated grenades, and smoke grenades may be used with care. • Wood fire ignition and smoking permitted only in designated areas. • All training unit vehicles will have fire suppression equipment on board • At all times, smoking is only authorized in the areas designated by the RTSWS Quarter Deck.
31-40 (Moderate)	Use normal caution. Fires will start easily.	• Blank 5.56 mm or 7.62 mm rounds, pencil flares, day/night flares, simulated grenades, and smoke grenades may be used with care. • Wood fire ignition and smoking permitted only in designated areas. • All training unit vehicles will have fire suppression equipment on board
41-60 (High)	Use extra caution. Fires will start very easily.	• Blank 5.56 mm or 7.62 mm rounds permitted in training areas. • Use of pencil flares, day/night flares, simulated grenades, smoke grenades, heat or flame-producing devices, and wood fires within training areas to be limited to appropriately cleared areas with fire suppression equipment and supplies onsite • Training commands should curtail use of heat or flaming producing training devices and wood fires under Red Flag conditions (humidity can be <15%, sustained winds of 25 mph and/or frequent gusts of 35 mph). • All training unit vehicles will have fire suppression equipment on board

Table 2-2: Fire Danger Ratings and Precautions (continued)

Fire Danger Rating (Hazard)	Caution To Be Exercised	Necessary Precautions
61-80 (Very High)	Use extreme caution. Fires are very hard to control.	• Blank fire will only be permitted under calm, cool, humid conditions and in coordination with RTSWS Quarterdeck. • Use of pencil flares, day/night flares, simulated grenades, smoke grenades, heat or flame-producing devices, and wood fires within training areas to be limited to cleared areas under calm, cool, humid conditions with fire suppression equipment and supplies onsite and in close coordination with RTSWS Quarter Deck. Unless essential, training commands should curtail use of heat or flame-producing training devices and wood fires under Red Flag conditions (humidity can be <15%, sustained winds of 25 mph and/or frequent gusts of 35 mph) and only when fire suppression equipment and supplies are onsite and in close coordination with RTSWS Quarter Deck. • All training unit vehicles will have fire suppression equipment on board
81 and Higher (Extreme)	Flash condition. **Fires started are practically impossible to extinguish and usually continue until conditions improve.**	• Use of any blanks, pencil flares, day/night flares, simulated grenades, smoke grenades, heat or flame-producing devices, or wood fires within training areas is prohibited.

- All ammunition storage is in compliance with Navy, federal, and state regulations. A Ready Service Locker (RSL) is only available for SERE West training munitions. All other training units must coordinate training ordnance transport, storage, and use with the Area Coordinator.
- All equipment used in the wildland environment will be equipped with spark arresters. Heavy equipment that is diesel and turbocharged is exempt from this requirement. All vehicles (for example, dump trucks) that are licensed and otherwise registered for highway travel are also exempt from the spark arrester.
- Equipment service areas, parking areas, and petroleum and oil storage areas shall be cleared of all flammable material for a radius of at least 50 feet unless otherwise specified by local administrative unit.
- Smoking is only authorized in the areas designated by the RTSWS Quarter Deck. Under no circumstances shall smoking be permitted during fire season while employees are operating light or heavy equipment, including the operation of tractors, graders, backhoes or other similar equipment, or while walking or working in grass and woodlands.
- Welding, cutting, and grinding “Hot” Permits will be required and a copy must be in possession of each person welding, cutting, or grinding.
- Welding, cutting, or grinding shall be done in areas cleared of all flammable vegetation and materials, the area having a minimum radius of 15 feet measured from place of welding or cutting.
- One shovel and one type water pump (approximate 5-gallon capacity) will accompany each welder and be ready for use in the immediate area during any welding or cutting operations.
- A watchman must remain in the area for one (1) hour after welding or cutting has been completed.

- No welding or cutting will be allowed when wind speed exceeds 15 mph, or the NFDR Level is Very High for the project area. If welding or cutting must be done when the above restrictions are in effect, prior approval from the District Ranger or their representative must be obtained.
- Welding shields must be used to prevent airborne sparks from reaching flammable materials during all welding and cutting operations.
- All oily rags and used oil filters shall be removed from all lands. No glass bottles and jugs shall be used in the field.
- No burning is allowed.
- Training commands or range users are to report trespassers to RTSWS Quarterdeck (if available), NBC Command Duty Officer (CDO), and landowners.
- Training on RTSWS involves the use of designated unprepared LZs.

2.1.5.2 Unplanned Ignitions and Escaped Fire Measures

- If any unplanned ignition occurs, the unit in the field suspends all training activity and takes immediate action to extinguish the fire. Unless determined to be unsafe, the unit remains on station and attempts to control/extinguish the fire until determined to be extinguished by the On Scene Commander. All unplanned ignition will be immediately reported by radio to the SERE Quarterdeck. The Training Unit OIC will stop training at the facility/area where the incident occurs and immediately assess the situation to ensure all personnel are safe and accounted for. The Training Unit OIC will immediately call 911 to report a fire. Following 911 notification, the Training Unit OIC will contact the RTSWS Quarterdeck and, if available, the Command Duty Officer, and notify the appropriate chain of command and provide all information. The scene of the incident, damage, accident, or fire source is to be secured.

- When reporting a fire, the OIC will provide the following information:
    - Caller's Name
    - Call back telephone number
    - Location (Township and Range or global positioning system coordinates)
    - Fire Information (size; estimate of rate of spread; wind/weather conditions, what is burning/type of fire?).

- Mechanical equipment will not be brought into off-road areas containing archeological sites. No fire lines will be cut during suppression action without direct oversight by the responsible agency CRPM, or a qualified archeologist certified by the CRPM. Use of existing helipad(s), established LZs, or paved or graveled roads for helicopter landings is preferred over off-road use. Off-road use of fire apparatus should be specifically agreed to in each annual pre-season meeting by the RTSWS Facility Manager and/or advisor with landowner.

2.2 Alternative Development and Selection Criteria

Alternatives to the Proposed Action must be considered in accordance with NEPA and CEQ regulations for implementing NEPA. In accordance with CEQ regulations found at 40 C.F.R. §1502.14, each alternative must be feasible, reasonable, and reasonably foreseeable. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint. The Navy has developed criteria for assessing whether a possible alternative meets the purpose of and need for the Proposed Action. Any alternative considered for future analysis should support or employ the following:

1. Provision of vegetation management around installation assets to protect from wildfire damage;

2. Protection of residents and private assets on properties adjacent to RTSWS from fire resulting from Navy activities;
3. Minimization of impacts to resources;
4. Prevention of fire-related delays or disruptions in current installation mission or function.

CEQ's regulations require that an EA include a brief discussion of alternatives to a proposed action that involves unresolved conflicts concerning alternative uses of available resources (40 C.F.R. 1508.9(b)). EAs that address proposals where there is heightened technical controversy surrounding potential impacts or where there is otherwise greater potential for significant environmental impacts from the proposed action may need to identify and analyze more alternatives than other EAs. Conversely, the smaller the impacts of the proposed action, the less need there is to consider alternatives.

Per Office of the Chief of Naval Operations Instruction (OPNAVINST) 5090.1D (Section 10-3.15 [d]), all EAs (except those prepared in support of implementing an Integrated Natural Resources Management Plan or INRMP), alternatives should, at a minimum, include the proposed action, no action, and at least one other reasonable action alternative. For actions associated with implementation of an INRMP, analysis of the proposed action and no action alternatives is acceptable. The Navy has developed an INRMP, as required by Environmental Readiness Program Manual (OPNAVINST 5090.1D), to guide natural resources management. The wildland fire management actions are referenced in the INRMP.

Given the guidance provided in OPNAVINST 5090.1D along with no heightened technical controversy surrounding potential impacts of the proposed action, and environmental impacts from the proposed action being anticipated to be minor, only the Proposed Action was identified (along with the No Action Alternative) as an alternative for analysis within this EA.

2.2.1 No Action Alternative

In accordance with 32 C.F.R. §65, the No Action Alternative is included in the EA as a benchmark to compare the magnitude of environmental effects of the action alternatives. The No Action Alternative is defined for this EA as no change from current fire management activities (i.e., current activities would continue such that no action is equal to no change in the status quo). Planning specific to fire for RTSWS lands takes place under a broad umbrella of federal, state, and local law and regulation, with the layers of organization being some of the most developed in the country. It includes a statewide mutual aid agreement among federal and state agencies; the CNF Fire Management Plan (FMP) (2012), a regional subplan of the California Fire Strategic Plan; San Diego County Consolidated Fire Code (2011) and its 2004 Combustible Vegetation and Other Flammable Materials Ordinance; and local community fire planning.

Currently, the general measures performed by the Navy for fire prevention and control and the use at RTSWS of any pyrotechnic device, blank-firing weapons, or warming/cooking fire will be in accordance with the procedures and protocol provided in Section 2.1.5 (Fire-Prevention and Escaped Fire Measures).

The No Action Alternative would not meet the purpose and need for the proposed action; however, as required by NEPA, the No Action Alternative is carried forward for analysis in this EA.

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3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

CEQ regulations require an EA to identify and evaluate all the relevant issues associated with a proposed action. The Affected Environment and Environmental Consequences chapter describes the current state of physical, biological, and human-related resources in the Project Area. The resources described and analyzed in this chapter are topography, geology, and soils; water resources; biological resources; noise; and public health and safety. The following environmental issues were evaluated in an initial screening process and found to be not applicable to the Proposed Action, and were therefore eliminated from detailed analysis.

3.0 Resources Not Described Further for Additional Analysis

3.0.1 Land Use, Recreation, and Utilities

Implementation of the Proposed Action would not adversely affect land use as there would be no land use category changes as a result of the Proposed Action. The Proposed Action would not introduce any new land use controls, and public access will remain unchanged. The Proposed Action will not require water, electricity, or sewage systems beyond existing capacities and will not affect public services. No new facilities are planned. Accordingly, the Navy has omitted further detailed examination of land use, recreation, or utilities in this EA.

3.0.2 Air Quality

All of the assessed sites are within the NAAQS/SAAQS attainment area. The natural resources plans and projects would introduce no new sources of mobile or stationary emissions that could change attainment status.

3.0.3 Cultural

The Proposed Action would not result in any negative impacts, change, or alter cultural resources of surrounding areas. Additionally, the area of proposed actions (i.e. surrounding existing structures and fuelbreaks/roads) has been disturbed over the years and has a low probability of containing undisturbed archaeological material. Therefore, this resource area was not carried forward for detailed analysis.

3.0.4 Transportation

Transportation of students and instructors to the RTSWS currently represents less than 1 percent of the total average monthly peak traffic volume along SR-79. The addition of additional vehicle trips associated with implementation of the Proposed Action would not substantially increase this volume. Thus, impacts of the Proposed Action on traffic and circulation are not carried forward for detailed analysis.

3.0.5 Socioeconomics/Environmental Justice

Implementation of the Proposed Action would not adversely affect socioeconomic resources and would comply with EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-income Populations, and EO 13045, Protection of Children from Environmental Health Risks and Safety Risks. No disproportionate impacts to schools, children, or minority populations would occur, and the scale of the alternatives would result in only minor effects to the economy (impacts from this activity would be negligible on a regional scale). No minority or low-income communities are known to exist in the vicinity

of the Project Area and no such groups would be disproportionately affected. Accordingly, the Navy eliminated further detailed examination of socioeconomics and environmental justice in this EA.

3.1 Topography and Sediments

This section describes the topography, geology, and soils on RTSWS. Faults that are within or that may affect RTSWS are also identified in this section. For analytical purposes, the terms “soil” or “sediment” refer to unconsolidated materials, while “rock” refers to consolidated materials.

3.1.1 Affected Environment

3.1.1.1 Topography

RTSWS is situated within the Peninsular Ranges of southern California. This is a group of mountain ranges that stretch approximately 900 mi. (1,448 km) from southern California to the southern tip of Mexico’s Baja California peninsula. Steep, elongated valleys that trend northwest are characteristic of the Peninsula Ranges. These continue offshore under ocean waters, while to the south they form the backbone of Baja California (U.S. Department of the Navy 2007). RTSWS includes the Aguanga Ridge, which is one of a three-part range including Palomar Mountain and Agua Tibia Mountain to the northwest (U.S. Department of the Navy 2007).

The RTSWS installation is located on the eastern side of a trending valley bounded by a broad ridge to the east and the eastern foothills of Palomar Mountain to the west. The ridge behind the facility rises to elevations of 4,200 to 4,400 ft. (1,280 to 1,341 m). Many small canyons cut by intermittent streams dot the hillside to the north and east of the installation (U.S. Department of the Navy 2009).

Geologically, the Peninsular Ranges Region is underlain primarily by granitic rocks that formed from the cooling of molten magmas deep within the earth’s crust. Over a long period of time, masses of granitic rocks accumulated at depth to form the Southern California Batholith. Intense heat associated with the magmas metamorphosed the ancient sedimentary rocks into which the plutons intruded. These metasediments are now preserved in the Peninsular Range Region as marbles, slates, schist, quartzites, and gneiss. Young sedimentary rocks occur in isolated districts in various regions of the Peninsular Ranges Region, such as in Warner Valley (U.S. Navy Department of the 2007).

One fault occurs southeast of the RTSWS. The Elsinore fault zone branches slightly, with one section (Elsinore-Julian) running through Lake Henshaw and the other section running southwest of Lake Henshaw. The Elsinore fault zone extends south-southeastward 149 mi. (240 km) from along the northeastern flank of the Santa Ana Mountains to the southwestern flank of the Coyote Mountain, then crosses the international border and is called the Laguna Salada fault in Mexico (Figure 3-1) (MACTECH 2010).

3.1.1.2 Sediments

The soils of the RTSWS installation are primarily Tollhouse rocky coarse sandy loams, Sheephead rocky fine sandy loams, Mottsville loamy course sands, Ramona gravelly sandy loam, La Posta rocky loamy coarse sand, rough broken land, and others (Figure 3-2, Table 3-1).

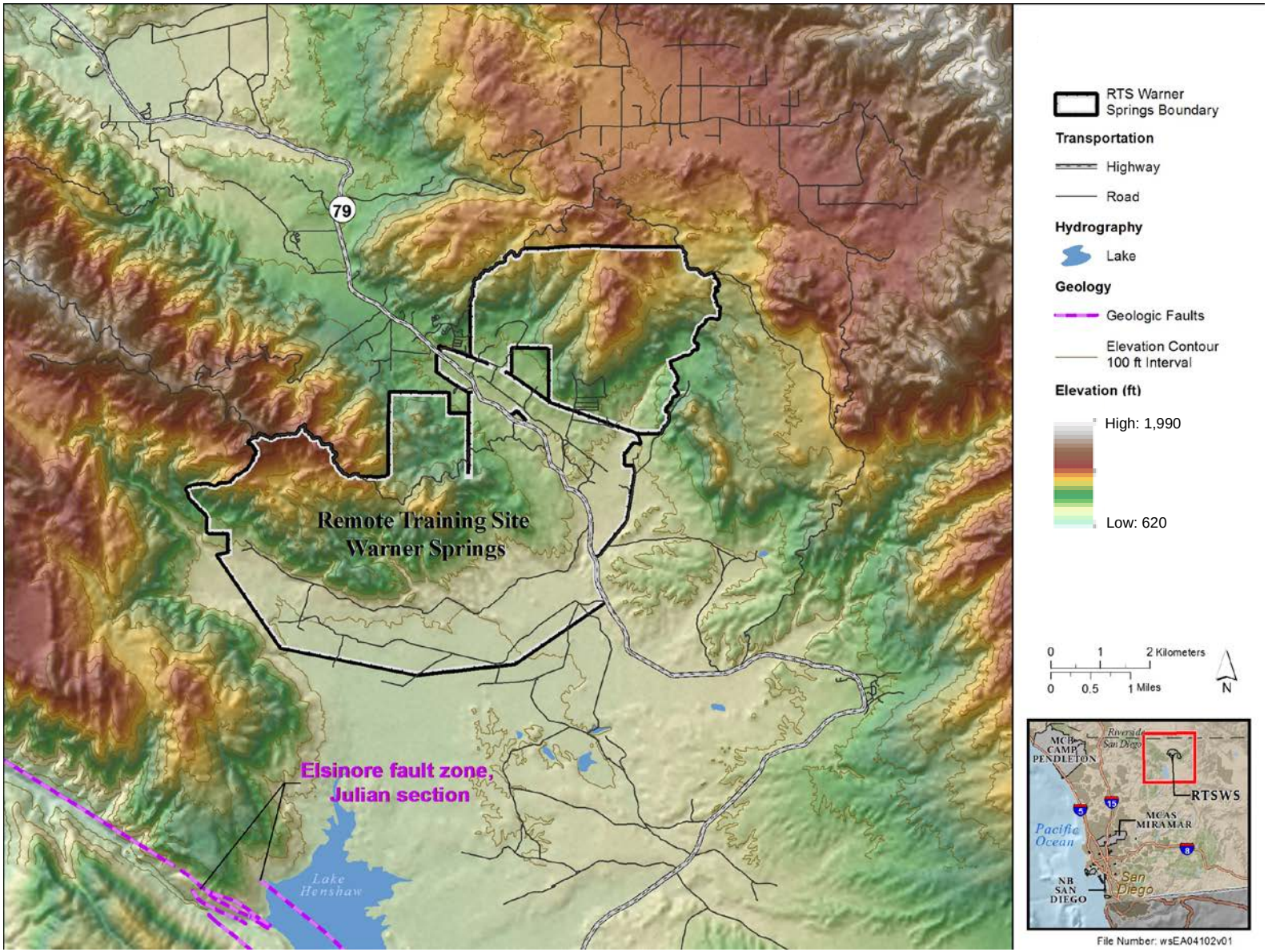


Figure 3-1: Remote Training Site Warner Springs Topology and Faults

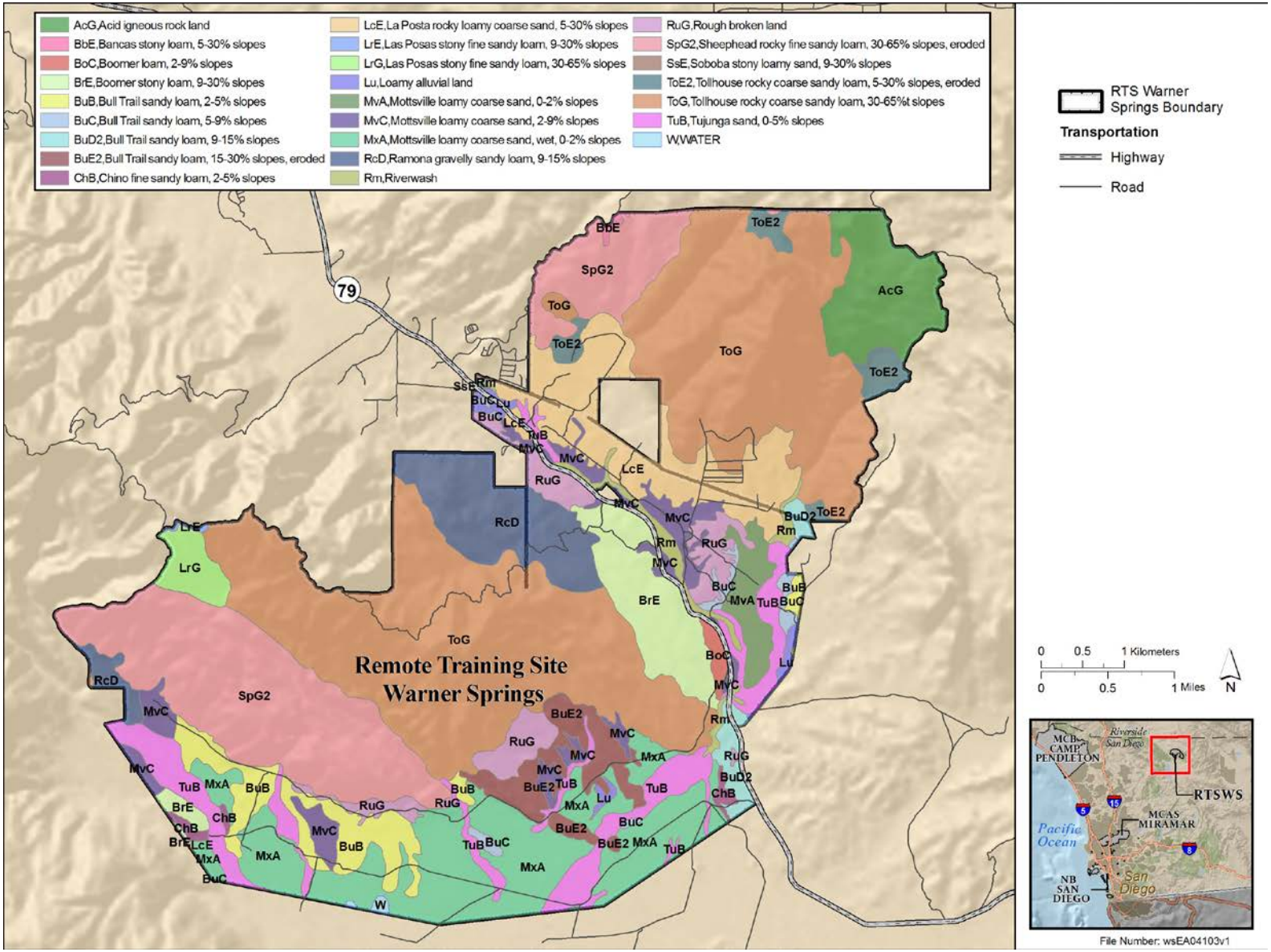


Figure 3-2: Remote Training Site Warner Springs Soils

Table 3-1: Soil Types and Erosion Hazards at Remote Training Site Warner Springs

Soil	Sloping	Runoff	Erosion Hazard
Acid igneous rock land	Variable	Rapid	n/a
Bancas stony loam	5–30% slopes	Medium	Moderate
Boomer loam	5–9% slopes	Medium	Slight to Moderate
Boomer stony loam	9–30% slopes	Medium to rapid	Moderate to High
Bull trail sandy loam	2–5% slopes	Medium	Moderate
	5–9% slopes	Slow	Slight
	9–15% slopes	Slow to Medium	Slight to Moderate
	15–30% slopes	Medium to Rapid	Moderate to High
Chino fine sandy loam	2–5% slopes	Very Slow	Slight
La Posta stony fine sandy loam	9–30% slopes	Medium	Moderate
	9–30% slopes	Medium to Rapid	Moderate to High
	30–65% slopes	Rapid	High
Loamy alluvial land	n/a	n/a	n/a
Mottsville loamy coarse sand	0–2% slopes	Very slow	Slight
	2–9% slopes	Slow to Medium	Slight to Moderate
Mottsville loamy coarse sand, wet	0–2% slopes	Very slow	Slight
Ramona gravelly sandy loam	9–15% slopes	Medium to Rapid	Moderate to High
Sheephead rocky fine sandy loam	9–30% slopes, eroded	Medium to Rapid	Moderate to High
Soboda stony loamy sand	9–30% slopes	Medium to Rapid	Moderate to High
Tollhouse rocky coarse sandy loam	5–30% slopes, eroded	Medium to Rapid	Moderate to High
Tujunga sand	0–5% slopes	Slow To Very Slow	Slight

Note: n/a = not applicable
Source: U.S. Department of the Navy 2009

3.1.2 Environmental Consequences to Topography and Sediments

This section evaluates potential impacts on topography and sediments associated with the Proposed Action and the No Action Alternative.

3.1.2.1 Proposed Action

The Proposed Action would include the annual maintenance of the vegetation treatment zones around developed areas, roadside vegetation maintenance on the RTSWS entry road, the Stone Ridge Fuelbreak, implementation of post-fire erosion controls and restoration of burned sites, and fire prevention and escaped fire measures.

As described in Section 2.1.1 (Design and Maintain Vegetation Treatment [Defense Zones] Around Designated Developed Areas), 2.1.2 (Maintain Roadside Vegetation Treatment on SERE Compound Entry Road), and 2.1.3 (Stone Ridge Cooperative Fuelbreak), vegetation treatments around developed areas will not include any soil modification or ground movement activities. Vegetation "islands" will be created by creating horizontal and vertical spacing between plants to interrupt continuous ground fuels. This vegetation treatment method will not completely remove all vegetation and leave the ground bare, which minimizes the potential for erosion or sedimentation. Additionally, where necessary to stabilize the soil and prevent erosion, grass and other vegetation will not be removed; instead, other measures will be considered to reduce fuel continuity (e.g., trimming or creating islands of vegetation). The lack of ground movement activities, combined with the vegetation treatment methodology, minimizes potential impacts to topography and sediments less than significant levels.

As described in Section 2.1.4 (Implement Post-Fire Controls and Perform Restoration of Burned Sites at RTSWS), in order to prevent erosion following a fire, burned areas will be stabilized using a variety of methods, such as bio-engineered bank stabilization techniques, gravel, fabrics, riprap, and recycled concrete and pavement. If bare ground were deemed a suitable restoration technique, other erosion control methods would be implemented (e.g., check dams, wind breaks, diversions). Restoration activities could also include revegetation, which would increase soil stabilization. Post-fire erosion control through seeding or fertilization would not be conducted as a general practice, but only with proper justification in a written rehabilitation plan that contains success criteria. These activities would decrease erosion and sedimentation in burned areas and reduce potential impacts to topography and sediments to less than significant.

As detailed in Section 2.1.5 (Fire-Prevention and Escaped Fire Measures), the OIC provides approval for the use of pyrotechnic devices, blank-firing weapons, or cooking/warming fires at the beginning of each training day. All fire building and the use of blank-firing weapons and pyrotechnics are under the supervision of a field instructor, and each activity occurs only in designated areas. All instructors, unit personnel, and students are briefed on fire prevention measures, reporting procedures, fire danger levels, and fire safety. Additionally, all vehicular units in the field during training have fire suppression equipment available in the event an unplanned ignition occurs. Suppression equipment consists of one backpack type water pump (approximate 5-gallon capacity), shovels, fire extinguisher (chemical CO_2), bucket, and radio. While training activities at RTSWS could increase the risk of unplanned ignition, such measures would prevent and control wildland fires that might occur from an unplanned ignition caused by the training activities.

If an unplanned ignition occurs, the unit in the field suspends all training activity and takes immediate action to extinguish the fire. Unless determined to be unsafe, the unit remains on station and attempts to control/extinguish the fire until determined to be extinguished or responded to by the appropriate

firefighting agency. Given the restrictions for pyrotechnics and the fire prevention measures in place, any unplanned ignition is expected to be small. In addition, fire suppression activities would be restricted to the immediate area of the ignition, with minimal soil disturbance, reducing potential impacts on soil and topography from these elements of the Proposed Action to less than significant.

Therefore, the Proposed Action would have no significant impact on soil or topography in the Project Area.

3.1.2.2 No Action Alternative

The No Action Alternative would include only fire prevention and escaped fire measures at RTSWS. As described above for the Proposed Action, the implementation of fire prevention and escaped fire measures minimizes the potential for impacts to sediments and topography through restrictions on the use of pyrotechnic devices, blank-firing weapons, or cooking/warming fires. Additionally, all instructors, unit personnel, and students are briefed on fire prevention measures, reporting procedures, fire danger levels, and fire safety. All vehicular units in the field during training have fire suppression equipment available in the event of unplanned ignition occurs. While training activities at RTSWS could increase the risk of unplanned ignition, such measures would prevent and control wildland fires that might occur from an unplanned ignition caused by the training activities. Therefore, the implementation of fire prevention and escaped fire measures reduces the potential impacts on soil and topography from the No Action Alternative to less than significant.

Therefore, the No Action Alternative would have no significant impact on soil or topography in the Project Area.

3.2 WATER RESOURCES

Water resource analysis incorporates the analysis of both surface and subsurface water. Surface water includes all lakes, ponds, rivers, streams, impoundments, and wetlands within a defined area or watershed. Subsurface water, commonly referred to as groundwater, is typically found in certain areas known as aquifers. Aquifers are areas of mostly high porosity soil where water can be stored between soil particles and within soil pore spaces. Groundwater is usually recharged during rain events and is withdrawn for domestic, agricultural, and industrial purposes.

Waters of the United States are potentially regulated resources and are subject to federal authority under Section 404 of the CWA. The term “Waters of the U.S.” is broadly defined to include navigable waters (including intermittent streams), impoundments, tributary streams, estuaries, and wetlands. Water resources are considered important to public interest because they perform significant biological functions, such as providing nesting, breeding, foraging, and spawning environments for a wide variety of resident and migratory animal species. In addition, wetlands help improve water quality and provide flood protection and erosion control.

Water resources analyzed in this section include watersheds and aquifers associated with the Warner Springs area.

3.2.1 AFFECTED ENVIRONMENT

3.2.1.1 Precipitation

Climate conditions in the Warner Springs area are characteristically Mediterranean with mild temperatures year around, ranging on average between 40 and 75 degrees Fahrenheit (˚F) (4.4 and 23.9

degrees Celsius [˚C]). More than 80 percent of the region's precipitation occurs in the period between November and March. Warner Springs experiences an annual average of 24.3 inches (in.) (61.7 centimeters [cm]) of precipitation. However, due to drought conditions, the precipitation for 2014 was only 7.7 in. (19.5 cm).

3.2.1.2 Hydrology

A watershed is an area of land that drains water, sediment, and dissolved materials to a common outlet point. RTSWS is located in the San Luis Rey River watershed, which has an area of 565 square miles (mi.^{2}) (1,938 square kilometers [km^2]) (Figure 3-3). The San Luis Rey River and other waters that flow through RTSWS drain into Lake Henshaw (CRWQCB 2003). Many of these waters are ephemeral, intermittent watercourses that are dry for much of the year except in the spring. The San Luis Rey River is the predominant natural resource feature of the RTSWS. Portions of the river and adjacent uplands provide suitable habitat for many species of mammals, amphibians, birds, and fish found in the project area.

3.2.1.3 Groundwater

An aquifer is any unit of rock or sediment that is capable of both storing water and transmitting water to wells and springs. Several alluvial groundwater aquifers have been identified in the San Luis Rey River watershed, and groundwater is used throughout the watershed for agricultural, industrial, and municipal supplies (California Regional Water Quality Control Board 2003). The principal aquifer in the RTSWS area is the Warner Basin (San Diego County Water Authority 2015). This basin is bounded on the west by Lake Henshaw and the Elsinore fault and on all other sides by impermeable crystalline rocks of the Peninsular Ranges (California Department of Water Resources 2003).

3.2.1.4 Wetlands

In April and October 2006, a wetland delineation was conducted on 150 ac.(61 ha) within the RTSWS based on criteria outlined in the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (U.S. Army Corps of Engineers 1987), best professional judgment, site conditions at the time of the field analysis, and information gathered during background investigations of the site (U.S. Department of the Navy 2007). The delineation identified about 4.1 ac. (1.7 ha) of jurisdictional Waters of the U.S., most of them also wetlands, and a very small area of non-jurisdictional waters (about 0.2 ac. [0.1 ha]).

3.2.2 Environmental Consequences to Water Resources

This section evaluates potential impacts on water resources associated with the Proposed Action and the No Action Alternative. The analysis focuses only on impacts on surface water resources, including wetlands and riparian areas. Area groundwater resources are located at sufficient depth as to be unaffected by activities associated with either the Proposed Action or the No Action Alternative.

3.2.2.1 Proposed Action

The Proposed Action would include the annual maintenance of the vegetation treatment zones around developed areas, roadside vegetation maintenance on the RTSWS entry road, the Stone Ridge

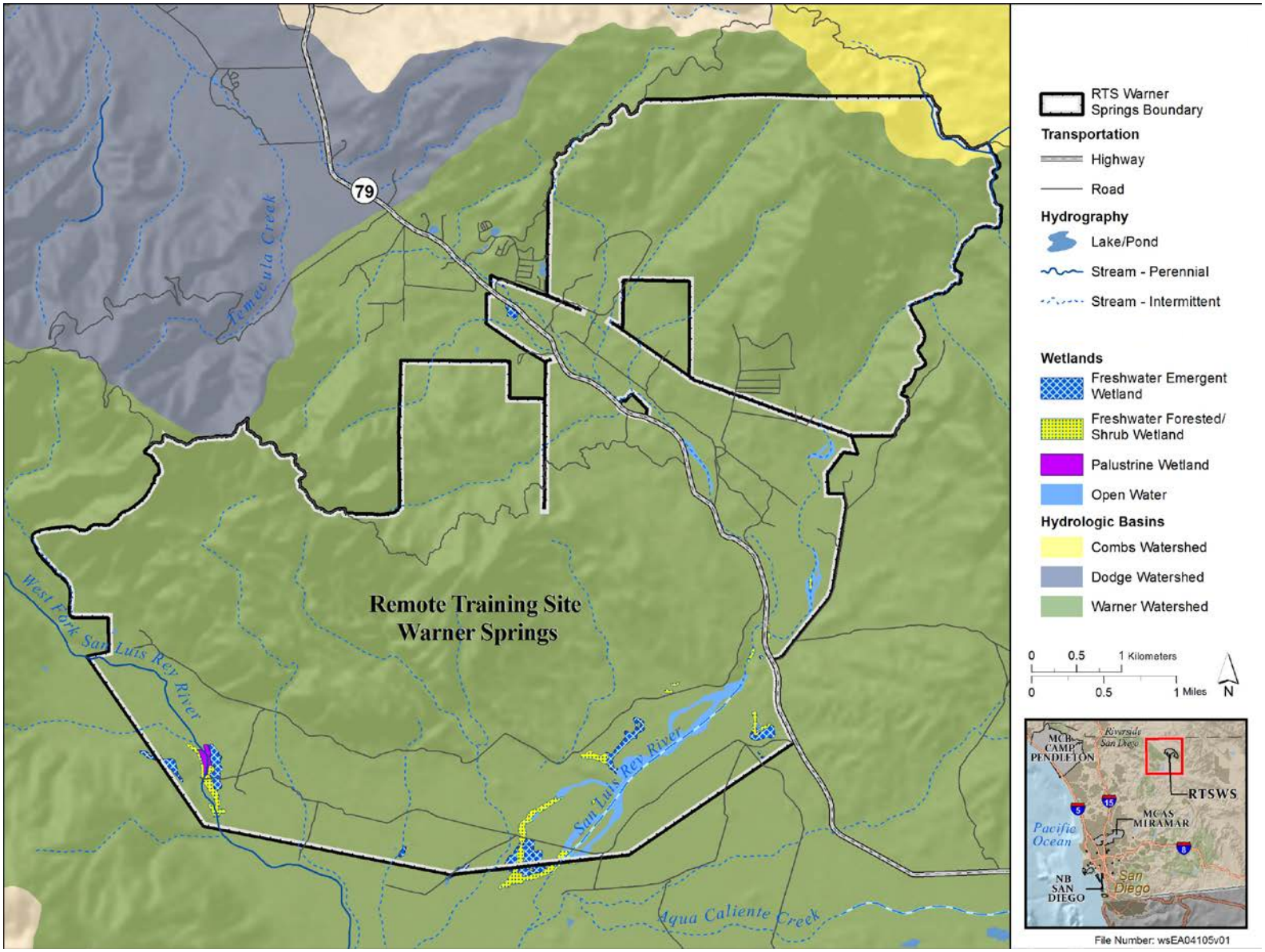


Figure 3-3: Remote Training Site Warner Springs Watersheds and Wetlands

Fuelbreak, implementation of post-fire erosion controls and restoration of burned sites, and fire prevention and escaped fire measures.

As described in Section 2.1.1 (Design and Maintain Vegetation Treatment [Defense Zones] Around Designated Developed Areas), 2.1.2 (Maintain Roadside Vegetation Treatment on SERE Compound Entry Road), and 2.1.3 (Stone Ridge Cooperative Fuelbreak), vegetation treatments around developed areas will not include any soil modification or ground movement activities, minimizing impacts to nearby surface waters. Further, the vegetation treatments around developed areas, on the RTSWS entry road and the Stone Ridge Fuelbreak will not leave the ground bare, will not occur in riparian areas, and where necessary to stabilize the soil to prevent erosion, grass and other understory vegetation will not be removed. Avoiding riparian areas and leaving vegetation islands will help prevent erosion and sedimentation, limiting the impact to nearby surface waters.

As described in Section 2.1.4 (Implement Post-Fire Erosion Controls and Perform Restoration of Burned Sites at RTSWS), in order to prevent erosion following a fire, burned areas will be stabilized using a variety of methods, such as bio-engineered bank stabilization techniques, gravel, fabrics, riprap, and recycled concrete and pavement. If bare ground were deemed a suitable restoration technique, other erosion control methods would be implemented (e.g., check dams, wind breaks, diversions). Restoration activities could also include revegetation, which would increase soil stabilization, minimizing potential impacts to nearby surface waters. Post-fire erosion control through seeding or fertilization could include watering and the use of herbicides, insecticides, and pesticides. Herbicides, insecticides, and pesticides will be used in accordance with the defined label use and DoD regulations. Additionally, they would not be sprayed when there are wind velocities above 5 mph (8 kph) or in foggy or rainy conditions. These regulations and restrictions would limit the potential for these materials to enter into any nearby surface waters.

As detailed in Section 2.1.5 (Fire Prevention and Escaped Fire Measures), all vehicular units in the field during training have fire suppression equipment available in the event of unplanned ignition occurs. Suppression equipment consists of one backpack type water pump (approximate 5-gallon capacity), shovels, fire extinguisher (chemical CO_2), bucket, and radio. Given the restrictions for use of pyrotechnics and the fire prevention measures in place, any unplanned ignition is expected to be small. In addition, fire suppression activities would be restricted to the immediate area of the ignition, with minimal soil disturbance and water use, reducing potential impacts on surface water resources, including wetlands and riparian areas, from these elements of the Proposed Action to less than significant.

Therefore, the Proposed Action would have no significant impact on water resources in the Project Area.

3.2.2.2 No Action Alternative

The No Action Alternative would include only fire prevention and escaped fire measures at RTSWS. As described for the Proposed Action, the implementation of fire prevention and escaped fire measures minimizes the potential for impacts to surface water resources, including wetlands and riparian areas. Restrictions on the use of pyrotechnic devices, blank-firing weapons, or cooking/warming fires, as well as the availability of fire suppression equipment, reduces the potential for impacts on surface water resources to less than significant.

Therefore, the No Action Alternative would have no significant impact on water resources.

3.3 BIOLOGICAL RESOURCES

3.3.1 AFFECTED ENVIRONMENT

3.3.1.1 Protected Species

Protected and special status species include the following:

- Species listed and proposed for listing as threatened or endangered under the ESA;
- Species listed or proposed for listing as threatened or endangered under the California ESA;
- California Fully Protected Species;
- California Species of Special Concern;
- Plant species listed as sensitive by the California Native Plant Society;
- Nesting birds protected by the MBTA;
- Golden eagles and bald eagles protected under the Bald and Golden Eagle Protection Act; and
- Birds considered Federal Birds of Conservation Concern.

Table 3-2 lists federal and state listed wildlife and plant species and other special status species that occur or have the potential to occur within the Project Area and its vicinity. Potential occurrence was determined based on past documentation of special status species within the vicinity of the Project Area and on suitability of habitat and occurrence within the region of a particular species.

Table 3-2: Special Status Species Observed and Listed Species with Potential to Occur on Remote Training Site Warner Springs

Common Name	Scientific Name	Federal Status	State Status	Other Status
Plants				
Nevin's barberry[1]	*Berberis nevinii*	**FE**	SE	CNPS 1B.1
Orcutt's brodiaea	*Brodiaea corcuttii*			CNPS 1B.1
Vail Lake ceanothus[1]	*Ceanothus opiochilus*	**FT**	SE	CNPS 1B.1
Long-spined spineflower	*Chorizanthe polygonoides var. longsipina*			CNPS 1B.2
Mojave tarplant	*Deinandra mohavensis*			CNPS 1B.3
Slender-horned spineflower	*Dodecahema leptoceras*	**FE**	SE	CNPS 1B.1
Invertebrates				
Quino checkerspot butterfly	*Euphydryas editha quino*	**FE**	SE	
Fish				
Arroyo chub	*Gila orcutti*		SSC	
Amphibians and Reptiles				
Arroyo toad	*Anaxyrus californicus*	**FE**	SE	
Silvery legless lizard	*Anniella pulchra*		SSC	
Western pond turtle	*Actinemys marmorata*		SSC	
Coast horned lizard	*Phrynosoma blainvillii*		SSC	
Coronado Island skink	*Plestiodon skiltonianus interparietalis*		SSC	
Coast patch-nosed snake	*Salvadora hexalepis virgultea*		SSC	
Western spadefoot toad	*Spea hammondii*		SSC	
Birds				
Tricolored blackbird	*Agelaius tricolor*	BCC	SE	DoD PIF
Grasshopper sparrow	*Ammodramus savannarum*		SSC	DoD PIF
Sage sparrow	*Artemisiospiza bellii*			DoD PIF
Golden eagle	*Aquila chrysaetos*	BGEPA, BCC	CFP	DoD PIF
Long-eared owl	*Asio otus*		SSC	

Table 3-2: Special Status Species Observed and Listed Species with Potential to Occur on Remote Training Site Warner Springs (continued)

Common Name	Scientific Name	Federal Status	State Status	Other Status
Birds (continued)				
Oak titmouse	*Baeolophus inornatus*	BCC		
Ferruginous hawk	*Buteo regalis*	BCC		
Swainson's hawk	*Buteo swainsoni*	BCC	ST	
Lawrence's goldfinch	*Spinus lawrencei*	BCC		
Vaux's swift	*Chaetura vauxi*		SSC	
Northern harrier	*Circus cyaneus*		SSC	
Olive-sided flycatcher	*Contopus cooperi*		SSC	DoD PIF
Yellow warbler	*Setophaga petechia brewsteri*	BCC	SSC	
White-tailed kite	*Elanus leucurus*		CFP	
Willow flycatcher	*Empidonax traillii*	BCC	SE	
Southwestern willow flycatcher	*Empidonax traillii extimus*	**FE**	SE	
Loggerhead shrike	*Lanius ludovicianus*	BCC	SSC	DoD PIF
Sage thrasher	*Oreoscoptes montanus*			DoD PIF
Nuttal's woodpecker	*Picoides nuttallii*	BCC		
Oregon Vesper sparrow	*Pooecetes gramineus affinis*		SSC	
Rufous hummingbird	*Selasphorus rufus*	BCC		
Black-chinned sparrow	*Spizella atrogularis*	BCC		DoD PIF
Least bell's vireo	*Vireo belli pusillus*	FE		
Oregon Vesper sparrow	*Pooecetes gramineus affinis*		SSC	
Rufous hummingbird	*Selasphorus rufus*	BCC		
Black-chinned sparrow	*Spizella atrogularis*	BCC		DoD PIF
Gray vireo	*Vireo vicinior*	BCC	SSC	DoD PIF
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*		SSC	
Mammals				
Pallid bat	*Antrozoous palidus*		SSC	
Townsend's big-eared bat	*Corynorhynus townsendii*		SSC	
Stephens' kangaroo rat	*Dipodomys stephensi*	**FE**	ST	
Western mastiff bat	*Eumops perotis*		SSC	
Red bat	*Lasiurus blossevillii*		SSC	
Pocketed free-tailed bat	*Nyctinomops femorosaccus*		SSC	
American badger	*Taxidea taxus*		SSC	

Notes: 1 Federally listed species with the potential to occur. However, the nearest documented occurences of these species are over 10 miles distant from RTSWS and are not carried forward in the analysis; FT = Federally Threatened; FE = Federally Endangered; ST = State Threatened; SE = State Endangered; BCC = Bird of Conservation Concern; SSC = California Species of Special Concern; FP = California Fully Protected Species; BGEPA = Bald and Golden Eagle Protection Act; DoD PIF = DoD Partners in Flight Priority Species

The sections below describes ESA-listed species present within the Action Area, their spatial and temporal distribution, life history, ecological requirements, and critical habitat within the Action Area that might conceivably be affected by the Proposed Action. There are six species listed under the ESA that occur or have potential to occur in the Action Area. The ESA defines a "species" to include any distinct population segment (DPS) of any species of vertebrate fish or wildlife.

3.3.1.1.1 Slender-Horned Spineflower (Federally Endangered)

General Description and Life History

This annual in the buckwheat family (Polygonaceae) is tiny with a basal rosette and dense flower stalks with pink flowers. It has a spreading habit with stems reaching 1.2–5.9 in. (3–15 cm) across. Slender-horned spineflower is distinguished from other spineflowers by the presence of six terminal awns and six hooked basal awns on each involucre. The involucre in this species is a group of bracts that have been fused together to enclose approximately three white to pink flowers within each involucre, blooming April through June (Hickman 1993). Slender-horned spineflower germinates late February to early March in response to winter rains. Abundant germination is known to occur following successive years of little or no seed production, suggesting that seeds remain viable in the soil for a number of years (Ferguson and Ellstrand 1999). Ants and flying insects have been observed visiting flowers of slender-horned spineflower (Ferguson et al. 1996).

Habitat

The slender horned spineflower preferred habitat is alluvial scrub found on older alluvial fans, floodplains, stream terraces, washes, and associated benches where infrequent overland flow occurs (Rey-Vizgirdas 1994; Wood and Wells 1997). It grows in riverbed alluvium in silt-filled, shallow depressions on relatively flat surfaces surrounded by scattered, river-rounded, cobble-sized rocks (Allen 1996; Wood and Wells 1997), on stable surfaces, usually older than 100 years (Wood and Wells 1997). The species may also be found in chaparral, coast live-oak woodland, or western sycamore woodland (U.S. Fish and Wildlife Service 2010).

Regional Status

The species is distributed in drainage systems of foothills adjacent to the Transverse and Peninsular Ranges of southern California from Los Angeles, Riverside, and San Bernardino counties (Young et al. 2000). Historically, this species ranged from the southern base of the Liebre Mountains, Western Transverse Ranges, and the western edge of the San Gabriel Mountains (Los Angeles County) to the eastern edge of the range at Cajon Canyon (San Bernardino County); then southeast from the Santa Ana River wash near Redlands (San Bernardino County), southeast to the San Jacinto Mountains; and also in Riverside County, in Temescal Canyon and southeast to Vail Lake/Dripping Springs area (California National Diversity Database 2007).

There have been 37 reported occurrences of slender-horned spineflower in southern California, of which 23 are existing occurrences and 14 have been or are presumed extirpated. These occurrences are located in eight general areas: Bee Canyon, Big Tujunga Wash, Lytle Creek/Cajon Canyon, Santa Ana River wash, Bautista Creek, San Jacinto River, Temescal Canyon, and Vail Lake/Dripping Springs area (California National Diversity Database 2007).

Threats

Populations of slender-horned spineflower are currently threatened by development, mining, altering hydrology and flood control, invasive species, off-highway vehicle impacts, and trash dumping (U.S. Fish and Wildlife Service 2010). The interruption of fluvial processes disrupts infrequent sheet flow that may be necessary to maintain suitable habitat (Sawyer et al. 2008; Boyd et al. 1989). Without flooding and scouring events, dense vegetation communities can establish, making habitat unsuitable for slender-horned spineflower (Boyd et al. 1989).

Status

The slender-horned spineflower was listed as endangered in 1987 (52 FR 36267). No recovery plan has been prepared for slender-horned spineflower.

Critical Habitat

Critical habitat has not been designated for the slender-horned spineflower.

Occurrence in the Action Area

The closest California National Diversity Database (CNDDB) record is about 16 miles from the proposed action area, in Riverside County (California National Diversity Database 2007). Despite the presence of suitable habitat, this diminutive herb was not found during surveys of RTSWS in 2005 and 2006 (Tierra Data, Inc. 2007).

Factors Affecting Species Environment Within the Action Area

Slender horned spineflower has not been documented within the action area although suitable habitat is present. Within the action area, slender-horned spineflower habitat could be disturbed as a result of the inadvertent introduction of non-native invasive plant species. However, general and specific measures to avoid and minimize impacts to potential slender horned spineflower habitat are in place. Measures include control of invasive plants, restrictions on off-road vehicle use, and restrictions on permitted activities within potential slender-horned spineflower habitat.

3.3.1.1.2 Quino Checkerspot Butterfly (Federally Endangered)

General Description and Life History

The Quino checkerspot butterfly is a member of the brushfooted butterfly family (Nymphalidae) and the checkerspot and fritillary subfamily (Melitaenae), and is a subspecies of the Edith's checkerspot butterfly (*Euphydryas editha*). The Quino checkerspot is separable from other Edith's checkerspot subspecies by both physical characteristics and life history traits (Mattoni et al. 1997).

Adult Quino checkerspots have an approximately 4-centimeter (1.5 inch) wingspan. The dorsal wing surface features a red, black, and cream checkered pattern while the ventral wing surface has a red and cream checkered pattern. The abdomen is black with red stripes, and the antennal clubs are bi-colored with yellow tips and a darker base. First instar larvae are primarily yellow, transitioning to gray with black markings following their first molt (second instars). Following their second molt larvae assume their characteristic dark black coloration with 8 to 9 orange tubercles down the center of their back. Pupae are pale blue-gray with black mottling.

Quino checkerspots typically have one generation of adults maturing per year. The adult flight season lasts 4–6 weeks. Exact timing of the flight season is dependent on environmental conditions such as temperature and rainfall, but adults usually start flying between January and early March with adults present as late as early May (USFWS 2003). Females typically mate the day they emerge and begin laying eggs on select host plants shortly thereafter.

Quino checkerspot oviposition has been most frequently documented on California plantain (*Plantago erecta*), woolly plantain (*Plantago patagonica*), and Coulter snapdragon (*Antirrhinum coulterianum*). Larvae have been found feeding on Thread-leaved bird's beak (*Cordylanthus rigidus*) and will feed on purple owl's clover (*Castilleja exserta*) in the laboratory, but it is unclear if Quino checkerspots will oviposit on these species (Pratt et al. 2001). In 2008, oviposition and larval development were recorded for the first time on Chinese houses (*Collinsia concolor*) at multiple sites (U.S. Fish and Wildlife Service

2009). Chinese houses are typically found in cooler and moister micro-habitats on north-facing slopes and in the shade, as opposed to dry open habitat favored by the other host plant species (Pratt et al. 2001). It is thought that adoption of this host plant is due to a microhabitat shift by Quino checkerspots in response to climate change (U.S. Fish and Wildlife Service 2009).

Once laid, eggs hatch in 10–14 days. Larvae feed until host plants senesce and then enter diapause (usually as third instars in May or June) (U.S. Fish and Wildlife Service 2003). Larvae will stay in diapause until winter rains trigger the germination of host plants, at which time they will resume active feeding (usually January) (Osborne and Redak 2000). Based on observations of captive larvae, approximately 50 percent of first year larvae will re-enter diapause rather than maturing (U.S. Fish and Wildlife Service 2003). Larvae have been documented re-entering diapause as many as four times (U.S. Fish and Wildlife Service 2003). It is postulated that under poor conditions such as drought, most or even all larvae at a site may re-enter diapause (U.S. Fish and Wildlife Service 2003). Field studies have found that Quino checkerspot larvae diapause at or near the base of dense, low-growing native shrubs and forbs, such as California buckwheat (*Eriogonum fasciculatum*), California everlasting (*Pseudognaphalium californicum*), and fiddleneck (*Amsinkia* sp.) as well as within leaf litter (Pratt and Emmel 2010). Diapausing larvae of other Edith's checkerspot subspecies have been found under rocks and logs, and it is possible that Quino checkerspots may use these types of retreats as well (U.S. Fish and Wildlife Service 2003).

Habitat

Quino checkerspots are often associated with annual forblands (barren-looking stony deserts with a few scattered saltbushes, or grassland communities as well forb-dominated clearings in chaparral or scrub vegetation that support wildflowers on which adults nectar as well as larval host plants. Within these habitats, Quino checkerspots show a tendency to occur in barren spots with sparse low-growing vegetation (U.S. Fish and Wildlife Service 2003). In cases where host plants and nectar plants do not co-occur, adult Quino checkerspots have been documented traveling several hundred meters from host plant patches to nectar sources (U.S. Fish and Wildlife Service 2003).

Adult Quino checkerspots also frequent hilltops even in the absence of larval host plants and nectar plant (U.S. Fish and Wildlife Service 2003). This behavior is known as hilltopping and involves males patrolling topographic high points and unmated females seeking out these high points in order to find mates (Scott 1968). Due to their role in mate finding, undeveloped hilltop and ridgeline habitat may be vital to population survival regardless of host plant occurrence.

Regional Status

The Quino checkerspot butterfly is highly endangered. Prior to listing in 1997, it was at such low densities that it was thought to possibly be extinct (U.S. Fish and Wildlife Service 2003). As of 2003, the species was down to less than 25 percent of its historic distribution, largely due to habitat loss (U.S. Fish and Wildlife Service 2003). Quino checkerspots are also known to undergo significant population fluctuations related to environmental conditions such as drought (U.S. Fish and Wildlife Service 2003), which current reduced populations are less able to rebound from. Most remaining populations are also experiencing ongoing habitat degradation due to development (U.S. Fish and Wildlife Service 2003).

Threats

The primary threat to the Quino checkerspot butterfly is loss of habitat due to urban and agricultural development. Quino checkerspot habitat is also threatened by invasion by nonnative species, off-road vehicle use, grazing, and fire management practices (U.S. Fish and Wildlife Service 2003). Enhanced

nitrogen deposition, elevated atmospheric carbon dioxide concentrations, and climate change may also be adversely affecting the Quino checkerspot and its habitat (U.S. Fish and Wildlife Service 2003).

Status

The USFWS listed the Quino checkerspot butterfly as endangered in 1997 (62 FR 2313) for reasons related to habitat loss, degradation, and fragmentation, and the negative effects of fire management practices. Critical habitat was initially designated in 2002 (67 FR 18356–18395) but was revised in 2009 (74 FR 28776–28862). The minimum criteria for downlisting include the permanent protection of habitat within documented occurrence complexes (U.S. Fish and Wildlife Service 2003). The area at RTSWS is not within a known occurrence complex.

Critical Habitat

The project area is not within Critical Habitat for the Quino checkerspot butterfly (74 FR 28776–28862).

Occurrence in the Action Area

The Quino checkerspot butterfly is known to occur a few miles to the north of the project area in Aguanga, California. A preliminary habitat assessment conducted within the project area in 2005 found that there was substantial potential Quino checkerspot habitat present (Tierra Data, Inc. 2007) and has been observed at RTSWS during surveys in 2011 and 2015 (AECOM 2015) (Figure 3-4). Therefore, in 2006, a series of focused surveys for the Quino checkerspot was conducted in accordance with USFWS established protocols (U.S. Fish and Wildlife Service 2003). The surveys covered approximately 1,000 ac. of what was determined to be the highest quality habitat for the Quino checkerspot within the project area (Tierra Data, Inc. 2007). No Quino checkerspots were observed in the project area during 2006 surveys (Tierra Data, Inc. 2007). Surveys were executed consistent with the USFWS established protocol; however, reports from studies across San Diego rated 2006 as a poor year for Quino checkerspot flights (Tierra Data, Inc. 2007).

There were six total Quino detections during 2015 surveys, which represent at least five different individuals. Although the sex of each Quino detected could not be definitively confirmed, most Quino detected were potentially male, based on size, behavior, and general location where they were found (e.g., hilltopping and chasing other butterflies away). Quino were found in two primary locations. Two Quino were found along a firebreak on Palomar Divide (along the east slope of Palomar Mountain), and the other Quino were found along a firebreak adjacent to a dirt USFS road along the north side of RTSWS. The Quino found along the USFS road were detected in proximity to several vast carpets of *Plantago patagonica*, with nearby pockets of *Castilleja exserta*. The Quino found along the top of Palomar Divide were detected in proximity to sizable populations of *Collinsia concolor* and *Castilleja exserta* (Figure 3-4). (AECOM 2015)

Factors Affecting Species Environment Within the Action Area

Disturbance to suitable Quino habitat occurs from dispersed foot traffic, and helicopter operations. These actions also carry the potential for inadvertent introduction of non-native invasive plant species. General and specific measures are in place to avoid and minimize effects, which include control of invasive plants, restrictions on off-road vehicle use, and restrictions on permitted activities within potential Quino checkerspot butterfly habitat.

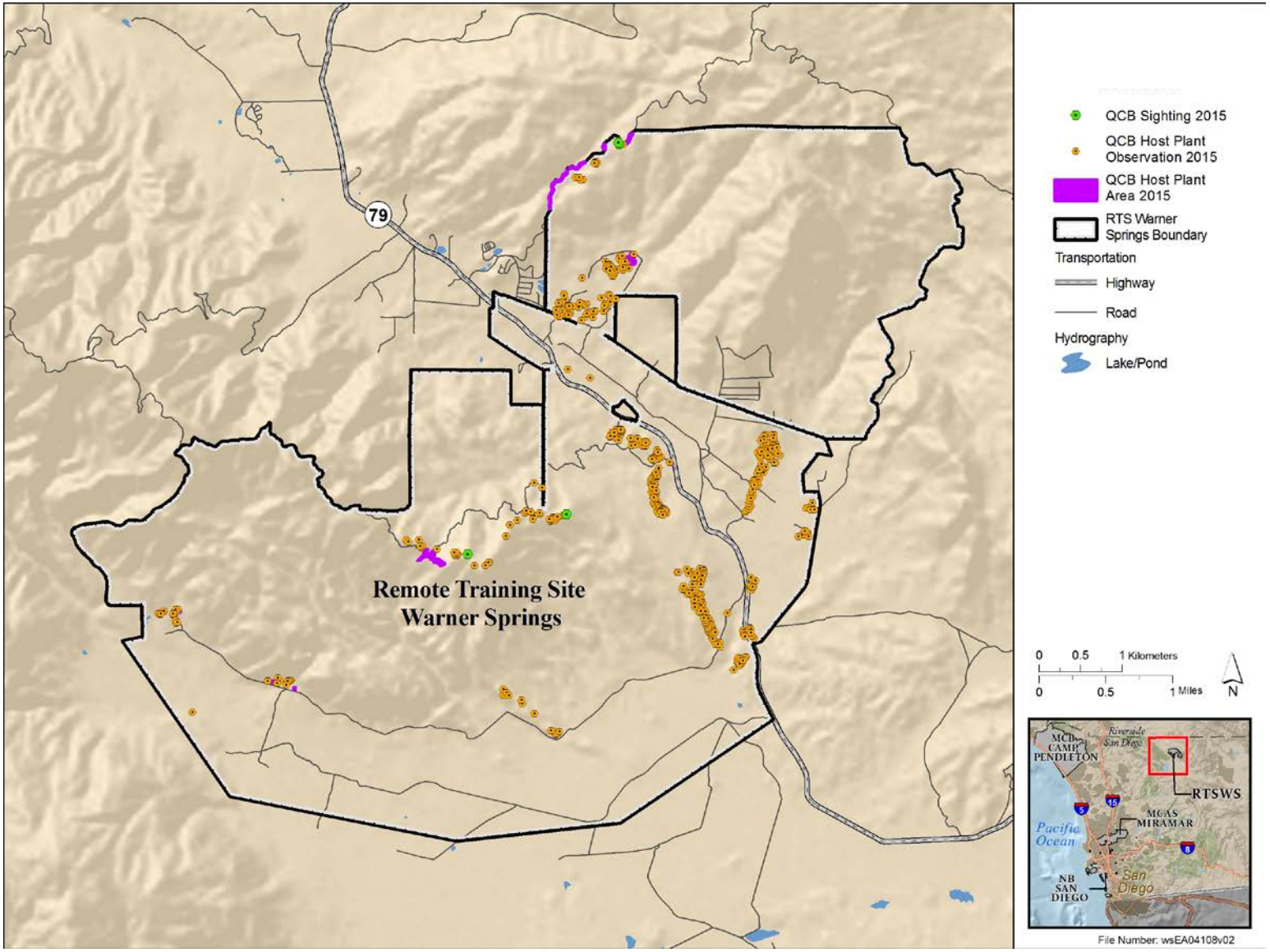


Figure 3-4: Quino Checkerspot Butterfly Host Plant Localities near Remote Training Site Warner Springs

3.3.1.1.3 Arroyo Toad (Federally Endangered)

General Description and Life History

The arroyo toad is a small 2–3.2 in. (5–8 cm), stocky amphibian with an olive-green to gray, tan, or pinkish back, often with off-white or light-colored sacral and mid-dorsal patches; a spotless cream-colored underside; horizontal pupils; and widely separated parotid glands. The arroyo toad was first described as a subspecies of *Bufo cognatus*, the Great Plains toad (Camp 1915). It was later recognized as a distinct species, *B. californicus*, referred to as the "southern California toad" (Myers 1930). Stebbins (1951) identified *B. microscaphus* populations from Arizona as a distinct species (specifically from earlier designations within the *B. compactilis*, *B. woodhousii*, and *B. cognatus* species groups) with two allopatric subspecies, the Mexican toad (*B. m. mexicanus*) and the arroyo southwestern toad (*B. m. californicus*). However, subsequent studies of the systematics of the southwestern toad based on allozyme data distinguished the arroyo toad as a full and distinct species, *B. californicus* (Gergus 1998). In 2006, Frost et al. partitioned the *Bufo* genus into *Bufo* (restricted to the eastern hemisphere) and *Anaxyrus*, in North America (Frost et al. 2006; Frost 2008).

Arroyo toads are nocturnal and spend the day buried in primitive burrows, often just below the soil surface and usually not more than 6 inches underground (Haas 2003). In coastal San Diego County, arroyo toads may be active throughout the year. Outside of the breeding season, arroyo toads are rarely active when temperatures fall below 46°F (8° C). They may be active in limited numbers when relative humidity exceeds 80 percent and temperatures exceed 52°F (11° C); however, they are often active in large numbers during moderate to heavy rain, when temperatures exceed 52°F (Haas 2003).

Arroyo toads begin moving to breeding sites in February, and occasionally as early as January (Holland and Goodman 1998). For breeding, the arroyo toad is restricted to rivers and creeks of low stream gradient, usually in the range of 0–2 percent, with persistent water, or pooled water, where streams have been altered (Sweet 1992). Breeding sites must retain water for 60 or more consecutive days from the onset of breeding to accommodate larval development (Sweet 1992). There is only one breeding season annually, with egg deposition occurring from March to July. Deposition of eggs and growth of larvae usually occur in shallows along the edges of sandy to gravelly pools, within ox-bows, or along sandbars within stream channels with little or no current or emergent vegetation. Periodic floods are necessary to keep the pools free of vegetation and to keep the terrace soils friable enough for burrowing (U.S. Fish and Wildlife Service 1999). Floods following egg deposition, however, are usually disastrous to breeding success (Haas 2003).

Breeding sites are typically near or adjacent to stream terraces. These terraces often have open sandy areas surrounded by patches of riparian vegetation; mule fat (*Baccharis salicifolia*) and arroyo willow (*Salix lasiolepis*) are typical components, or live oak (*Quercus agrifolia*) woodlands. Beyond these terraces, arroyo toads may travel into other upland associations, including most of the major vegetation types common to southern California, such as alluvial and sage scrubs, open chaparral (for example, chamise [*Adenostoma fasciculatum*] chaparral), and oak woodlands. They show no known preferences or aversion to any particular plant species associations. During the breeding season, most adult male arroyo toads move from burrows to breeding sites on a nightly basis. After exhausting nights of calling, they retreat from breeding pools to burrow into sandy substrate, often within meters of their calling sites (Haas 2003, 2004a, 2004b, 2005).

Eggs hatch in 4–14 days, depending upon water temperatures. After hatching the larvae disperse into the surrounding stream where for the next 65–85 days they ingest stream sediments and loose organic material, feeding on detritus, algae, bacteria, and diatoms (U.S. Fish and Wildlife Service 1999). Upon

metamorphosing into juvenile toads, arroyo toads tend to remain along the margins of the breeding pool for up to 6 months. Initially they seek cover under rocks or other available cover until they are large enough 0.7–0.9 in. (17–23 mm) to dig burrows in which to bury themselves (U.S. Fish and Wildlife Service 1999). As they mature, the juvenile toads venture further out into surrounding upland habitats, subsisting largely on a diet of ants (U.S. Fish and Wildlife Service 1999). Male toads reach maturity in 2 years, while females reach sexual maturity in 2–3 years (U.S. Fish and Wildlife Service 1999). Adults also feed on ants as well as a variety of other insects.

Predators of arroyo toads include a variety of animals. Larvae are preyed upon by aquatic insects, snakes, bullfrogs (*Lithobates catesbeiana*), and a number of fish species. Predators of juveniles and adults include birds, snakes, bullfrogs, and probably other species such as turtles, raccoons, opossums, and ravens (U.S. Fish and Wildlife Service 1999). The western toad (*A. boreas*) occurs sympatrically with the arroyo toad and may potentially compete with it for resources.

Habitat

Adult female and sub-adult arroyo toads typically forage in upland habitats. The females, when sufficiently nourished, move to streamside breeding sites. Females are able to deposit eggs only once per breeding season (Sweet 1992); they may only visit a breeding site once each year, spending the remainder of the year in uplands near breeding sites (Haas 2003). During extremely dry periods, when breeding conditions are lacking, and when forage is poor, arroyo toads tend to remain in uplands (Haas 2003). During the driest years, they remain primarily on sandy terraces adjacent to breeding sites (Haas 2003).

Average distance from breeding sites is related to the amount of rain, with soil moisture apparently favoring a broader spectrum of usable substrate (Haas 2003). Arroyo toads wander farthest abroad when rainfall is distributed throughout the non-breeding season (Haas 2003). Some individuals may disperse up to 1.24 mi (2 km) from the streambed breeding sites (Holland and Goodman 1998, U.S. Fish and Wildlife Service 1999). Long-distance movements are typically documented along easily accessible and open thoroughfares, including roads, hiking and game trails, areas cleared of vegetation by wildfire, and along rivers, streams, and creeks (Haas 2003). Toads that stray far from the friable soils near rivers and streams, however, may succumb to desiccation during extended dry periods, especially in hostile soils (e.g., predominantly clay soils) (Haas 2003). Arroyo toads tend to remain close to breeding sites during the driest years.

Regional Status

Arroyo toads range from Monterey County, California, south to Northern Baja California; however, the population in San Luis Obispo County has been extirpated (U.S. Fish and Wildlife Service 1999). The majority of the remaining populations are found in Santa Barbara, Ventura, and Riverside Counties. Within San Diego and Riverside Counties arroyo toads occur in at least 14 river basins (U.S. Fish and Wildlife Service 1999). The population at RTSWS lies on the very eastern edge of the species distribution. In 1998, the overall breeding population was estimated at less than 3,000 individuals (U.S. Fish and Wildlife Service 1998). No current overall population estimate is available, but localized population densities can range anywhere from 25 to 200+ adult toads per 2-mile stream section, even within the same stream bed (U.S. Fish and Wildlife Service 1999).

Threats

Populations of this highly specialized, ecologically restricted amphibian have been in decline since the early 20th century. Jennings and Hayes (1994) estimated that the arroyo toad had been extirpated from

75 percent of its former range in the last century. Numerous factors have contributed to this extirpation, including damming of watercourses, which leads to the disruption of a hydrologic regime of sedimentation and scour; drawdown of the water table in the vicinity of breeding sites; and loss and fragmentation of upland habitats (Campbell et al. 1996). In 1994, the USFWS listed the arroyo toad as an endangered species (U.S. Fish and Wildlife Service 1999).

Status

The arroyo toad was listed as endangered by the USFWS (59 FR 64859) on 16 December 1994. A recovery plan was published (U.S. Fish and Wildlife Service 1999) and Critical Habitat has been designated. Currently the USFWS is considering a proposal to downlist the arroyo toad from endangered to threatened (79 FR 62408).

Critical Habitat

On 13 April 2005 (70 FR 19562), the USFWS designated approximately 11,695 ac. (4,733 ha) of critical habitat for the arroyo toad in six units. The USFWS issued revised critical habitat for the arroyo toad on 9 February 2011 (76 FR 7245), which increased critical habitat to 98,366 ac. (39,807 ha). This designation excludes approximately 4,640 ac (1,878 ha) of BLM and USFS lands leased to the Navy in Unit 15 and Unit 19 for reasons of national security under section 4(b)(2) of the ESA, Impacts to National Security. Therefore, the proposed action area does not include critical habitat for the arroyo toad.

Occurrence in the Action Area

Within the proposed action area, arroyo toad occur east of SR 79 in areas of low gradient sandy drainage, with seasonally low-energy braided channels for breeding, and adjacent uplands, with sandy or friable soils for foraging and burrowing (Tierra Data, Inc. 2007), and were observed west of SR 79 during surveys in 2013 and 2105. Arroyo toad tadpoles have been observed in quiet pools, and foraging adults were observed along damp sandbars at night, but not in narrow stream corridors, with cobbly substrates, or those densely vegetated without openings for toad access (Tierra Data, Inc. 2007). Quiet pools and damp sandbars are present along the riparian corridor and adjacent uplands of the Upper San Luis Rey River and Canada Aguanga.

Based on USFS habitat modeling of habitat, approximately 3,100 ac. (1,255 ha) of potential arroyo toad habitat exists within RTSWS (70 FR 19562), including upland and potential breeding habitat (Figure 3-5). The arroyo toad Recovery Plan (U.S. Fish and Wildlife Service 1999) describes arroyo toads as having scattered breeding sites throughout the main stem of the San Luis Rey River after first having been documented in the drainage in 1927 (U.S. Fish and Wildlife Service 1999). Arroyo toads have been reported in the main stem San Luis Rey River, West Fork, and at Indian Flats Campground (Figure 3-5). They occupy West Fork to above the Barker Valley trail (M. Jennings, unpublished data reported in U.S. Fish and Wildlife Service 1999) and at the Lost Valley Boy Scout Camp (U.S. Fish and Wildlife Service 1999). Tierra Data, Inc. (2007), performed focused surveys in suitable habitat west of SR-79 in 2006 but did not find arroyo toads.

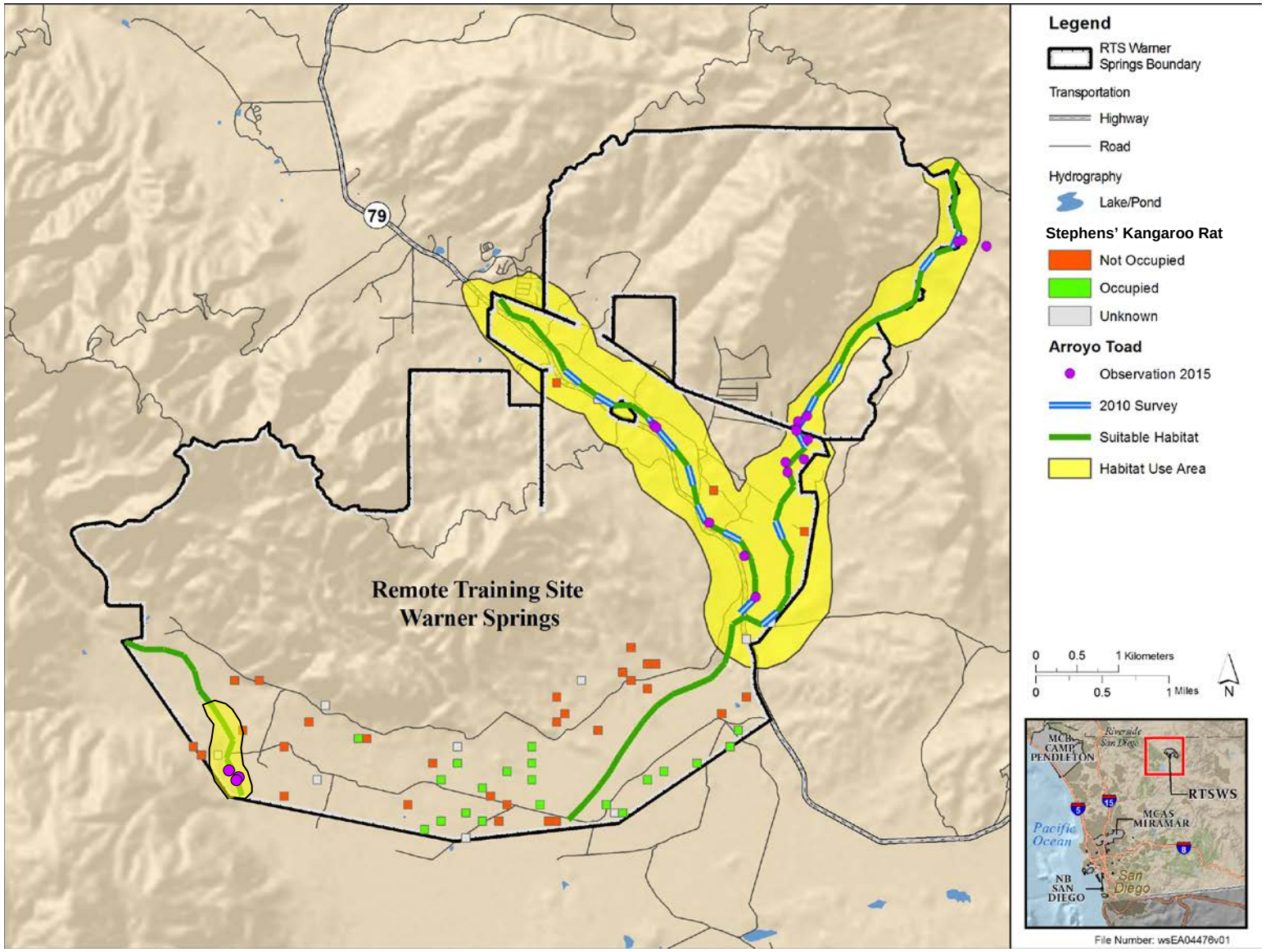


Figure 3-5: Stephens' Kangaroo Rat and Arroyo Toad Status at Remote Training Site Warner Springs

Factors Affecting Species Environment Within the Action Area

Current training activities at RTSWS are concentrated in the area on VID land east of SR-79. Much of this area has been determined to be occupied arroyo toad habitat. As a result of this training, there is the possibility of disturbance or crushing of arroyo toad and its habitat by both dispersed and concentrated foot traffic and adverse effects on habitat by helicopter operations at Landing Zone (LZ) 2.

Ongoing actions within the action area also produce noise events at night in the form of noise generated from helicopters at LZs 1 and 2, and noise from the use of simulated grenades and blank-firing weapons; this noise is a potential source of harassment. Nighttime driving on roads or emergency travel off road associated with these actions, helicopter operations at LZ2, and inadvertent capture of arroyo toad and tadpoles incident to survival training are also potential sources of direct mortality and disturbance to habitat (though consuming toads or tadpoles is restricted in the arroyo toad management area). There is also the possibility of the inadvertent introduction of non-native invasive plant species and of sedimentation of streambeds and breeding pools along with a change in the hydrologic regime that the toad depends upon, due to training activities.

However, general and specific measures to avoid and minimize effects are in place, including protection of the riparian plant communities, control of invasive plants and bullfrogs, restrictions on off-road vehicle use, a 15 mph (24 kph) speed limit on roads in occupied habitat, and restrictions on permitted activities within the arroyo toad habitat.

3.3.1.1.4 Least Bell's Vireo (Federally Endangered)

General Description and Life History

Least Bell's vireo (*Vireo bellii pusillus*) is a subspecies of the North American songbird Bell's vireo (*Vireo bellii*). Least Bell's vireo is a small (about 4.5 to 5.0 inches [11.5-12.5 centimeters] long), gray, migratory passerine species that spends its winters in Mexico and returns to southern California as a summer resident. Least Bell's vireo can be found in the region during breeding season, which is from March to August. They breed locally in willow riparian thickets with good cover and understory vegetation.

Habitat

The least Bell's vireo species is a breeding riparian habitat obligate and prefers willow-dominated woodland or scrub areas that typically exists along streams and rivers (Kus 2002). Habitat characteristics that appear to be essential for least Bell's vireo include dense cover of one to two meters (3-6 feet) in height and a stratified canopy providing both foraging habitat and song perches for territorial advertisement (Unitt 2004; U.S. Fish and Wildlife Service 1998b). The least Bell's vireo is restricted to riparian woodland and is most frequent in areas that combine an understory of dense young willows or mulefat with a canopy of tall willows.

Threats

Vireo populations began declining in the late 1900s as a result of habitat loss and alteration associated with urbanization and conversion of land adjacent to rivers to agriculture (Franzreb 1989, U.S. Fish and Wildlife Service 1998b, Riparian Habitat Joint Venture 2004). Additional factors contributing to the vireo's decline have been the expansion in the range of the Brown-headed Cowbird (*Molothrus ater*), a brood parasite, to include the Pacific coast (Franzreb 1989; Kus 1998, 1999), and the introduction of invasive exotic plant species, such as giant reed (*Arundo donax*) into riparian systems.

Status

The USFWS designated least bell's vireo as endangered in May 1986 (51 FR 16474).

Critical Habitat

Critical habitat was designated for the least bell's vireo in 1994 (70 FR 60985), but there is no critical habitat in the proposed action area.

Occurrence in the Action Area

The least bell's vireo was first detected incidentally in 2014 while doing natural resources inventory and running a Monitoring Avian Productivity and Survivorship (MAPS) station, but it was not known if a territory or pair existed, or if breeding occurred. The installation did follow up surveys in 2015 and detected a pair but could not confirm nesting.

Factors Affecting Species Environment Within the Action Area

Low-quality vireo habitat is present; however, due to the lack of a developed understory, and the lack of available water during the nesting season, birds that might be present would be transient. This area is subject to disturbance by dispersed foot traffic and is impacted by helicopter operations. These activities also carry the potential for inadvertent introduction of non-native invasive plant species. In addition, this area is subject to noise impacts from helicopter operations in LZs 1 and 2 and noise impacts from the use of simulated grenades and blank firing weapons.

General and specific measures to avoid and minimize effects are in place, which include protection of the riparian plant communities that provide habitat for vireo species, control of invasive plants, restrictions on off-road vehicle use, and restrictions on permitted activities within the potential vireo habitat.

3.3.1.1.5 Southwestern Willow Flycatcher (Federally Endangered)

General Description and Life History

The southwestern willow flycatcher (*Empidonax traillii extimus*) is one of a group of closely related species of the genus *Empidonax* that are very difficult to distinguish, especially by appearance, in the field. They are small (5.9 in., 0.4–0.5 ounces [15 cm, 11–14 grams]) songbirds having grayish-green back, white throat, and pale yellow breast. The two wingbars are faint, as are the eye rings. The upper mandible is dark, the lower mandible orange. It differs from the other species of *Empidonax* by its near lack of a pale eye ring. In southern California, only those individuals exhibiting territorial behavior outside of the migration period (i.e., after June 21) or individuals known to be nesting at any time during the breeding season should definitively be considered southwestern willow flycatchers. The southwestern willow flycatcher is a neotropical migrant. It spends the winter months in central America and returns to breed in southern California, Arizona, New Mexico, southwestern Colorado, and extreme southern portions of Nevada and Utah (Paxton 2008; Sogge et al. 2010).

Habitat

The southwestern willow flycatcher is a riparian obligate species, requiring dense stream-side vegetation to breed. This riparian habitat can range from high-elevation willow riparian, to monotypic stands of exotic saltcedar (*Tamarix* spp.), Russian olive (*Elaeagnus angustifolia*), or lower elevation broadleaf riparian habitat with varying degrees of native and exotic cover (Sogge et al. 1997). In California, broadleaf (particularly willow [*Salix* spp.]) dominated riparian is the most common type, though cottonwood (*Populus* spp.), box elder (*Acer negundo*) and exotic Tamarix are also common (Sogge et al. 1997). Southwestern willow flycatchers in the San Luis Rey River even breed in coast live oak (*Quercus agrifolia*) riparian. Preferred habitat is made up of a mosaic of trees varying in size classes from 3 to 15 meters tall with patches of dense vegetation interspersed with small openings, open water, or shorter vegetation (Sogge et al. 1997).

Regional Status

Willow flycatchers were considered a "common summer resident from willow thickets of lowlands to no more than 5000 feet in mountain canyons" in southwestern California during the early 1900s (Lehman 1994, revised draft 2012). However, a nesting population decline began in the 1920s and 1930s, resulting in the virtual extirpation of this species from its historic range throughout much of California. This decline is attributed to habitat loss/degradation, combined with the rapid onset of intense brood-parasitism by brown-headed cowbirds (Sogge et al. 2010). As of 2001, 256 southwestern willow flycatcher territories were known from California (U.S. Fish and Wildlife Service 2002).

Threats

Southwestern willow flycatchers face ongoing threats. The primary threat to their persistence and the cause of the flycatcher's decline is habitat loss and modification. Construction of dams and reservoirs, water diversions and ground water pumping, channelization and bank stabilization in stream corridors, vegetation removal within stream corridors, livestock grazing, recreational development, fires, agricultural development, and urbanization all continue to adversely affect flycatcher habitat (U.S. Fish and Wildlife Service 2002). The introduction of non-native plant species such as giant reed (*Arundo donax*) can also significantly degrade habitat. In addition, brood parasitism by brown-headed cowbirds represents an ongoing threat (U.S. Fish and Wildlife Service 2002).

Status

In response to steadily declining population numbers, the USFWS listed the southwestern willow flycatcher as an endangered species in 1995 (60 FR 10695–10715), and a Recovery Plan was finalized in 2002 (U.S. Fish and Wildlife Service 2002). To meet recovery criteria for downlisting the species to threatened, the San Diego management unit would have to increase its current known territories from 101 to 125 (U.S. Fish and Wildlife Service 2002). RTSWS is upstream from the San Diego management area.

Critical Habitat

Critical habitat was designated for the southwestern willow flycatcher in 2005 (70 FR 60985), but there is no critical habitat in the proposed action area.

Occurrence in the Action Area

Four willow flycatchers likely belonging to the subspecies *E.t. brewsteri* (a separate subspecies from the federally endangered *E. t. extimus*) were detected during the three sets of southwestern willow flycatcher surveys west of SR 79 in 2006 (Tierra Data, Inc. 2007). A single flycatcher was also detected foraging low in the riparian scrub on the north side of the dirt road in the San Luis Rey River on 30 May 2006. Two additional willow flycatchers (subspecies identification not made) were observed during one survey in 2015. None of the flycatchers could be conclusively determined to be breeding resident within the action area (Tierra Data, Inc. 2007).

The riparian area on the West Fork is the most suitable area for nesting by the flycatcher in the action area. Late-season detection was made on 14 June 2006 at this location that could have been a locally breeding southwestern willow flycatcher (*E. t. extimus*), based on the timing. The determination was inconclusive, however, due to lack of visual confirmation and failure to re-detect the bird during subsequent surveys. (Tierra Data, Inc. 2007)

Factors Affecting Species Environment Within the Action Area

Low-quality southwestern willow flycatcher habitat on the both sides of SR-79 is present; however, due to the lack of a developed understory, and the lack of available water during the nesting season, birds that might be present would likely be transient. This area is subject to disturbance by dispersed foot traffic and is impacted by helicopter operations. These activities also carry the potential for inadvertent introduction of non-native invasive plant species. In addition, this area is subject to noise impacts from helicopter operations in LZs 1 and 2 and noise impacts from the use of simulated grenades and blank firing weapons.

General and specific measures to avoid and minimize effects are in place, which include protection of the riparian plant communities that provide habitat for willow flycatcher species, control of invasive plants, restrictions on off-road vehicle use, and restrictions on permitted activities within the potential southwestern willow flycatcher habitat.

3.3.1.1.6 Stephens' Kangaroo Rat (Federally Endangered)

General Description and Life History

The Stephens' kangaroo rat is a member of the family Heteromyidae and one of 19 species in the genus *Dipodomys*. The Stephens' kangaroo rat is a medium-sized kangaroo rat, 9–12 in. (22.9–30.5 cm) long from nose to tail. Its tail is approximately 1.45 times the length of its body. Its upper sides are cinnamon-buff color, and it has white underparts. A local subspecies of the Pacific kangaroo rat, the Dulzura kangaroo rat (*Dipodomys simulans*) is also present in the proposed action area, distinguished from the Stephens' kangaroo rat only through morphometric and phenotypic characteristics measured in hand, after trapping.

The Stephens' kangaroo rat may breed at any time of year, especially in years when food is plentiful, but primarily reproduces from April to July (California Department of Fish and Game 1999). Up to three litters, with an average of 2.5 individuals each litter, will be produced in high rainfall years, compared to one or no litters in dry years (U.S. Fish and Wildlife Service 1997).

The Stephens' kangaroo rat feeds on grasses and forbs for which it may compete with other rodents. Annual grasses and forbs, such as filaree (*Erodium* sp.) and bromes (*Bromus* sp.), are most frequently taken (California Department of Fish and Game 1999). Competitors may include the deer mouse (*Peromyscus maniculatus*), and in some areas, the Dulzura kangaroo rat. However, where the Stephens' kangaroo rat co-exists with the Dulzura kangaroo rat, distinct niches are occupied, with the latter species preferring denser shrub cover (Zeiner et al. 1988). Predators include snakes, owls, foxes, and coyotes.

Habitat

The Stephens' kangaroo rat is primarily found in perennial and annual grasslands and can be considered an early-successional species, often colonizing a grassland area soon after disturbance, if the habitat is suitable. However, what appears to be accessible and suitable habitat is not always colonized as expected, for unknown reasons (Bleich 1977; Brehme et al. 2005). In disturbed, non-native grasslands, annual grasses or forbs replace the initial weedy invaders. Many of these grasses tend to persist for several years, resulting in the formation of dense mats. Annual forbs, however, disintegrate rapidly after they dry, leaving substantial patches of bare ground (O'Farrell 1997). The Stephens' kangaroo rat will avoid areas with dense grasses and thrive in areas dominated by forbs, possibly due to the increase in food resources and greater ability to use its bipedal, hopping, locomotion in the more open areas. Water

sources are currently thought to not be an important habitat variable for Stephens' kangaroo rat, because kangaroo rats obtain moisture from their food (U.S. Fish and Wildlife Service 1997).

The Stephens' kangaroo rat is also found in sparse coastal sage scrub, where perennial cover is less than 30 percent (U.S. Fish and Wildlife Service 1997). While it may be found in habitats containing up to 30 percent aerial shrub cover, more than 75 percent of occurrences were in habitat patches devoid of shrubs (O'Farrell 1997). O'Farrell (1997) suggested that aerial cover for Stephens' kangaroo rat should not exceed 10 percent, with 2.5 percent the ideal.

The Stephens' kangaroo rat will excavate its own burrows; however, they will also use abandoned gopher burrows (Montgomery 2004). Stephens' kangaroo rat burrows are more angled than gopher holes, and the apron of the hole is usually cleared of debris. The soil must be soft enough for excavation; consequently, clay soils are not inhabited (Price and Endo 1989; O'Farrell and Uptain 1989, 1987). Areas of very fine, silty soil used as dust baths are often located near Stephens' kangaroo rat burrows. It is not possible to distinguish between burrows of Stephens' and Dulzura kangaroo rats without performing on-site trapping (Montgomery 2004). Stephens' kangaroo rats will use abandoned gopher holes; however, a high density of gophers usually precludes the presence of the Stephens' kangaroo rat (Montgomery 2004). The Stephens' kangaroo rat will also use dirt roads for dust baths, foraging, or possibly for social interactions, and Stephens' kangaroo rat holes are occasionally located within infrequently used dirt roads.

Regional Status

Stephens' kangaroo rats currently occur in three geographically distinct regions in Southern California: western Riverside County, western San Diego County, and central San Diego County (USFWS 1997). They may once have extended into San Bernardino County, but no extant populations are currently known. The population occurring within the proposed action area represents a relatively small portion of the species' distribution in San Diego County and occurs on the very eastern fringe of its distribution.

No overall estimate of the current range-wide population is available. As with most rodents, the population of this species may increase or decrease rapidly in response to the quantity and quality of available habitat or environmental conditions (O'Farrell and Uptain 1987, 1989; Price and Endo 1989; McClenaghan and Taylor 1993; Diffendorfer and Deutschman 2002; Montgomery 2004; Kelt et al. 2005). Home range sizes may range from 0.1 to 0.5 ac (0.04 to 0.20 ha) (Thomas 1975; U.S. Fish and Wildlife Service 1997). Home range size is inversely proportional to population density, which is quite variable from season to season, year to year, and location to location. Reported densities range from 2 to 23 animals per acre (Zeiner et al. 1988; U.S. Fish and Wildlife Service 1997).

Threats

The primary threats to Stephens' kangaroo rat are loss of suitable habitat through agricultural and urban development and habitat fragmentation (54 FR 38465; U.S. Fish and Wildlife Service 1997). A significant portion of its former range has been lost in developed parts of southern California, and much of its current range lies on private lands. Encroachment of non-native grasses, including *Bromus diandrus*, and land practices that contribute to the development of dense vegetation, have deteriorated the suitability of habitat and have contributed to this species decline and extirpation (U.S. Fish and Wildlife Service 1997). Over-grazing and excessive off-road vehicle use have also caused habitat deterioration (U.S. Fish and Wildlife Service 1997). In addition, the use of rodenticides and predation by non-native predators (e.g., domestic cats) have decreased populations (U.S. Fish and Wildlife Service 1997).

Status

The USFWS listed the Stephens' kangaroo rat as endangered in 1998 (53 FR 38465) for reasons related to loss and fragmentation of habitat. Critical habitat has not been designated for the Stephens' kangaroo rat. A recovery plan was been drafted in 1997 (U.S. Fish and Wildlife Service 1997) but is not finalized. It states that the minimum criteria for downlisting includes the establishment of one ecosystem-based reserve in San Diego County (de-listing, two reserves in San Diego County) in either the western or central San Diego County that is permanently protected, funded, and managed.

Critical Habitat

Critical habitat has not been designated for the Stephens' kangaroo rat.

Occurrence in the Action Area

Stephens' kangaroo rats are present in trace to high densities throughout much of RTSWS. However, they are primarily found in the southern portion of the RTSWS (Tierra Data, Inc. 2007, USGS 2014; Figure 3-5). The locations of the fire management projects (Figure 2-2) are primarily chamise-dominated chaparral, coast live oak woodlands, and ruderal habitat (Tierra Data, Inc. 2007). Stephens' kangaroo rats are typically found in sparsely vegetated grassland habitat and are therefore expected to be in low densities in the areas of the fire management projects.

Factors Affecting Species Environment Within the Action Area

Occupied Stephens' kangaroo rat habitat is confirmed within the disturbed grazing land, which is part of the training area to the west of SR-79. Training activities include dispersed foot traffic, vehicle use on existing paved and unpaved roads, and helicopter operations at LZ3, which is in suitable but unoccupied habitat. These actions may occur both day and night and result in disturbance to both Stephens' kangaroo rats and their habitat. Harassment from foot traffic and noise events from the noise generated from helicopters at LZ3 and the noise from the use of simulated grenades and blank firing weapons also occur.

Within the action area, there are 5.28 mi. (8.5 km) of paved or unpaved road within 100 ft. (30.5 m) of occupied habitat where Stephens' kangaroo rat population densities are estimated to range from trace (fewer than two Stephens' kangaroo rats per hectare) to medium density (10–30 Stephens' kangaroo rats per hectare). Direct mortality from vehicle strikes and harassment due to nighttime driving on roads may occur, as well as the potential for direct mortality and disturbance to habitat from off road travel by emergency vehicles.

These actions also have the potential to result in the inadvertent introduction of non-native invasive plant species. However, measures are in place to avoid and minimize effects, including restrictions on off-road vehicle use, a 15 mph (24 kph) speed limit on roads in occupied habitat, and restrictions on permitted activities within the Stephens' kangaroo rat habitat.

3.3.1.2 Vegetation

RTSWS occurs in a largely undeveloped part of San Diego County that contains expansive wild lands encompassing numerous habitats that are minimally disturbed by humans. A total of 32 plant communities were classified for RTSWS, including 19 distinct alliances and 13 associations (U.S. Department of the Navy 2014) and is presented on Figure 3-6. Classification and mapping is currently being updated to comply with FGDC requirements..

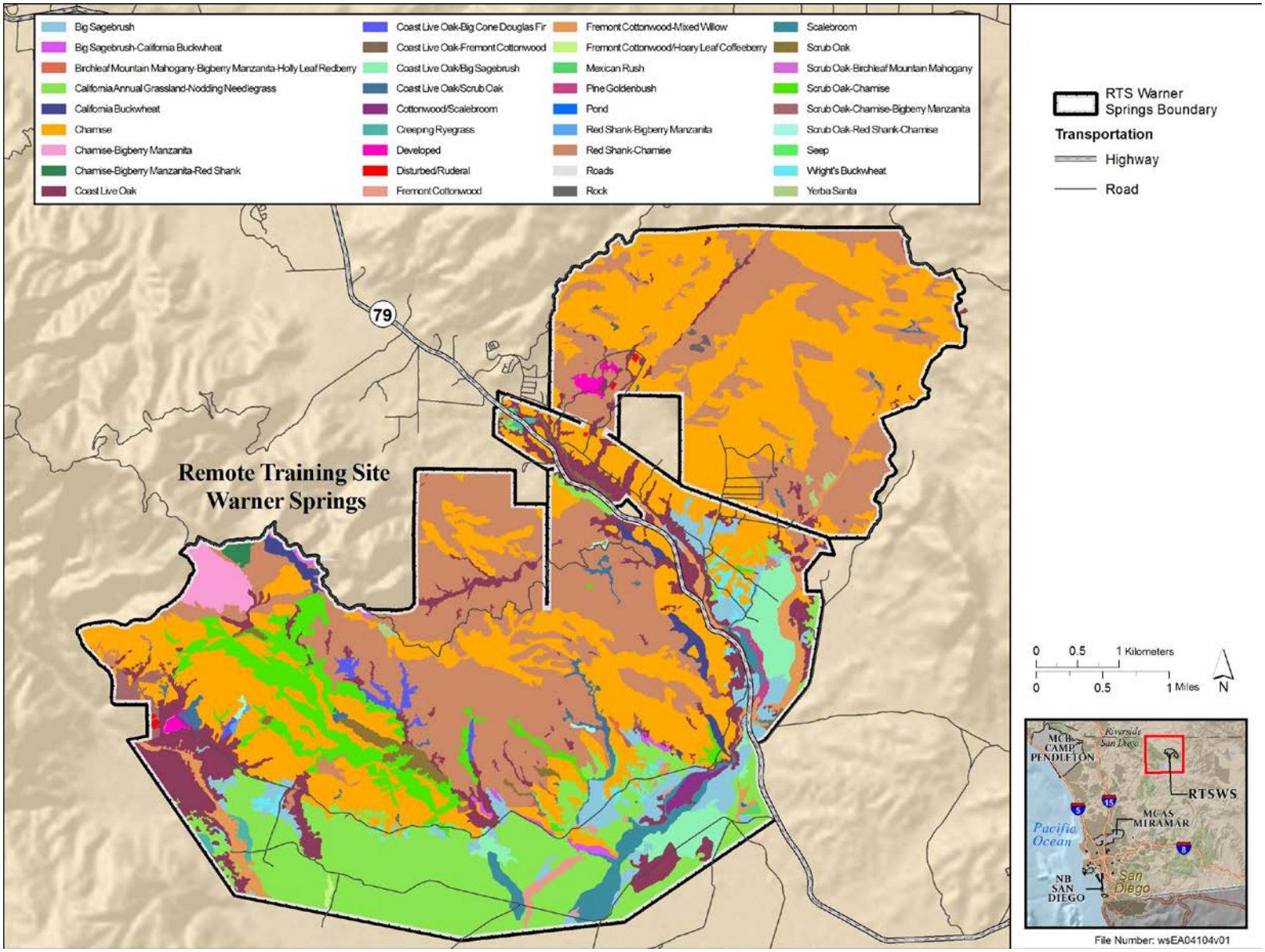


Figure 3-6: Vegetation Communities (Alliances and Associations) Occurring on Remote Training Site Warner Springs

Four alliances and one association of scrub have been designated within RTSWS, comprising only a small portion (4.9 percent) of the installation, with big sagebrush accounting for more than half. Within the big sagebrush alliance, big sagebrush is the dominant shrub species in most areas, and is almost exclusively located on VID lands. Usually few other shrub species are present at more than trace levels, and the spaces between Artemisia shrubs are generally filled in with native and non-native forbs and grasses. Prickly pear and cholla are also scattered in amongst the shrubs at low densities. On some of the lower hillsides, California buckwheat dominates, with or without big sagebrush as a co-dominant. These areas are more-or-less open with a prominent layer of native and non-native grasses and forbs. Big sagebrush also commonly occurs in association with live oak woodlands, and in one area south of Fink Road, it occurs amidst a stand of widely spaced Fremont's cottonwoods (*Populus fremontii*).

Coast live oak woodlands comprise nearly 10 percent of RTSWS, primarily along both sides of Highway 79, and at the western end of VID expansion parcel. Pockets of oak woodland are also found in many of the canyons and upland along drainages. Throughout much of the coast live oak woodland, few other trees are found, aside from the occasional Engelmann oak (*Q. engelmannii*). Common shrubs include scrub oak, *Ceanothus* spp., *Arctostaphylos* spp., skunkbrush (*Rhus trilobata*), and big sagebrush, but seldom at very high densities. Herbaceous cover is usually non-native grasses (*Bromus* spp.) and native and non-native forbs. In some areas, big sagebrush occurs in somewhat dense stands, and these areas are mapped as live oak/big sagebrush. Some of the canyons above Fink Road contain a wide variety of tree species, including coast live oak, canyon live oak (*Q. chrysolepis*), Fremont's cottonwood (*Populus fremontii*), California sycamore (*Platanus racemosa*), and big-cone Douglas fir (*Pseudotsuga macrocarpa*).

Two distinct alliances and three associations of riparian vegetation were mapped on RTSWS, comprising less than 4 percent (480 ac. [194.2 ha]) of the installation. The largest riparian alliance present is classified as scalebroom (*Lepidospartum squamatum*), and although scalebroom is the primary shrub present, it seldom occurs in dense stands. For the most part, these areas are very open, sandy streambeds with sparse vegetation cover. A few scattered cottonwoods and willows might be present and small stands of mulefat occur.

Grasslands cover approximately 12.8 percent (1,593 ac. [644.7 ha]) of RTSWS. Most of the grasslands are dominated by cheatgrass and other Bromus species, wild oats, and a large mix of native and non-native forbs, particularly filaree, owl's clover, clover (*Trifolium* spp.), lupines (*Lupinus* spp.), goldfields (*Lasthenia californica*) and shortpod mustard (*Hirschfeldia incana*). However, there are some areas where native bunch grass species (e.g., *Nassella* spp. and *Muhlenbergia* spp.) occur at quite high densities and where non-native species are reduced to a secondary role. There is a general trend for native bunchgrass density to increase towards the western end of the installation, and some of the largest and highest density bunchgrass areas are west of the West Fork of the San Luis Rey River. For the most part, the patches of native grass exist in a complex mosaic with areas where non-native species are dominant.

3.3.1.3 Invertebrates

Invertebrate surveys carried out at RTSWS, augmented by records from other surveys (especially Quino checkerspot butterfly surveys, which contributed a number of butterfly observations not detected in the collected samples), yielded a total of 681 distinct invertebrate taxa in 24 insect Orders and represent the full range of arthropod diversity, including mites, spiders (and other arachnids), springtails, bristletails, grasshoppers and crickets, dragon and damselflies, snakeflies and lacewings, and mantids (U.S. Department of the Navy 2014).

3.3.1.4 Fish

There is one main perennial stream located on RTSWS, the West Fork of the San Luis Rey River. The West Fork watershed, composed of the main perennial stream and several ephemeral streams, flows into nearby Lake Henshaw. During surveys conducted in January and May 2006, three species of fish were documented within the West Fork of the San Luis Rey River on RTSWS. These were the arroyo chub, threadfin shad (*Dorosoma petenense*), and common carp (*Cyprinus carpio*). In 2010, three additional non-native fish species were documented within the West Fork of the San Luis Rey River. These include the mosquitofish (*Gambusia affinis*), bullhead catfish (*Ictalurus melas*), and the green sunfish (*Lepomis cyanellus*) (Clark et al. 2011). Of these, only the arroyo chub is native to the area.

3.3.1.5 Reptiles and Amphibians

Reptiles and amphibians are anticipated to be reasonably widespread throughout the training area. Twenty-five species of reptiles and amphibians were recorded within RTSWS during the 2006 biological resources surveys. The most common native amphibian species encountered were western toads (*Bufo boreas*), pacific treefrogs, and California treefrogs along the stream beds of the West Fork and mainstream of the San Luis Rey River. The non-native bullfrog (*Rana catesbeiana*) was also detected through vocalizations along the San Luis Rey River, and bullfrog tadpoles were found in the West Fork of the San Luis Rey River. The western spadefoot toad, a California species of special concern, was encountered in cow ponds in VID lands (U.S. Department of the Navy 2014).

Common reptile species within RTSWS include side-blotch lizards, western fence lizards, and San Diego horned lizards. Other lizards seen included granite spiny lizards, alligator lizards, coastal whiptails (*Aspidoscelis tigris stejnegeri*), and long-nosed leopard lizards (*Gambelia wislizenii*). Western (or Coronado Island) skinks were found along the West Fork of the San Luis Rey River. Snake species seen included red racers (*Masticophis flagellum ssp. piceus*), California striped racers (*Masticophis lateralis* ssp. *lateralis*), southwestern speckled rattlesnakes (*Crotalus mitchelli* ssp. *stephensi*), southern pacific rattlesnakes (*Crotalus oreganus* ssp. *helleri*), and gopher snakes. The western patch-nosed snake, a California State Species of Special Concern, was also documented on RTSWS.

3.3.1.6 Birds

The diversity of bird species in San Diego County is a result of varied topography, climate, soils, and the county's location along the Pacific Flyway, a major north-south bird migration route. RTSWS lies within the Peninsular Range, which is capable of supporting more than 400 bird species, including warblers, ducks, sandpipers, phalaropes, gulls, terns, sparrows, towhees, and flycatchers. Most of these species are migrants or winter residents. A total of 153 birds species were observed within RTSWS during the 2005 and 2006 surveys. The most significant finds were that of the tricolored blackbird (*Agelaius tricolor*) and the gray vireo (*Vireo vicinior*), both California species of special concern and USFWS Birds of Conservation Concern (U.S. Department of the Navy 2007).

Common year-round residents on RTSWS include mourning dove (*Zenaida macroura*), California quail, wild turkey (*Meleagris gallopavo*), bushtit (*Psaltriparus minimus*), western scrub-jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), dark-eyed junco (*Junco hyemalis*), song sparrow (*Melospiza melodia*), California towhee (*Melozone crissalis*), spotted towhee (*Pipilo maculatus*), Lawrence's goldfinch (*Spinus lawrencei*), lesser goldfinch (*Spinus psaltria*), house finch (*Carpodacus mexicanus*), tricolored blackbird (*Agelaius tricolor*), western meadowlark (*Sturnella neglecta*), oak titmouse (*Baeolophus inornatus*), white-breasted nuthatch (*Sitta carolinensis*), European starling (*Sturnus vulgaris*), wrentit (*Chamaea fasciata*), Bewick's wren (*Thryomanes bewickii*), house wren

(*Troglodytes aedon*), western bluebird (*Sialia mexicana*), northern flicker (*Colaptes auratus*), acorn woodpecker (*Melanerpes formicivorus*), and Nuttall's woodpecker (*Picoides nuttallii*) (U.S. Department of the Navy 2014).

Common winter residents observed on RTSWS include green-winged teal (*Anas crecca*), savannah sparrow (*Passerculus sandwichensis*), fox sparrow (*Passerina amoena*), white-crowned sparrow (*Zonotrichia leucophrys*), brewer's blackbird (*Euphagus cyanocephalus*), American pipit (*Anthus rubescens*), yellow-rumped warbler (*Setophaga coronata*), and ruby-crowned kinglet (*Regulus calendula*) (U.S. Department of the Navy 2014).

Common breeding residents that occur on RTSWS during the summer only include black-headed grosbeak (*Pheucticus melanocephalus*), black-chinned Sparrow (*Spizella atrogularis*), cliff swallow (*Petrochelidon pyrrhonota*), western kingbird (*Tyrannus verticalis*), and ash-throated flycatcher (*Myiarchus cinerascens*) (U.S. Department of the Navy 2014).

3.3.1.7 Mammals

A total of 37 mammal species were observed within RTSWS. Of the larger mammals, mule deer (*Odocoileus hemionus*) were by far the most commonly encountered, especially in the grasslands near the edges of the oak woodlands and under the eaves of the woodlands themselves. Coyotes and bobcats were seen on many occasions in many areas, including in the grasslands south of Fink Road and along roads such as the Palomar Divide on the ridgeline north of Fink Road. Mountain lions are also known to be present, direct and camera observations have occurred during the course of the biological resources surveys. Mountain lion footprints were commonly seen in the sandy streambeds, and on one occasion, a severed deer leg was found that appeared to have been gnawed off by a large predator (U.S. Department of the Navy 2007).

Numerous American badger (*Taxidea taxus*) dens were also found in VID lands west of the highway and numerous small rodents were found within RTSWS (U.S. Department of the Navy 2014). The southern mule deer observed are part of the San Diego deer herd, one of three herds of southern mule deer recognized in southern California (the others are the San Jacinto and Santa Ana herds). The San Diego deer herd ranges for a small distance into Riverside County, Orange County, and Baja California, Mexico. This study documented a significant presence of large mammals that require contiguous, sizable tracts of land, such as the American badger, southern mule deer, and mountain lion. This area of San Diego County has become increasingly significant for large mammals because of its size and geographic position (U.S. Department of the Navy 2007).

A total of 11 bat species were recorded as a result of the 2005–2006 biological resources surveys, including four species that are California species of special concern.

3.3.2 Environmental Consequences to Biological Resources

The significance of potential impacts on biological resources are determined on the basis of the importance (e.g., legal, ecological, or scientific) of the resource, the portion of the resource that would be affected relative to its occurrence in the region, the sensitivity of the resource to existing and proposed activities, and the duration of ecological ramifications. Impacts on biological resources are significant if species or habitats of concern are adversely affected over relatively large areas or disturbances adversely affect the population or distribution of a species of concern.

This section analyzes the potential for impacts on biological resources from actions associated with the Proposed Action and the No Action Alternative.

3.3.2.1 Determination of Significance

The impact analysis for biological resources considers effects of the Proposed Action on individual biological resources and populations. The analysis first looked at how individuals would respond to a stressor or combination of stressors and whether the response would affect the fitness of an individual. Fitness refers to changes in an individual's growth, survival, annual reproductive success, or lifetime reproductive success. If individual fitness is not affected, then no impacts to populations would be expected. The potential for impacts to occur at the population level depends on several things including whether individual fitness has been reduced, the number of individuals affected, the size of the affected population, and numerous life history and ecological factors.

The significance of impacts to wildlife is considered in the context of populations. A population is broadly defined as a group of biological resources (vegetation or wildlife) of one species that interbreed and live in the same place at the same time. The geographic scale used to define a particular wildlife population is influenced by species-specific life history characteristics such migratory and breeding behavior, as well as ecological factors such as habitat availability and barriers to migration or dispersal. These species-specific characteristics and ecological factors are discussed in more detail in Section 3.2.1 (Affected Environment). In particular, impacts to special status wildlife species were considered because populations of these species have declined historically or are currently declining on a regional or national level.

Impacts to wildlife are determined significant if the fitness of individual animals were affected directly or indirectly to the extent that populations would decline or become unstable. For an outcome to be biologically significant to a population, it must have a measurable impact on the population or its habitat, which could reasonably be expected to affect its stability, and as a result influence a population's viability. The scientific limitations associated with predicting the responses of individuals and populations to stressors create a relatively high degree of uncertainty. Accordingly, a conservative approach was used in making significance determinations when the level of uncertainty was considered high.

3.3.2.2 Proposed Action

The Proposed Action would include the annual maintenance of the vegetation treatment zones around developed areas, roadside vegetation maintenance on the RTSWS entry road, the Stone Ridge Fuelbreak, implementation of post-fire erosion controls and restoration of burned sites, and fire prevention and escaped fire measures.

As described in Section 2.1.1 (Design and Maintain Vegetation Treatment [Defense Zones] Around Designated Developed Areas), 2.1.2 (Maintain Roadside Vegetation Treatment on SERE Compound Entry Road), and 2.1.3 (Stone Ridge Cooperative Fuelbreak), vegetation treatments would be performed and maintained through vegetation removal or thinned using hand power tools (e.g., brush cutters, chainsaws), vehicles (Off Highway Vehicles [OHVs] and four-wheel drive trucks), and a towable wood chipper. Because of the small implementation areas, the vegetation treatment efforts are expected to take several days per treatment project.

As described in Section 2.1.4 (Implement Post-Fire Controls and Perform Restoration of Burned Sites at RTSWS), in order to prevent erosion following a fire, burned areas will be stabilized using a variety of

methods, such as bio-engineered bank stabilization techniques, gravel, fabrics, riprap, and recycled concrete and pavement. In addition to the equipment utilized for vegetation treatments, it is expected that dozers, backhoes, loaders, and other heavier equipment would be utilized to assist in the burned site restoration. Similar to above, restoration activities involving heavier equipment would be short-term and temporary.

3.3.2.2.1 Impacts to ESA-listed Species

Slender-Horned Spineflower

Vegetation treatment zones associated with developed areas, the RTSWS entry road, and the Stone Ridge Cooperative Fuelbreak do not contain suitable habitat for slender-horned spineflower, which has never been observed at RTSWS (Tierra Data, Inc. 2007). *Pursuant to the ESA, activities associated with the maintenance of defense zones, roadside treatments along RTSWS entry road, and maintenance of the Stone Ridge Cooperative Fuelbreak will have no effect on the slender-horned spineflower.*

If erosion control and restoration activities are required in slender-horned spineflower habitat during its growth and flowering season following a fire, surviving plants may be crushed. If these activities occur within suitable habitat for the slender-horned spineflower between February and July, a qualified biologist would pre-survey the site for this species and mark a 5 ft. (1.5 m) buffer around any plants in the genus *Dodechamema* to ensure there are no impacts. If the surveys occur during flowering season (April through June), and positive identification of *D. leptoceras* can be made, then the biologist would only mark buffers around this species. Outside of this species growth, flowering, and senescing season, off-road vehicle and foot traffic are not expected to affect this species. If applied within suitable habitat, insecticides could kill pollinators and herbicides could kill individual plants. Pre-emergent herbicides could kill seedlings as they emerge if applied in suitable habitat. However, insecticides and pre-emergent herbicides would not be applied within potential slender-horned spineflower habitat and post-emergent herbicides would only be used outside of the 5 ft. (1.5 m) buffer discussed. Overall, the erosion control and restoration activities would be temporary and are expected to result in long-term benefits to slender-horned spineflower by facilitating the recovery of impacted habitat. As a result of the avoidance measures discussed above, potential impacts on the slender-horned spineflower from these elements of the Proposed Action would be reduced to less than significant. Post-fire erosion control and restoration activities will have no effect on the slender-horned spineflower.

Quino Checkerspot Butterfly

The defense zones associated with developed areas, roadside treatment along the RTSWS entry road, and the Stone Ridge Cooperative Fuelbreak contain potential habitat for Quino checkerspot, as host plants for Quino checkerspot are prone to disturbed areas. If checkerspot eggs, larvae, or pupae are present during maintenance activities they would be at risk of mortality and injury during any ground-disturbing activity, including vegetation clearing and off-road vehicle and foot traffic. Leaving wildlife logs, creating vegetation islands, and minimizing ground disturbance will help reduce the risk of impact to Quino checkerspot eggs, larvae, and pupae. If activities occur during flight season and adult checkerspots are present, they would be vulnerable to mortality or injury due to vehicle strikes. However, to the extent practicable, work would only occur between 1 June and 31 December, to avoid the period when larvae may be active which also includes the adult flight season. As a result, risk of injury due to vehicle strikes would be minimized.

There may be short term effects to clearing of vegetation around buildings and in the fuelbreak. However, there will be long term benefits as host plants for Quino checkerspot are prone to disturbed areas, which the vegetation treatment areas will potentially create. The Navy states in the Biological

Assessment (U.S. Department of the Navy 2008) that we will follow the general conservation measures already in the BO (FWS-SDG-09B0277-09F0806), and the general conservation measures for control of invasive plants and for fire prevention and control (BA sections 2.5.1.2 through 2.5.1.3). These measures will avoid or minimize any adverse impacts to suitable Quino habitat and potential host plants. Direct and indirect effects of these fire management activities will be insignificant or discountable to Quino checkerspot. For these reasons and the minimal detections of Quino checkerspot at RTSWS, the proposed action may affect, but is not likely to adversely affect the Quino checkerspot butterfly.

If erosion control and restoration activities are required in Quino checkerspot habitat following a fire, all Quino life stages could be vulnerable to injury and mortality during the implementation of erosion control or restoration activities. Surviving eggs, pupae, active or diapausing larvae could be killed or injured during any activities that involve the compaction of soils or crushing or removing surviving vegetation. Any off-road vehicle and foot traffic would avoid crushing native vegetation, and the removal of native vegetation shall be avoided to the extent practicable in order to avoid potential impacts to Quino checkerspot. If present, adult checkerspots would be vulnerable to injury and mortality from vehicle strikes. However, these activities would occur between 1 June and 31 December, outside of the period when larvae and adults are active and eggs may be present and thus minimize the risk of vehicle strikes. Quino checkerspot may also be impacted either directly or indirectly by the use of pesticides. Insectides and certain herbicides may kill all life stages of Quino checkerspot, and herbicide use may kill or injure Quino host plants. Within potential Quino checkerspot habitat, insecticides would not be applied; herbicide use would avoid host plants; herbicides would not be applied to native vegetation; and a qualified monitor would actively monitor and directly supervise all herbicide application. Rehabilitation efforts would only occur if there is less than 30% vegetation cover, if majority of cover were non-native species, or if erosion issues exist following a fire. A fire event could result in killing the Quino checkerspot butterfly in the short term, but would also open habitat preferred by the butterfly and be beneficial long term. Rehabilitation efforts if needed, would improve habitat for this species by planting host and nectar species and not closing the canopy. The proposed action may affect, but is not likely to adversely affect the Quino checkerspot butterfly.

Arroyo Toad

Some of the defense zones associated with developed areas, roadside treatment along the RTSWS entry road, and the Stone Ridge Cooperative Fuelbreak are within arroyo toad upland habitat. If toads are present in these areas, they would be expected to shelter under vegetation, debris, or burrow in loose soils or in rodent burrows during the day. Arroyo toads would then be vulnerable to death and injury by crushing from vehicle and foot traffic, or by removing surface objects, such as logs and other fallen wood debris. Removing surface objects would be minimized to the extent practicable, leaving vegetated islands and wildlife logs wherever possible. In addition, native vegetation treatments in the defense zones and maintenance of the Stone Ridge fuelbreak would not be conducted in riparian areas and therefore would only affect potential upland arroyo toad habitat. Roadside treatments would occur in marginal ruderal habitat, and thus arroyo toad presence would be unlikely. As a result, these actions are not expected to affect a significant number of arroyo toads or a significant portion of suitable arroyo toad habitat. Defense zone and fuelbreak clearing activities do not require excavation and would only occur in potential movement areas, thus would not affect aestivating toads. Any work would also be conducted during daylight hours, avoiding any toads dispersing during nighttime hours. The Navy concludes there would be no effect on the arroyo toad.

Following a fire, the opening of the canopy over waterways and siltation would increase water temperature and possibly shift hydrology so that breeding sites may no longer be suitable.

Rehabilitation efforts would provide shading vegetation and prevent siltation of the waterways where the toad breeds and benefit the species. If excavation were needed to stabilize soil, a permitted biological monitor would be present to remove and relocate toads. The proposed action may affect, but is not likely to adversely affect the arroyo toad.

The project implementation measures detailed in Section 2.1 are expected to minimize and avoid potential impacts to arroyo toads. Any activity that could potentially impact a listed species would be overseen by a qualified biologist. The use of heavy equipment would be avoided when possible in arroyo toad habitat. If excavation were needed to stabilize soil, a permitted biological monitor would be present to remove and relocate toads. Off road vehicle and foot traffic would be minimized. Pesticide use would be restricted wherever possible and used in accordance with pesticide label and DoD requirements, and a biological monitor would directly supervise herbicide application in sensitive habitats. In addition, erosion control and restoration activities would be temporary and are expected to result in long-term benefits to arroyo toads by facilitating the recovery of impacted habitat.

Least Bell's Vireo

The defense zones associated with developed areas, roadside treatment along the RTSWS entry road, and the Stone Ridge Cooperative Fuelbreak are not within suitable least Bell's vireo habitat. They are also far enough away from vireo habitat that noise related impacts during maintenance and clearing would not be disruptive. Activities associated with the maintenance of defense zones, roadside treatments along RTSWS entry road, and maintenance of the Stone Ridge Cooperative Fuelbreak will have no effect on the least Bell's vireo.

If erosion control and restoration activities are required in least Bell's vireo habitat following a fire, the severity of the burn would, in part, determine the potential for impacts to this species. In the event of a severe burn, the burned area would likely no longer constitute suitable vireo habitat, and no vireos would be expected in the area during the erosion control and restoration activities. If suitable vireo habitat is still present within the area following a fire, any vireos present may experience temporary disturbance as a result of noise and equipment traffic during the transport and installation of erosion control devices and the implementation of restoration activities. Such activities would be temporary, and a qualified biologist would ensure that there are no impacts to nesting least Bell's vireos. Overall, erosion control and restoration would be expected to result in long-term benefits to vireos by facilitating the recovery of impacted habitat. Post-fire erosion control and restoration activities may affect but are not likely to adversely affect the least Bell's vireo.

Southwestern Willow Flycatcher

The defense zones associated with developed areas, roadside treatment along the RTSWS entry road, and the Stone Ridge Cooperative Fuelbreak are not within suitable southwestern willow flycatcher habitat. They are also sufficiently distant from flycatcher habitat that noise related impacts during maintenance and clearing would not be disruptive. Activities associated with the maintenance of defense zones, roadside treatments along RTSWS entry road, and maintenance of the Stone Ridge Cooperative Fuelbreak will have no effect on the southwestern willow flycatcher.

If erosion control and restoration activities are required in southwestern willow flycatcher habitat following a fire, the severity of the burn would in part determine the potential for impacts to this species. In the event of a severe burn, the burned area would likely no longer constitute suitable flycatcher habitat, and no flycatchers would be expected in the area during the erosion control and restoration activities. If suitable flycatcher habitat is still present within the area following a fire, any

flycatchers present may experience temporary disturbance as a result of noise and equipment traffic during the transport and installation of erosion control devices and the implementation of restoration activities. Such activities would be temporary, and a qualified biologist would ensure that there are no impacts to nesting southwestern willow flycatchers. Overall, erosion control and restoration would be expected to result in long-term benefits to willow flycatcher by facilitating the recovery of impacted habitat. Post-fire erosion control and restoration activities may affect but are not likely to adversely affect the southwestern willow flycatcher.

Stephens' Kangaroo Rat

The defense zones associated with developed areas, roadside treatment along the RTSWS entry road, and the Stone Ridge Cooperative Fuelbreak do not overlap suitable habitat for Stephens' kangaroo rat. Habitat in these areas, however, is patchy and occupancy has yet to be documented. If Stephens' kangaroo rats are present in these areas, they would be expected to inhabit burrows during the day when vegetation treatment and fuelbreak maintenance activities would occur. Roadside treatments would occur in marginal ruderal habitat, and thus Stephens' kangaroo rat presence would be unlikely. As a result, these actions are not expected to affect a significant number of Stephens' kangaroo rats or a significant portion of suitable habitat.

The project implementation measures detailed in Section 2.1 are expected to minimize and avoid potential impacts to Stephens' kangaroo rat. Any activity that could potentially impact a listed species would be overseen by a qualified biologist. The use of heavy equipment would be avoided when possible in Stephens' kangaroo rat habitat. Off road vehicle and foot traffic would be minimized. In addition, erosion control and restoration activities would be temporary and are expected to result in long-term benefits to Stephens' kangaroo rat by facilitating the recovery of impacted habitat. Stephens' kangaroo rat habitat has gentle slopes where erosion would be minimal to non-existent after a fire. Rehabilitation in Stephens' kangaroo rat habitat, if needed, would be minimal and not likely to affect Stephens' kangaroo rat. The proposed action may affect, but is not likely to adversely affect the Stephens' kangaroo rat.

Vegetation, Invertebrates, Amphibians, Reptiles, and Other Non-Listed Birds and Mammals

The disturbances from defense zones associated with developed areas, roadside treatment along the RTSWS entry road, and the Stone Ridge Cooperative Fuelbreak are expected to be minimal, short term, and recoverable based on: (1) relatively low intensity of the impacts, (2) localized nature of the impacts on pre-disturbed areas, (3) infrequent nature of the impacts due to the spread-out nature of the sites, (4) the brief duration of the activities, and (5) the implementation of avoidance and minimization measures. For these reasons, long-term consequences to individual vegetation, invertebrates, amphibians, reptiles, and other non-listed birds and mammals or their populations are not expected to result from defense zone treatments.

Similarly, the Proposed Action will have no direct or indirect changes that would have a considerable negative impact on habitat. Overall, the erosion control and restoration activities would be temporary and are expected to result in long-term benefits for affected species by facilitating the recovery of impacted habitat.

Therefore, the Proposed Action would have no significant impact on biological resources in the Project Area

3.3.2.3 No Action Alternative

The No Action Alternative would include only fire prevention and escaped fire measures at RTSWS. As described above for the Proposed Action, the implementation of fire prevention and escaped fire measures minimizes the potential for impacts to sediments and topography through restrictions on the use of pyrotechnic devices, blank-firing weapons, or cooking/warming fires. Additionally, all instructors, unit personnel, and students are briefed on fire prevention measures, reporting procedures, fire danger levels, and fire safety. All vehicular units in the field during training have fire suppression equipment available in the event an unplanned ignition occurs.. While training activities at RTSWS could increase the risk of unplanned ignition, such measures would prevent and control wildland fires that might occur from an unplanned ignition caused by the training activities. Therefore, the implementation of fire prevention and escaped fire measures reduces the potential impacts on biological resources from the No Action Alternative to less than significant.

Therefore, the No Action Alternative would have no significant impact on biological resources in the Project Area

3.4 NOISE

3.4.1 INTRODUCTION TO SOUND

This section addresses potential impacts on the human terrestrial environment in the vicinity of the RTSWS from sound generated by activities identified in the alternatives, including the Proposed Action. Potential impacts of sound on terrestrial biological resources are addressed in Section 3.3 (Biological Resources).

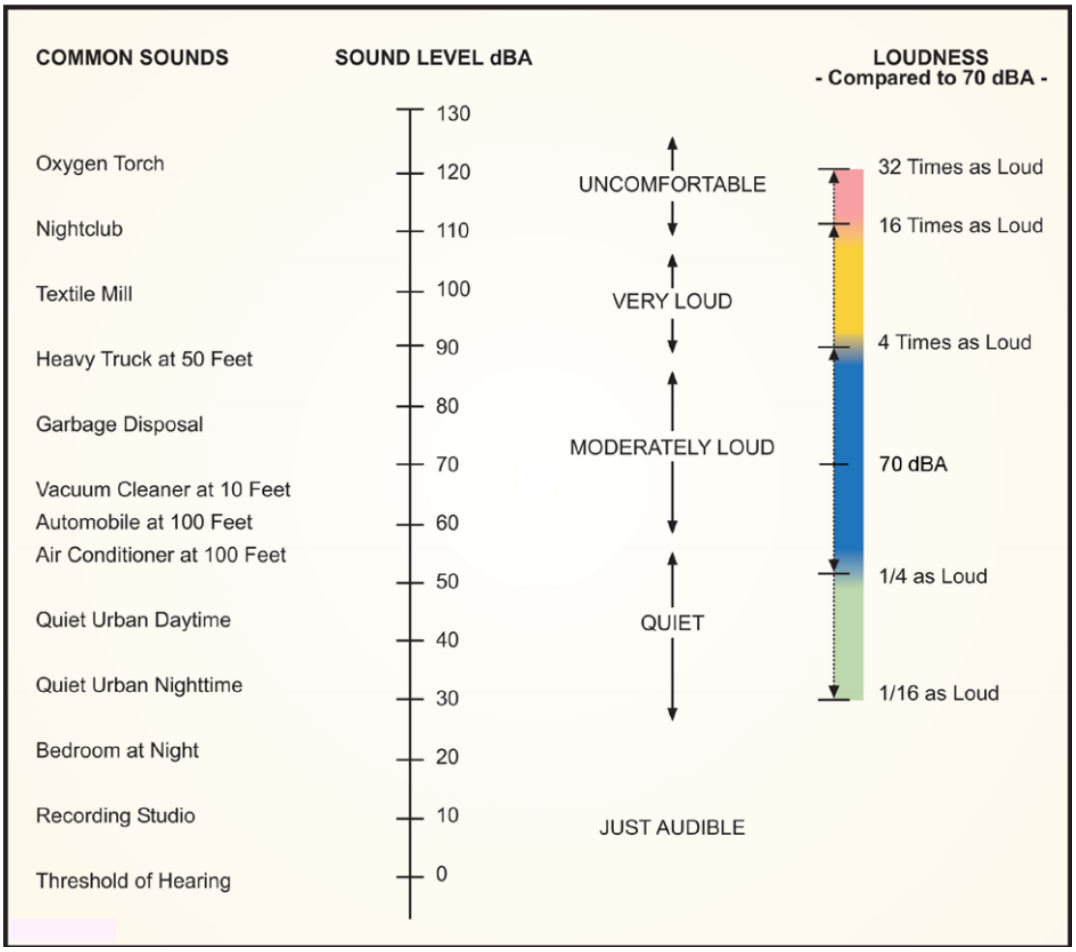
3.4.1.1 Sound Intensity

Sound intensity is expressed in decibels (dB), a logarithmic scale that compares the power of an acoustical signal to a reference power level. A sound level of zero dBs is defined as the threshold of human hearing. The human ear is not equally sensitive to all sound frequencies within the frequency range of human hearing; it cannot detect lower frequencies as well as it can detect higher frequencies. Thus, the “raw” sound intensity measured by mechanical devices is selectively weighted—or filtered—to simulate the non-linear response of the human ear. The A-weighting network is designed to duplicate the sensitivity of the human ear and heavily discounts sound energy at low frequencies and at very high frequencies. These adjusted sound levels are termed “A-weighted” sound levels, denoted as dB(A) or simply dBA. The quietest environmental conditions yield sound levels of about 20 dBA. Typical night-time sound levels in quiet residential areas have a sound level of about 35–45 dBA. Normal speech has a sound level of about 60 dBA at a distance of about 3.3 ft. (1 m). A freight train passing by at about 49.2 ft. (15 m) yields a sound level of about 85 dBA. The human pain threshold is about 120 dBA (Figure 3-7).

3.4.1.2 Sound Metrics

Transient sound is defined as an “event having a beginning and an end where the sound temporarily rises above the background and then fades into it” (U.S. Army 2005). These types of sounds, measured in terms of Sound Exposure Level (SEL), are associated with vehicles driving by, aircraft overflights, or impulse noise. The SEL is based on two characteristics of transient sound, duration and intensity, where a long duration, low-intensity event can be as annoying as a high-intensity, shorter event. The SEL is the total acoustic energy in an event normalized to 1 second (U.S. Army 2005). This number represents all of the acoustic energy for the event in a 1-second period.

Figure 3-7: Sound Levels of Selected Sound Sources and Environments



A continually varying sound level over a given period can be described as a single "equivalent" sound level (L_{eq}) that contains an amount of sound energy equal to that of the actual sound level. Thus, the L_{eq} is a measure of the average acoustic energy over a stated period. Equivalent sound levels can represent any length of time, but typically are associated with some meaningful period, such as an 8-hour L_{eq} for an office, or a 1-hour L_{eq} for a classroom lecture (U.S. Army 2005). The L_{eq} is averaged over a 1-, 8-, or 24-hour period. The L_{eq} is used to describe continuous sound sources and may be obtained by averaging sound levels over a selected period. This level is the estimation of the continuous sound level that would be equivalent to the fluctuating sound signal under consideration (U.S. Department of the Navy 1978). A L_{eq} that is a 24-hour average can also be termed the Day-Night-Level (DNL), with a caveat. The DNL is the average noise level over a 24-hour period. However, the noise between the hours of 10 p.m. and 7 a.m. is artificially increased by 10 dB. This noise is weighted to take into account the decrease in community background noise of 10 dB during this period.

3.4.1.3 Time-Averaged Sound Levels

Ambient sound standards regulate ambient sound levels through time-averaged sound level (L_{eq}) limits. Sound standards for land use compatibility established by DoD and civilian jurisdictions are expressed in terms of the DNL. Based on numerous sociological surveys and recommendations of federal interagency councils, the most common benchmark for assessing environmental sound impacts is a DNL of 65 dBA (Schomer 2005; Federal Interagency Committee on Noise 1992). Sound levels up to 65 dBA, DNL are considered to be compatible with land uses such as residences, transient lodging, and medical facilities.

Appropriate sound mitigation is recommended for new development in areas where the DNL exceeds 65 dBA. A substantial increase in the number or intensity of intrusive sound events on nearby public or private land would indicate a substantial increase in distraction and interference with sound-sensitive activities.

3.4.1.4 Ambient Sound Guidance Documents

- Chief of Naval Operations Environmental Readiness Program Manual (M-5090.1) contains guidance for considering sound. Chapter 10 (Environmental Planning Under the National Environmental Policy Act and Executive Order 12114) and Chapter 11 (Environmental Readiness in the Acquisition Process) contains guidance for sound control and abatement of Navy shore activities.
- Planning in the Noise Environment (U.S. Department of the Navy 1978) provides compatibility criteria for various land uses.
- 49 U.S.C. 44715 (The Noise Control Act of 1972)

3.4.2 AFFECTED ENVIRONMENT

3.4.2.1.1 Sensitive Receptors

Noise-sensitive areas are those areas where noise interferes with normal activities associated with its use. Normally, noise-sensitive areas include residential, educational, health, religious structures and sites, parks, recreational areas (including areas with wilderness characteristics), wildlife refuges, and cultural and historical sites. In the context of facilities and equipment, noise-sensitive areas may include such sites in the immediate vicinity of operations, pursuant to the Noise Control Act of 1972. Users of designated recreational areas are considered sensitive receptors.

RTSWS and surrounding areas are encompassed within the North Mountain Subregion of the San Diego County General Plan. This region is characterized by vast open expanses of land and scattered rural residential development (County of San Diego 2011). Based on the existing North Mountain Community Planning Area map, the areas near RTSWS are designated as National Forest and State Parks, Public/Semi-Public Lands, and Multiple Rural Use. Private and public land uses in the area include the Stoneridge Mobile Home Park, California Department of Forestry Puerta La Cruz Conservation Camp, and various spaced rural residential dwellings.

The Double R Ranch, operated by the Orange County Rescue Mission, is a private, 142 ac. (57 ha) working ranch located within the boundaries of RTSWS. It is bordered on three sides by USFS land and one side by VID land. The Double R Ranch offers day programs geared toward children 12–18 years old who may live in group homes or foster care, as well as residential care for adults from Orange County Rescue Mission's recovery program (Orange County Rescue Mission 2013).

Local schools, operated by the Warner Unified School District, are all located miles away from RTSWS. The San Jose Continuation High School, Warner Elementary School, and Warner Junior/Senior High School are all located at 30951 SR 79 in Warner Springs, approximately 6.4 mi. (10.2 km) from the RTSWS SUP Area A and 3.6 mi. (5.8 km) southeast of the closest point of the existing training area boundary (U.S. Department of the Navy 2010).

The surrounding local area is popular for developed, dispersed, and wilderness recreation (Map 1-3). Developed recreation sites on private property include Warner Hot Springs and the San Luis Rey Picnic Area. The Warner Springs Ranch Resort and Lake Henshaw are both south of the RTSWS area. Both offer

a variety of recreational opportunities. Lake Henshaw is the largest body of water in the area and offers camping and fishing. Warner Springs Ranch is a full service resort that offers recreational facilities/services, including tennis, golf, horseback riding, and dining.

3.4.2.1.2 Ambient Noise Conditions

The project area consists mostly of open space. The most commonly occurring noise sources in the area include local vehicle traffic, occasional helicopter operations, weapons firing (from hunting and military training activities using simulated munitions), and simulated grenades. Traffic noise is generated by the local traffic along SR-79 and is minimal due to the remoteness of the area. Noise associated with blank weapons firing and simulated grenades is generated during training activities (firing of simulated munitions or "blanks" using AK-47 assault rifles and use of "flash bangs"). Aircraft noise is generally associated with typical commercial aircraft flying over the area. Helicopters are used for emergency evacuation medical training. In addition, 1st MSOB and I Marine Expeditionary Force (MEF) training uses helicopters at RTSWS, albeit intermittently, such that helicopter activities do not contribute significantly to ambient sound levels.

3.4.3 Environmental Consequences to Noise

Concerns over sound include hearing loss, non-auditory health effects, annoyance, speech interference, and sleep interference. Vehicular operation, construction and renovation activities, and operations do not generate sound at intensities that could contribute to hearing loss in off-site public areas. However, potential effects would be conversation interruption, sleep interference, distraction, and annoyance. Based on numerous sociological surveys, and recommendations of federal interagency councils, the most common benchmark for assessing environmental sound impacts is a DNL of 65 dB for A-weighted sound (Schomer 2005; Federal Interagency Committee on Noise 1992). When subjected to sound levels of 65 dBA DNL, approximately 12 percent of exposed individuals would be "highly annoyed." A sound level of 75 dBA DNL is a threshold above which effects other than annoyance can occur.

3.4.3.1 Determination of Significance

The primary factor considered in determining the significance of potential noise impacts includes the extent or degree to which implementation of the Proposed Action would affect the baseline noise environment. The alternatives were examined to determine if they would produce one or more of the following effects:

- A long-term increase in the average hourly ambient sound level at any sensitive receptor of 5 or more dB, which would indicate a substantial degradation in the noise environment
- A substantial increase in the number or intensity of intrusive sound events on nearby public or private lands, which would indicate a substantial increase in distraction and interference with noise-sensitive activities

3.4.3.2 Proposed Action

The Proposed Action would include the annual maintenance of the vegetation treatment zones around developed areas, roadside vegetation maintenance on the RTSWS entry road, the Stone Ridge Fuelbreak, implementation of post-fire erosion controls and restoration of burned sites, and fire prevention and escaped fire measures.

As described in Section 2.1.1 (Design and Maintain Vegetation Treatment Zones Around All Developed Areas), 2.1.2 (Maintain Roadside Vegetation Treatment on SERE Compound Entry Road), and 2.1.3 (Stone Ridge Cooperative Fuelbreak), vegetation treatments around developed areas will not include any soil modification or ground movement activities. Vegetation treatments would be performed and maintained through vegetation removal or thinning using hand power tools (e.g., brush cutters, chainsaws), vehicles (OHVs and four wheel drive trucks), and a towable wood chipper. Because of the small implementation areas, the vegetation treatment efforts are expected to take several days per treatment project. Typical noise levels of commonly used renovation equipment are presented in Table 3-3. The equipment used for the developed areas, roadside treatment areas, and Stone Ridge fuelbreak would create received noise levels of less than 70 dBA approximately 500 ft. (152.4 m) from the work site.

Given the distance from treatment locations to adjacent sensitive receptors, noise levels from construction activities would be audible above typical background noise levels at some sensitive receptors. However, since the noise-generating events from renovation activities would be intermittent, the contribution of noise from renovation activities to the hourly sound levels (L_{eq}) is anticipated to be low (and thus, their contribution to the DNL). Sound levels up to 65 dBA DNL are considered to be compatible with land uses such as residences, transient lodging, and medical facilities. The number of sensitive receptors impacted from sound as a result of vegetation treatment activities under the Proposed Action is expected to be low, only on an intermittent basis, and only in areas immediately adjacent to the treatment activities. Therefore, vegetation treatment noise would not significantly affect the acoustic environment under the Proposed Action.

As described in Section 2.1.4 (Implement Post-Fire Controls and Perform Restoration of Burned Sites at RTSWS), in order to prevent erosion following a fire, burned areas will be stabilized using a variety of methods, such as bio-engineered bank stabilization techniques, gravel, fabrics, riprap, and recycled concrete and pavement. In addition to the equipment utilized for vegetation treatments, it is expected that dozers, backhoes, loaders, and other heavier equipment would be utilized to assist in the burned site restoration. Similar to above, and presented in Table 3-3, equipment used for the restoration activities would create received noise levels of less than 70 dBA approximately 500 ft. (152.4 m) from the work site. Additionally, restoration activities involving heavier equipment would be short-term and temporary.

Table 3-3: Typical Equipment Noise Levels

Equipment	Typical Noise Level (dBA) 50 ft. (15.2 m) from source	Typical Noise Level (dBA) 500 ft. (152.4 m) from source	Approximate Noise Level (dBA) 0.5 mi. (804.6 m) from source
Backhoe	80	60	46
Dozer	85	65	51
Grader	85	65	51
Loader	85	65	51
Saw	76	56	42
Scraper	89	69	55
Shovel	82	62	48
Truck	88	68	54

Notes: dBA = decibels, A-weighted; ft. = feet; m = meters; mi. = miles
Source: U.S. Department of Transportation; Federal Highway Administration 2006

Depending on the location of the restoration activity, noise levels from restoration activities would be audible above typical background noise levels at some sensitive receptors. If affected areas are proximate to the Double R Ranch, it is possible that users of the facility would experience intermittent elevated noise levels from restoration activities. However, since the noise-generating events from renovation activities would be intermittent, the contribution of noise from renovation activities to the hourly sound levels (L_{eq}) is anticipated to be low (and thus, their contribution to the DNL). Sound levels up to 65 dBA DNL are considered to be compatible with land uses such as residences, transient lodging, and medical facilities. The number of sensitive receptors impacted from sound as a result of renovation activities under the Proposed Action is expected to be low, only on an intermittent basis, and only in areas immediately adjacent to the treatment activities.

Therefore, restoration activity noise would not significantly affect the acoustic environment under the Proposed Action.

3.4.3.3 No Action Alternative

The No Action Alternative would include only fire prevention and escaped fire measures at RTSWS. There are no activities under the No Action Alternative that would create sound levels that could impact sensitive receptors.

Therefore, the implementation of fire prevention and escaped fire measures under the No Action Alternative would not significantly affect the acoustic environment at RTSWS.

3.5 PUBLIC HEALTH AND SAFETY

Resource issues related to public health and safety at the RTSWS include public access, fire, and emergency services.

3.5.1 AFFECTED ENVIRONMENT

3.5.1.1 Public Access

The Proposed Action includes activities on USFS lands and VID Lands, and post-fire activities may occur on USFS Cleveland National Forest (CNF), VID, and BLM lands. Public access is allowed on USFS land, with the exception of the 60-ac. (24-ha) Permit Area A (see Figure 1-1). This area is fenced for security

and safety purposes. VID land is private and access to the public is restricted. Public access is allowed on BLM land.

3.5.1.2 Fire Safety

Fire service in the area is provided either by CALFIRE or USFS in conjunction with local city and volunteer fire departments. Typically, if a fire occurs on USFS land, primary responsibility for the fire lies with the USFS Oak Grove Fire Station, and primary responsibility for fires on VID and BLM lands typically lies with CALFIRE. However, the USFS and CALFIRE periodically renegotiate as to which agency will serve as the lead response to fires in the area. The Navy maintains 47,000 gallons of water storage at the facility as a firefighting reserve for both the camp and the surrounding community. Water stored for this purpose is pumped from one of the two groundwater wells serving the SERE compound into two aboveground storage tanks.

3.5.2 Environmental Consequences to Public Health and Safety

This section evaluates potential impacts on public health and safety associated with the Proposed Action and the No Action Alternative. The analysis focuses only on impacts on public access and fire safety.

3.5.2.1 Proposed Action

The Proposed Action would include the annual maintenance of the vegetation treatment zones around developed areas, roadside vegetation maintenance on the RTSWS entry road, the Stone Ridge Fuelbreak, and the implementation of post-fire erosion controls and restoration of burned sites.

The vegetation treatments around developed areas and on the RTSWS entry road would occur in Permit Area A where there is no public access. The Stone Ridge Fuelbreak vegetation treatments would occur in an area with public access. However, the proposed activities would not create a public health or safety issue, as vegetation treatment activities would be coordinated with the Stone Ridge facility, which would minimize civilian use of the area during treatments.

Restoration activities could include revegetation activities, involving watering and the use of herbicides, insecticides, and pesticides. Herbicides, insecticides, and pesticides will be used in accordance with the defined label use and DoD regulations. Additionally, they would not be sprayed when there are wind velocities above 5 mph (8 kph) or in foggy or rainy conditions. These regulations would limit the potential for these materials to impact public use of the area or become a public health issue.

Therefore, the Proposed Action would have no significant impact on public health and safety at RTSWS.

3.5.2.2 No Action Alternative

The No Action Alternative would include the implementation of post-fire erosion controls and restoration of burned sites. Restoration activities could include revegetation activities, involving watering and the use of herbicides, insecticides, and pesticides. Herbicides, insecticides, and pesticides will be used in accordance with the defined label use and DoD regulations. Additionally, they would not be sprayed when there are wind velocities above 5 mph (8 kph) or in foggy or rainy conditions. These regulations would limit the potential for these materials to impact public use of the area or become a public health issue.

Therefore, the No Action Alternative would have no significant impact on public health and safety at RTSWS.

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4 CUMULATIVE IMPACTS

4.1 INTRODUCTION

The assessment of cumulative impacts (or cumulative effects[1]) in the Study Area follows the objectives of NEPA of 1969, CEQ regulations, and CEQ guidance. Council on Environmental Quality regulations (40 C.F.R. Parts 1500-1508) provide the implementing procedures for NEPA as

> … the impact on the environment which results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (40 C.F.R. §1508.7)

While a single project may have minor impacts, overall impacts may be collectively significant when the project is considered together with other projects on a regional scale.[2] The CEQ provides guidance on cumulative impacts analysis in *Considering Cumulative Effects Under the National Environmental Policy Act* (Council on Environmental Quality 1997) and identifies cumulative effects as those environmental effects resulting "from spatial and temporal crowding of environmental perturbations."

This EA examines cumulative effects as a result of the implementation of wildland fire management actions at RTSWS. As the scope and nature of activities associated with the Proposed Action would not change from existing activities, no additional cumulative analysis is required beyond what is presented in this chapter.

4.2 APPROACH TO ANALYSIS

The cumulative impacts analysis in this EA focused on impacts that are "truly meaningful," in accordance with CEQ guidance (Council on Environmental Quality 1997). The level of analysis for each resource was commensurate with the intensity of the impacts. Variable geographic boundaries were used for analyses of cumulative impacts, depending on the resource being evaluated. The current impacts of past and present actions and the potential impacts of reasonably foreseeable future actions were analyzed, to the extent they may be additive to impacts of the Proposed Action. The cumulative impacts analysis was not limited by a specific timeframe; however, this EA dismissed from further analysis the actions and environmental considerations that were considered not reasonably foreseeable. Section 4.3 (Actions Analyzed in the Study Area) presents the other actions analyzed for cumulative impacts. Section 4.4 (Potential Cumulative Impacts) summarizes those effects and makes a determination of the level of significance.

4.3 ACTIONS ANALYZED IN THE STUDY AREA

Various types of reasonably foreseeable future actions relevant to the Proposed Action have the potential to affect the resources identified in Chapter 3 (Affected Environment and Environmental Consequences). Descriptions of the other actions and environmental considerations carried forward for analysis are provided in Table 4-1 andTable 4-2 presents other actions not carried forward for analysis.

[1] CEQ regulations consider the terms "cumulative impacts" and "cumulative effects" as synonymous (40 C.F.R. §1508.8[b]); the terms are used interchangeably.
[2] A cumulative impact is the additive effect of all projects in the geographic area.

Table 4-1: Cumulative Projects Retained for Analysis

Project Name/Description	Location	Timeframe
United States Department of the Navy		
Expansion of and Training Activities at RTSWS	RTSWS	Past, present, and future
United States Forest Service		
Forest-Wide Unauthorized Route Decommissioning	Cleveland National Forest	Future
San Diego Gas & Electric (SDG&E) Master Special Use Permit	Cleveland National Forest	Future
Cleveland National Forest Invasive Weed Management Plan	Cleveland National Forest	Present, and future
Southern California National Forests Land Management Plan Amendment	Cleveland National Forest	Present, and future

The analysis of cumulative impacts included other environmental considerations as well as a review of federal, State, and local projects. This EA analyzed cumulative impacts that focused only on the relevant actions that currently affect, or reasonably could affect, the resources in the Study Area. Past and present actions are considered part of the affected environment.

4.3.1 Expansion and Training Activities at Remote Training Site Warner Springs

In 2010 the Navy evaluated existing and future training activities at RTSWS in an EA (U.S. Department of the Navy 2010). The Proposed Action involved the geographic expansion of the RTSWS and the continuance and increase of training activities occurring on the installation. Specifically, the Proposed Action consisted of: 1) the expansion and realignment of training areas, portions of which would occur on BLM, USFS, and VID lands; 2) maintenance of current types of training activities for SERE, NSW, 1st MSOB, and ACB-1 (Seabee) units; 3) an increase in annual SERE student use; 4) accommodation of future training requirements of the NSW, 1st MSOB, I MEF Test and Evaluation Group (TEG)/Test and Evaluation Coordinating Group (TECG), and other units (e.g., military) that are occasional users of RTSWS; and 5) replacement of the current MOU between the Navy and USFS with a SUP. A full range of environmental issues were assessed including land use and recreation, air quality, water resources, biological resources, cultural resources, public health and safety, noise, and traffic and circulation. In general, the potential impacts associated with these activities included:

- Increases in erosion, runoff, and sedimentation associated with increased training activities
- Vegetation and wildlife disturbance during training activities (offset by best management practices)
- Changes to land use zones and public use and recreation areas
- Increased emissions during expansion activities and increased training activities, but not in excess of the 250 tons per year comparative threshold
- Increased noise levels in the vicinity of the RTSWS due to increased level of training activities that utilize blank-firing weapons and the introduction of helicopter operations

4.3.1.1 Cleveland National Forest Invasive Weed Management Plan

This project is to plan for weed treatment activities for known infestations of certain invasive plant species. Weed removal efforts may include herbicides. A rapid response weed treatment protocol for new infestations will also be developed. The Proposed Action for the 2014 Cleveland National Forest Invasive Weed Management EA includes invasive species control or eradication efforts on Cleveland

National Forest lands for certain invasive weed species and specific infestations, as well as rapid response for certain species not currently known to occur, and an adaptive management framework for treating newly discovered infestations of target species or newly discovered species.

The priority species with the greatest potential to impact ecology in the Cleveland National Forest and expand are tamarisk, giant reed (Arundo donax), and yellow starthistle. No aerial application of herbicides would occur, and only five specific herbicides would be used (Glyphosate, Triclopyr, Imazapyr, Aminopyralid, and Fluazifop-p-butyl). This ongoing project is likely to occur for 10–20 years. The proposed action will also include monitoring so that there is baseline information that can determine the effectiveness of treatment, lead to quicker treatment of new populations, evaluate the restoration of treated sites, and possibly lead to adaptive management based on unanticipated effects (U.S. Department of Agriculture 2014).

Significant adverse effects are not expected on human health and safety. The Biological Assessment for the Cleveland National Forest Invasive Weed Management EA concluded that the Proposed Action may affect, but was not likely to adversely affect, three Federally listed wildlife species: the California arroyo toad (Bufo microscaphus californicus), least Bell's vireo (Vireo bellii pusillus), and southwestern willow flycatcher (Empidonax traillii extimus). All other federal-listed species were found to have no effect or a positive effect due to improved habitat conditions from implementation of the Proposed Action. No negative effects are expected for the 14 federal- or state-listed endangered or threatened plant species in the study area. Sensitive plants may be affected as individuals but the action is not likely to result in a trend toward federal listing for Forest Service listed sensitive plant species. The proposed action was found to benefit all Management Indicator Species due to improved habitat conditions. The watershed could be impacted due to erosion and sediment transport to streams, use of herbicides or pesticides, which could impact soil productivity and water quality, and from recent wildlfires. There would be no impact to heritage or cultural resources from the Proposed Action. The Proposed Action would have short-term and temporary impacts to the degradation of the Wilderness character of the study area (U.S. Department of Agriculture 2014).

4.3.1.2 Southern California National Forests Land Management Plan Amendment

The Angeles, Cleveland, Los Padres, and San Bernardino national forests propose to amend their land management plans with new guidance for roadless area management and land management plan monitoring. The 2013 Final Supplemental Environmental Impact Statement Southern California National Forests Land Management Plan Amendment describes four alternative land use zone allocations for 35 inventoried roadless areas, and three alternative monitoring strategies. The Proposed Action applies more restrictive land use zones and increases recommended wilderness allocations as well as adds new monitoring protocols. The conclusions from their effects analysis are that allocating more of the study area to restrictive land use zones would benefit resources such as watershed, wildlife, and dispersed recreation by limiting future activities. Under the Proposed Action, there would be no effects on fire suppression, law enforcement, or other emergency response, and limited effects to reduced road access (U.S. Department of Agriculture 2013).

Table 4-2: Cumulative Projects Dismissed from Analysis

Project Name/Description	Location	Reason for Dismissal
United States Forest Service (USFS)		
Forest-Wide Unauthorized Route Decommissioning The Cleveland National Forest received funding from the California Off-Highway Vehicle Grants Program to decommission unauthorized routes, as defined by the 2008 Motorized Travel Management decision, that have the greatest resource impacts.	Cleveland National Forest All Units	Outside of the Project Area
San Diego Gas & Electric (SDG&E) Master Special Use Permit The Cleveland National Forest is proposing to develop a "master" permit to consolidate and reissue over 70 permits presently issued to SDG&E, which also is proposing to “fire-harden” some of the electric lines to improve system safety and reliability.	Cleveland National Forest All Units	Outside of the Project Area
AT&T Master Permit Renewal for Telephone Lines To renew AT&T's authorizations on the Cleveland National Forest land, one master permit with 135 amendments, one 50-year right-of-way, one telephone booth, and one access on private road to telephone facilities is proposed for renewal.	Cleveland National Forest All Units	Permit renewal only
Feral Pig Damage Control Project on Cleveland National Forest and Bureau of Land Management Lands This project seeks to reverse the trend of increasing loss of natural resource values due to invasive species such as feral pigs, and prevent the introduction of new invaders, conduct early treatment of new infestations, and contain and control established infestations.	Cleveland National Forest All Units	Outside of the Project Area
Alpine Community Defense The Descanso Ranger District is proposing vegetation treatments in the vicinity of Alpine, California to reduce vegetation levels and mitigate the potential effects of wildfire. This project was expanded beyond its original focus on the Sweetwater and Viejas Creek area.	Descanso Ranger District	Outside of the Project Area
Greater Alpine Community Defense Fuels Treatment on Non-Federal Lands This project involves constructing fuel breaks on private lands to reduce the risk to life, property, and resource values from an unusually severe wildland fire event in the greater Alpine area and improve fire suppression effectiveness and safety.	Descanso Ranger District	Outside of the Project Area
South Main Divide and Greater El Cariso Fuels Management The Trabuco Ranger District proposes to treat vegetation along South and North Main Divide Roads and Long Canyon Road in order to mitigate the potential effects of wildfires. This project was expanded beyond its original focus on Elsinore Peak.	Trabuco Ranger District	Outside of the Project Area
Three Sisters Falls Recreation Management To designate or construct a Forest Service system trail to Three Sisters Falls and a primitive parking area, and to decommission and restore user-created trails to address resource impacts and public safety issues.	Palomar Ranger District	Outside of the Project Area
Cedar Creek Falls Visitor Use Permit System Modification The proposed action would adjust the visitor use permit system by freezing maximum use levels at Cedar Creek Falls at 75 daily visitor use permits allowing up to 5 visitors each.	Ramona, California; Palomar Ranger District	Outside of the Project Area
Laguna Water System Improvement Installation of a new electrical drop and service, water and control line distribution to a new reservoir site, the installation of a new 100,000	Descanso Ranger District	Outside of the Project Area

gallon reservoir and water distribution line extension to connect to the existing Laguna water system		
Lake Morena Community Defense Project Create and maintain defense zone on National Forest Service lands in the vicinity of Lake Morena Village.	Descanso Ranger District	Outside of the Project Area

Table 4-2: Cumulative Projects Dismissed from Analysis (continued)

Vista Irrigation District (VID)		
Water Supply Response Program Amended The VID has amended its Water Supply Response Program to comply with the new State Water Resources Control Board emergency regulations, adding provisions prohibiting the watering of landscapes during or 48 hours after measurable rainfall and the watering of turf in public street medians. The new rules also change the hours that landscape can be irrigated and shortens the timeframe that customers have to repair leaks.	Vista Irrigation District	No Overlap with Project Area

The analysis of cumulative impacts included other environmental considerations as well as a review of federal, State, and local projects. This EA analyzed cumulative impacts that focused only on the relevant actions that currently affect, or reasonably could affect, the resources in the Study Area. Past and present actions are considered part of the affected environment.

4.4 Potential Cumulative Impacts

A finding of a significant cumulative impact requires (1) a determination that the aggregate impact of past, present, and reasonably foreseeable future projects on a resource, including the Proposed Action, would be significant; and (2) a determination that the Proposed Action would contribute to that impact in an additive or synergistic manner. Where significance thresholds already have been exceeded by past, present, and approved future projects, this analysis assumes any incremental contribution to the existing adverse condition by the Proposed Action that impedes the reduction of that impact to a level of insignificance would be considered cumulatively significant.

4.4.1 Topography and Soils

The cumulative projects identified in Section 4.3 (Actions Analyzed in the Study Area) would have varying effects on topography and soils within the Study Area. Wildland fire management actions, in conjunction with identified cumulative projects would not result in significant cumulative impacts on topography and soils. None of the cumulative projects would impact topography and soils in the same manner or in the same areas. Therefore, in conjunction with other past, present, or reasonably foreseeable projects, the Proposed Action would not result in significant cumulative impacts on topography and soils.

4.4.2 Water Quality

The cumulative projects identified in Section 4.3 (Actions Analyzed in the Study Area) would have varying effects on water quality and sediments within the Study Area. Wildland fire management actions implementation activities, in conjunction with identified cumulative projects, would not result in significant cumulative impacts on water resources. None of the cumulative projects would impact surface water resources in the same manner or in the same areas. Since no construction is proposed, there is no increase in the amount of impervious surfaces or surface runoff. Therefore, in conjunction with other past, present, or reasonably foreseeable projects, the Proposed Action would not result in significant cumulative impacts on water resources.

4.4.3 Biological Resources

Cumulative direct impacts on biological resources may result from loss of habitat, impaired access to important life-cycle resources on a population scale, or wildlife disturbances from projects identified in Section 4.3 (Actions Analyzed in the Study Area) that include substantial ground disturbing activities and increased noise levels. Non-Navy project-related developments that reduce areas of vegetation communities or reduce or encroach on seasonal wildlife habitats have direct, local impacts. These adverse effects, when added to other projects occurring within the same geographic area, may have significant impacts.

The vegetation types and wildlife present in the cumulative impacts analysis area are generally widely distributed, and few limitations to their availability were identified. Indirect impacts on wildlife include the addition of NSW/Special Operations Forces (SOF) training activities and associated human presence, and other disturbances that may cause changes in resting or feeding cycles, displacement from habitat, masking of sounds and related changes in vocal behavior, or disrupted breeding or young-rearing activities.

The analysis in Section 3.3 (Biological Resources) indicates that impacts of the alternatives on terrestrial biological resources would be minimal, short term, and recoverable based on the (1) relatively low intensity of the impacts, (2) localized nature of the impacts, (3) infrequent nature of the impacts, and (4) brief duration of the activities. For these reasons, long-term consequences to individuals or populations of terrestrial biological resources are not expected to result from the Proposed Action training activities. Therefore, impacts on terrestrial biological resources from proposed training activities would be less than significant.

Training activities within the Training Study Area, in conjunction with the identified cumulative projects, would not result in significant cumulative impacts on terrestrial biological resources. Few of the cumulative projects overlap with the existing training locations and most would have only temporary, localized impacts on terrestrial biological resources. Therefore, in conjunction with past, present and reasonably foreseeable projects, the Proposed Action would not result in significant cumulative impacts on terrestrial biological resources.

4.4.4 Noise

Vegetation treatment and post-fire restoration activities would increase daytime noise levels in the short-term in the vicinity of those projects. Overall, cumulative increases in long-term average noise levels in the Bayview area from planned and proposed projects would not be significant. Based on information available at this time, the action alternatives are not expected to contribute to cumulative long-term average noise levels. Therefore, further analysis of cumulative impacts on noise is not warranted at this time.

4.4.5 Public Health and Safety

The Proposed Action, in conjunction with identified cumulative projects, would not result in significant cumulative public health and safety impacts. Although recreational use of public lands is likely to occur in the future, the impacts of wildland fire management actions on public health and safety would not increase. With implementation of Standard Operating Procedures (SOPs), public safety would continue to be protected. Therefore, no additive or synergistic public safety risk would exist. In conjunction with other past, present, and reasonably foreseeable projects, the Proposed Action would not result in

significant cumulative public health or safety impacts. Therefore, further analysis of cumulative impacts on public health and safety is not warranted at this time.

4.5 SUMMARY OF CUMULATIVE IMPACTS

In accordance with Council on Environmental Quality guidance (Council on Environmental Quality 1997), the cumulative impacts analysis focused on impacts that are "truly meaningful." The level of analysis for each resource was commensurate with the intensity of the impacts identified in Chapter 3 (Affected Environment and Environmental Consequences). No significant contribution of military activities associated with the Proposed Action were identified when added to other past, present, and reasonably foreseeable future actions. The discussions presented in Chapter 3 of this EA indicate that implementation of the Proposed Action would not significantly impact the resources that have been evaluated (topography and soils, biological resources, noise, and public health and safety). The evaluation of other actions that are reasonably foreseeable in the Study Area, and other environmental considerations, indicated that procedures and processes are implemented to minimize or avoid cumulative impacts. Therefore, the proposed activities under the Proposed Action would not result in significant cumulative impacts on the resources evaluated.

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5 OTHER NEPA CONSIDERATIONS

5.1 POSSIBLE CONFLICTS BETWEEN THE PROPOSED ACTION AND THE OBJECTIVES OF FEDERAL ACTS, EXECUTIVE ORDERS, POLICIES, AND PLANS

Based on evaluation with respect to consistency and statutory obligations, the Navy's Proposed Action for RTSWS does not conflict with the objectives or requirements of federal, state, regional, or local plans, policies, or legal requirements. Table 5-1 summarizes environmental compliance requirements that were considered in preparing this EA.

Table 5-1: Summary of Environmental Compliance for the Proposed Action

Plans, Policies, and Controls	Responsible Agency	Status of Compliance
Clean Air Act (CAA) (42 U.S.C. §§ 7401 et seq.) CAA General Conformity Rule (40 C.F.R. § 93[B]) State Implementation Plan (SIP)	United States (U.S.) Environmental Protection Agency (USEPA)	The CAA is the comprehensive federal law that regulates air emissions from stationary and mobile sources. The Proposed Action would not conflict with attainment and maintenance goals established in SIPs. A CAA conformity determination will not be required because emissions attributable to the Proposed Action would be below *de minimis* thresholds.
Clean Water Act (CWA) (33 U.S.C. 1251 et seq.)	USEPA	The CWA is an act to provide for water pollution control activities in the Public Health Service of the Federal Security Agency and in the Federal Works Agency, and for other purposes. The Act's objective is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. The Proposed Action would not conflict with goals established in SIPs. No permits are required under the CWA Sections 401, 402, or 404 (b)(1).
NEPA of 1969 (42 U.S.C. §§4321, et seq.) Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 C.F.R. §§1500–1508) Navy Procedures for Implementing NEPA (32 C.F.R. §775)	U.S. Department of the Navy (Navy)	This EA has been prepared in accordance with NEPA, CEQ regulations, and the Navy's NEPA procedures. The Proposed Action would not result in significant impacts, and thus an EIS is not required.
Endangered Species Act (ESA) (16 U.S.C. §§1531 et seq.)	U.S. Fish and Wildlife Service (USFWS)	The ESA established protection over and conservation of threatened and endangered species and the ecosystems upon which they depend. Navy is complying with ESA regulations through consultations with USFWS.

Table 5-1: Summary of Environmental Compliance for the Proposed Action (continued)

Plans, Policies, and Controls	Responsible Agency	Status of Compliance
Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§703–712)	USFWS	The Migratory Bird Treaty Act prohibits the taking, killing, or possessing of migratory birds or the parts, nests, or eggs of such birds, unless permitted by regulation. The 2003 National Defense Authorization Act provides that the Armed Forces may take migratory birds incidental to military readiness activities provided that, for those ongoing or proposed activities that the Armed Forces determine may result in a significant adverse effect on a population of a migratory bird species, the Armed Forces confer and cooperate with the Service to develop and implement appropriate conservation measures to minimize or mitigate such significant adverse effects. Implementation of the Proposed Action would cause no significant adverse effect on a population of migratory bird species. The Proposed Action would not have a significant impact on migratory birds and would comply with applicable requirements of the MBTA.
National Historic Preservation Act (36 C.F.R. §800)	Navy/State Historic Preservation Office	The Proposed Action would not result in any negative impacts, change, or alter cultural resources of surrounding areas.
EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (58 FR 7269 [16 February 1994])	Navy	The Proposed Action would not result in any disproportionately high and adverse human health or environmental effects on minority or low-income populations.

5.2 Irreversible and Irretrievable Commitment of Resources

NEPA requires that environmental analysis include identification of "any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented." [NEPA Sec. 102 (2)(C)(v), 42 U.S.C. §4332]. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy or minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., the disturbance of a cultural site). For the Proposed Action, most resource commitments are neither irreversible nor irretrievable. Most impacts are short term and temporary or, if long lasting, are negligible.

5.3 Relationship Between Short-Term Use of the Environment and Long-Term Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and of the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one

development option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other resource to a certain use eliminates the possibility of other uses being performed at the site. The nature of activities for the Proposed Action would not differ from current uses of these areas. Therefore, implementation of the Proposed Action would not result in significant impacts on sensitive resources. As a result, it is not anticipated that the Proposed Action would result in any environmental impacts that would permanently narrow the range of beneficial uses of the environment or pose long-term risks to health, safety, or the general welfare of the public.

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