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Tahoe Program Timberland Environmental Impact Report

State Clearinghouse No. 2019069054

Prepared for:



California Department of
Forestry and Fire Protection



Tahoe Fire and
Fuels Team

April 2020

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LIST OF ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
AB	Assembly Bill
AFV	alternative fuel vehicles
AIS	aquatic invasive species
Basin	Lake Tahoe Basin
Basin Plan	Water Quality Control Plan for the Lahontan Region
BBER	Bureau of Business and Economic Research
BMP	Best Management Practices
Board	California Board of Forestry and Fire Protection
BP	before present
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Occupational Safety and Health Administration
CalEPA	California Environmental Protection Agency
California MUTCD	<i>California Manual on Uniform Traffic Control Devices</i>
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CALVEG	California Vegetation
CalVTP	California Vegetation Treatment Program
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDF	California Department of Forestry and Fire Protection
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFPR	California Forest Practice Rules
CFR	Code of Federal Regulations
CLG	Certified Local Government
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level

CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO ₂	carbon dioxide
Conservancy	California Tahoe Conservancy
CPI	Consumer Price Index
CRHR	California Register of Historical Resources
CSCI	California Stream Condition Index
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships System
CWPP	Community Wildfire Protection Plan
dB	decibels
dbh	diameter at breast height
diesel PM	diesel particulate matter exhaust
DOT	U.S. Department of Transportation
DTSC	California Department of Toxic Substances Control
DTSC	California Department of Toxic Substances Control
EDCAQMD	El Dorado County Air Quality Management District
EIP	Environmental Improvement Program
EIR	environmental impact report
ELZ	Equipment limitation zones
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986
ESA	Endangered Species Act
EVEG	existing vegetation
FACA	Federal Advisory Committee Act
FGC	Fish and Game Code
FHSZ	Fire Hazard Severity Zones
FHWA	Federal Highway Administration
FIA	Forest Inventory and Analysis Program
FICAN	Federal Interagency Committee on Aviation Noise
FPA	Forest Practice Act
FPR	Forest Practice Rules
FRAP	Fire and Resource Assessment Program
GHG	greenhouse gases
GPS	Global Positioning System
GVWR	Gross Vehicle Weight Rating
HAP	hazardous air pollutants
HCP	habitat conservation plans
HSC	Health and Safety Code

Hz	hertz
I-80	Interstate 80
IAP	Incident Action Plan
IEPR	Integrated Energy Policy Report
Impulsive Noise Level	Single Event
IPaC	Information for Planning and Consultation
IPCC	Intergovernmental Panel on Climate Change
Lahontan	Lahontan Water Quality Control Board
Lahontan RWQCB	Lahontan Regional Water Quality Control Board
lb/day	pounds per day
LCD	Land capability districts
LCFS	Low Carbon Fuel Standard
L_{dn}	Day-Night Level
League	League to Save Lake Tahoe
L_{eq}	Equivalent Continuous Sound Level
LiDAR	Light Detection and Ranging
L_{max}	Maximum Sound Level
LOS	level of service
LRA	Local Responsibility Area
LTAB	Lake Tahoe Air Basin
LTBMU	Lake Tahoe Basin Management Unit
LTBWCG	Lake Tahoe Basin Weed Coordinating Group
LTGRP	Lake Tahoe Geographic Response Plan
LTIMP	Lake Tahoe Interagency Monitoring Program
LTO	Licensed Timber Operator
LTR&TCo.	Lake Tahoe Railway and Transportation Company
LTW	Lake Tahoe West
LUST	leaking underground storage tanks
MBTA	Migratory Bird Treaty Act
MLD	most likely descendant
Mm^{-1}	inverse mega meters
MMTCO ₂ e	metric tons of carbon dioxide equivalent
MOA	Memoranda of Agreement
mPa	micro-Pascals
mpg	miles per gallon
MSP	maximum sustained production
MTCO ₂ e/year	metric tons of CO ₂ equivalent per year
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NCCP	natural community conservation plans
NCIC	North Central Information Center
NDEP	Nevada Department of Environmental Protection

NFS	National Forest System
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic and Safety Administration
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO ₂	nitrogen dioxide
NOA	naturally occurring asbestos
NOP	Notice of Preparation
NO _x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OEL	occupational exposure limits
OES	Office of Emergency Services
ONRW	Outstanding National Resource Water
OPR	California Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
ozone	photochemical smog
PAH	polycyclic aromatic hydrocarbons
PAS	plan area statements
PCAPCD	Placer County Air Pollution Control District
PCEH	Placer County Environmental Health
PCTBAP	Placer County Tahoe Basin Area Plan
PEIR	Program Environmental Impact Report
PEL	Permissible Exposure Limits
PFIRS	Prescribed Fire Information Reporting System
PM ₁₀	particulate matter with aerodynamic diameter of 10 micrometers or less
PM _{2.5}	particulate matter with aerodynamic diameter of 2.5 micrometers or less
PNW	Pacific Northwest Research Station
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
ppm	parts per million
PRC	Public Resources Code
PRPA	Paleontological Resources Preservation Act
PTEIR	Program Timberland Environmental Impact Report
PTEIR or Tahoe PTEIR	Program Timberland Environmental Impact Report
PTHP	Program Timber Harvest Plan
ROG	reactive organic gases
RPF	Registered Professional Foresters
RPS	Renewable Portfolio Standard
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	regional water quality control boards
SAF Plan	State Alternative Fuels Plan

SAFE	Safer Affordable Fuel-Efficient
SAP	Sustainability Action Plan
SB	Senate Bill
SEZ	stream environment zones
SGC	Strategic Growth Council
SIP	State Implementation Plan
SLCP	Short-lived Climate Pollutants
SMP	Smoke Management Plan
SMS	Scenery Management System
SO ₂	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SPL	sound pressure level
SPR	Standard Project Requirements
sq. ft.	square feet
sq. ft./ac.	square feet per acre
SQIP	Scenic Quality Improvement Program
SR	State Route
SRA	State Responsibility Area
SSC	species of special concern
State Parks	California State Parks
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	Toxic air contaminants
TFFT	Tahoe Fire and Fuels Team
THP	Timber Harvest Plans
TIS	invasive plant species
TMDL	total maximum daily load
TMP	Transportation Management Plans
TMPO	Tahoe Metropolitan Planning Organization
TOT	transient occupancy taxes
TPZ	Timberland Production Zones
TRPA	Tahoe Regional Planning Agency
TRPA Code	TRPA Code of Ordinances
TTC	Temporary traffic control
U.S. 50	U.S. Highway 50
UAIC	United Auburn Indian Community
UFP	ultrafine particulate matter
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tanks
VMP	Vegetation Management Program

VMS	Visual Management System
VMT	vehicle miles traveled
WEAP	Worker Environmental Awareness Program
WEPP	Water Erosion Prediction Project
WLPZ	Watercourse and Lake Protection Zones
WRCC	Western Regional Climate Center
WUI	Wildland-Urban Interface
ZEV	zero-emission vehicle

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EXECUTIVE SUMMARY

This Program Timberland Environmental Impact Report (PTEIR or Tahoe PTEIR) evaluates the environmental impacts of a proposed program to increase the pace and scale of forest management activities that reduce wildfire risk to communities and improve forest health in and adjacent to the Wildland Urban Interface (WUI) on the California side of the Lake Tahoe Basin (the proposed program). It has been prepared according to the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.), the State CEQA Guidelines (California Code of Regulations [CCR], Title 14, Section 15000 et seq. [14 CCR Section 15000 et seq.]), Z'berg-Nejedly Forest Practice Act (FPA; Public Resources Code [PRC] Section 4511 et seq.), and the California Forest Practice Rules (CFPR; California Code of Regulations [CCR] Title 14 Section 1092.01) under the direction of the California Department of Forestry and Fire Protection (CAL FIRE). CAL FIRE is the CEQA lead agency. Members of the Tahoe Fire and Fuels Team (TFFT) including the California Tahoe Conservancy (Conservancy), Lake Valley Fire Protection District, and North Tahoe Fire Protection District are CEQA responsible agencies that would implement later activities under the Tahoe PTEIR. These responsible agencies collaborated with CAL FIRE in the preparation of this PTEIR.

This summary is provided in accordance with State CEQA Guidelines Section 15123. It presents (1) a summary description of the proposed program, (2) a synopsis of significant environmental impacts and feasible mitigation measures (Table ES-1), (3) an overview of the alternatives evaluated and a conclusion regarding identification of an environmentally superior alternative, and (4) a discussion of the areas of controversy and issues to be resolved associated with the proposed program.

BACKGROUND

California is experiencing a wildfire crisis. As noted in a report of the Governor's Wildfire Strike Force (2019):

Climate change has created a new wildfire reality for California. The state's fire season is now almost year round. More than 25 million acres of California wildlands are classified as under very high or extreme fire threat. Approximately 25 percent of the state's population – 11 million people – lives in that high-risk area.

The effects of climate change and decades of fire suppression are evident on the landscape. Wildfire risk levels have been exacerbated by the location of developed land uses and communities in the high hazard areas. Drought conditions, low snowpack accumulation, and extreme temperature highs have also been prevalent in the last decade and are expected to worsen as climate change continues to alter landscapes and local climates (NOAA 2018, IPCC 2018). Many of the communities on the California side of the Tahoe Basin are within very high fire hazard severity zones and are at risk from catastrophic wildfire.

The TFFT has worked for years to create fire-adapted communities, restore forest resilience, and achieve other objectives consistent with the Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy (TFFT 2014) and the Tahoe Basin Community Wildfire Protection Plan (TFFT 2015) within the California portion of the Lake Tahoe Basin. The TFFT, in coordination with other agencies and organizations, have achieved significant results - treating thousands of acres to reduce wildfire risk in the WUI surrounding Tahoe's communities. However, significant portions of the WUI and nearby forested lands still require fuel reduction treatments, and long-term management is necessary to maintain fire-resiliency throughout the WUI. To address these challenges, the TFFT has developed the proposed program to accelerate the pace and scale of forest management activities that reduce wildfire risk to communities and improve forest health in and adjacent to the WUI on the California side of the Lake Tahoe Basin. A substantial challenge to increasing the pace and scale of forest management treatments is the project-by-project approach that has historically been used to comply with CEQA, FPA, and other regulatory requirements. This approach can lead to inefficiencies, delays, excess costs, and inconsistencies in environmental analysis and mitigation approaches. CAL FIRE, in close coordination with other TFFT agencies, has prepared this PTEIR to more efficiently and comprehensively evaluate the effects of forest management. Through its tiered, checklist-based approach to future CEQA and FPA compliance, this PTEIR is intended to offer significant advantages by providing for a more efficient, consistent, and comprehensive environmental review of later forest treatment activities.

While several PTEIRs have been completed in California, this Tahoe PTEIR is tailored to the regulatory environment of the Lake Tahoe Basin. This PTEIR is unique in that it includes a mix of public and private lands, and it covers both timber operations for commercial purposes that are regulated by the FPA and noncommercial fuel reduction projects subject to CEQA.

Relationship to the California Vegetation Treatment Program

The California Board of Forestry and Fire Protection has developed the California Vegetation Treatment Program (CalVTP), which is a statewide vegetation treatment program. The CalVTP defines vegetation treatment activities and associated environmental protections that would occur for projects within the State Responsibility Area (SRA) to reduce wildfire risks as one component of the range of actions being implemented by the state to respond to California's wildfire crisis. The CalVTP is an important part of the state's approach to addressing the wildfire crisis with an increase in the pace and scale of vegetation treatment to reduce wildfire risk.

Only a small portion of the program area for the Tahoe PTEIR, generally land owned by the Conservancy, is within the SRA. Those components of the Tahoe PTEIR could rely on the CalVTP Program Environmental Impact Report (PEIR) to cover the environmental review requirements for later treatment activities identified in the Tahoe PTEIR that are located within the SRA. However, the CalVTP does not cover activities within Local Responsibility Areas (LRA) or the sale of timber from fuel reduction projects, which are elements of this PTEIR. This PTEIR incorporates similar SPRs to protect the environment as the CalVTP, but modifies those requirements to address the Tahoe Basin environment and regional regulatory requirements, which include the regulations of the Tahoe Regional Planning Agency (TRPA), the Lahontan Regional Water Quality Control Board, and FPRs that apply to the Tahoe Basin.

SUMMARY DESCRIPTION OF THE PROPOSED PROGRAM

The proposed program subject to environmental review in this PTEIR involves an increase in the pace and scale of wildfire risk reduction activities. This includes mechanical and manual forest thinning, prescribed burning, and hauling and utilization of forest products from within and adjacent to the WUI on the California side of the Lake Tahoe Basin. After approval of the PTEIR, implementation of the proposed program would consist of later treatment activities carried out by CAL FIRE, the Conservancy, local fire districts, or other public agencies or landowners with land ownership or stewardship responsibilities within the program area.

The Tahoe PTEIR addresses the following:

- ▶ Expansion of forest management treatments on 17,490 acres of the California side of the Tahoe Basin to treat an estimated average of 900 – 1,300 acres each year to contribute to the achievement of the target 500,000 annual acres of treatment on non-federal lands expressed in Executive Order (EO) B-52-18, signed by former Governor Jerry Brown in May 2018. The expanded target would be a substantial increase compared to current treatment activity (recently averaging 503 acres per year).
- ▶ A project-specific implementation approach for streamlining CEQA and FPA review of later site-specific, treatment activities consistent with the proposed program, in accordance with CEQA procedures described in State CEQA Guidelines Section 15168 and FPA procedures described in 14 CCR Section 1092.01. Using a project consistency checklist (Appendix A), the streamlined CEQA and FPA review approach would document how a project's environmental effects are covered and which Standard Project Requirements (SPRs), California Forest Practice Rules (CFPRs), and feasible mitigation measures from the Tahoe PTEIR are incorporated. This would include evaluation of whether later treatment activities and associated impacts are within the scope of the proposed program and the Tahoe PTEIR. If the activities are determined to be within the scope of the Tahoe PTEIR, the project proponent agency may approve the activities using the Tahoe PTEIR without an additional environmental document (in accordance with Section 15168 of the State CEQA Guidelines for program EIRs) and/or may adopt a Program Timber Harvest Plan (PTHP), which is a streamlined Timber Harvest Plan (THP) that incorporates analysis from the Tahoe PTEIR (14 CCR 1092.01). Later site-specific treatment activities would still need to secure applicable permits from the Tahoe Regional Planning Agency, California Department of Fish and Wildlife (CDFW), local air districts, and/or Lahontan Regional Water Quality Control Board.

Program Objectives

The following program objectives describe the underlying purposes of the proposed program:

- ▶ reduce the risk of catastrophic wildfires that could damage Lake Tahoe Basin forests, watersheds, habitats, and communities;
- ▶ increase Lake Tahoe Basin forest resilience to effects of climate change, including prolonged drought, pest and disease outbreaks, and increased tree mortality;
- ▶ protect and restore meadow and riparian ecosystems, and forest habitat quality in the Lake Tahoe Basin;
- ▶ develop and implement all-lands fuel reduction, forest health improvement, and restoration projects that deliver multiple community and ecosystem service benefits; and
- ▶ increase the pace and scale of fuel reduction projects to assist in achieving the goals of Executive Order B-52-18.

Program Area

Forest management and fuel reduction activities analyzed in this PTEIR would occur within a program area located on private, local jurisdiction, federal, and Conservancy lands both in the WUI and select contiguous areas of general forest outside of the WUI throughout the California side of the Tahoe Basin (see Figure 2-1 in Chapter 2, "Program Description"). The program area covers approximately 17,490 acres in the City of South Lake Tahoe and in unincorporated areas of El Dorado and Placer Counties, including, but not limited to: Meyers, Cascade properties near Cascade Lake, Tahoma, Homewood, Alpine Peaks, Tahoe City, Dollar Point, Carnelian Bay, Tahoe Vista, and Kings Beach.

Proposed Forest Management Treatments

The proposed program consists of an ongoing series of forest treatment activities for the primary purpose of forest fuel reduction. The program includes numerous forest treatment activities to reduce the risk of wildfire including mechanical thinning, manual/hand thinning, prescribed understory burning, pile burning, and the sale and transport of merchantable timber. To provide revenue to support the wildfire risk reduction and forest habitat enhancement treatments, forest products with commercial value (e.g., timber, biomass, mulch) may be removed and sold or bartered as an accessory activity.

Treatment methods included in the proposed program include the following, which are described in greater detail in Section 2.3, "Proposed Forest Management Treatments" in Chapter 2, "Program Description":

- ▶ **Manual treatments:** In manual treatment operations, a crew would fell trees using chainsaws and limb the log directly at the stump. Through this process, the logs, tree limbs, and slash are either immediately piled into burn piles, chipped (with the chip either spread on site or removed) or scattered throughout the treatment area.
- ▶ **Mechanical treatments:** With mechanical treatments, a forestry contractor or Licensed Timber Operator (LTO) would implement silvicultural prescriptions with ground-based mechanical equipment. Equipment that could be used for mechanical treatments include chain saws, harvesters, forwarders, skid steers, excavators, dozers and dozer transport, loaders, tow chippers, track chippers, masticators, feller/bunchers, and rubber-tired skidders.
- ▶ **Prescribed burning:** Prescribed burning uses controlled fire to achieve management objectives. The proposed program involves pile burning and understory burning techniques. Pile burning is a method used to dispose of forest fuels that have removed during a manual or mechanical treatment. Pile burning is often a component of manual treatments, where hand crews cut hazardous fuels and pile them for burning. Understory burning is used to reduce fuels over a larger area or restore fire resiliency in target fire-adapted plant communities. In this method of treatment, the understory of the forest would be burned using fire with a control line along the perimeter of a treatment site to prevent the unintentional spread of fire beyond the treatment site.

RETREATMENTS

Retreatments would be an ongoing component of the proposed program and would include follow-up treatments to address re-growth of vegetation and maintain the wildfire risk reduction benefits in the treatment sites. It is estimated that retreatments would typically occur approximately 10-15 years after the initial treatment.

BIOMASS DISPOSAL

Implementation of the proposed program would result in an increase in biomass removal from treatment areas throughout the program area compared to existing conditions. The biomass disposal approach or approaches for each later treatment activity would depend on the project goals, location, size, existing vegetation conditions, market conditions, and other factors. It is estimated that biomass generated by the proposed program would be disposed of as sawlogs, firewood, other forest products, through burning, biomass energy generation, and onsite decomposition.

Standard Project Requirements and Forest Practice Rules

SPRs are mandatory parts of the proposed program that avoid and minimize environmental impacts and comply with applicable laws and regulations. SPRs would be incorporated into all proposed treatment activities under the Tahoe PTEIR as a standard part of treatment design and implementation. The SPRs would be incorporated into the project design, in contract specifications, and/or in instructions to all personnel involved in implementing treatments. The SPRs include applicable CFPR requirements (PRC Section 4527(a)), as well as additional measures that apply to all projects. The SPRs do not include alternate standards that would apply instead of operational standards identified in the CFPR. The SPRs are included as Appendix B of this PTEIR.

ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

This PTEIR has been prepared to evaluate the physical environmental effects of the proposed program. Table ES-1, presented at the end of this chapter, provides a summary of the significant and potentially significant environmental impacts that could result from implementation of the proposed program. The table identifies the level of significance of the impact before mitigation, mitigation measures proposed for the program, and the level of significance of the impact after implementation of the mitigation measures.

Significant and Unavoidable Impacts

The majority of qualifying treatments under the proposed program would result in less-than-significant impacts or impacts that could be reduced to less than significant with implementation of feasible mitigation measures. With respect to vehicle miles travelled (VMT) and emissions of greenhouse gases (GHG) and air pollutants, the PTEIR notes for CEQA purposes of good-faith disclosure that the impacts may be significant and unavoidable. However, the analysis of these impacts is conservative because it does not speculate on the reduced VMT and emissions that would result from fewer, smaller, and less severe wildfires. To the extent that the program successfully reduces the extent and severity of wildfires, it could result in less total VMT and emissions than disclosed in this PTEIR. Below is a summary listing of potentially significant and unavoidable impacts; it is important to review the impact discussions in Chapters 3 and 5 of this PTEIR to understand the full context of the impact significance determinations.

Implementation of the proposed program could result in the following potentially significant and unavoidable environmental impacts after implementation of feasible mitigation measures:

Impacts Forecasted to Be Significant and Unavoidable

- ▶ Impact 3.5-1: Potential to Generate Emissions that Would Contribute to an Exceedance of CAAQS or NAAQS in the LTAB
- ▶ Impact 3.10-2: Potential to Generate GHG Emissions through Treatment Activities

- ▶ Impact 3.15-2: Conflict or be Inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) Regarding Vehicle Miles Traveled

Cumulative impacts for the issues listed above would also be significant and unavoidable (considerable contributions to a cumulatively significant impact) as a result of implementation of the proposed program.

ALTERNATIVES TO THE PROPOSED PROGRAM

Agencies, organizations, and individuals provided suggestions for alternatives during interagency consultation and review of the Notice of Preparation (NOP). Alternatives were evaluated for consideration in the PTEIR if they were determined to: (1) accomplish all or most of the project objectives, (2) be potentially feasible (from economic, legal, regulatory, and technological standpoints), and (3) avoid or substantially lessen any significant effects of the proposed program. Alternatives that best meet these evaluation criteria are evaluated in Chapter 6, "Alternatives," in this PTEIR and are listed as follows:

- ▶ **Alternative A: No-Program**, which would include continuation of current fuel reduction efforts within the program area and treat an average of 503 acres each year. There would be no understory burning with implementation of this alternative. It would reflect a slower pace and smaller scale of treatment activities compared to the proposed program;
- ▶ **Alternative B: Fire Suppression Only**, which would include active fire suppression but no active fuels treatment activities;
- ▶ **Alternative C: Manual and Mechanical Treatment Focus**, which would treat an estimated 1,800 acres per year and include a treatment approach that emphasizes mechanical and manual thinning, with limited pile burning and no understory burning; and
- ▶ **Alternative D: Limited Thinning Intensity and Expanded Prescribed Burning**, which would treat an estimated 1,250 acres per year and include a treatment approach with less manual and mechanical thinning, and greater use of understory burning.

Environmentally Superior Alternative

With each alternative, there would be environmental tradeoffs; that is, impacts on certain resource areas from an alternative would increase while others would decrease relative to the proposed program. Additionally, each alternative would result in significant and unavoidable impacts. The proposed program would achieve all of the basic program objectives. However, it would result in potentially significant impacts and require the application of mitigation to reduce some, but not all, of the significant impacts to a less-than-significant level. The alternatives, particularly Alternative C: Manual and Mechanical Treatment Focus, and Alternative D: Limited Intensity and Expanded Prescribed Burning, would achieve the basic program objectives to a similar extent as the proposed program; however, these alternatives would result in some environmental effects that would be more severe than the proposed program. Alternative A: No-Program would not be as effective in meeting the program objectives as the proposed program, such as increasing the pace and scale of fuel reduction projects to assist in achieving the goals of Executive Order B-52-18, but would continue to implement fuel treatment projects and reduce the severity of some of the environmental effects of the proposed program.

In light of these tradeoffs among the alternatives and the proposed program, none of the alternatives clearly stands out as environmentally superior. Identification of the environmentally superior alternative is, therefore, not an objective choice based on quantifiable criteria, but rather, an exercise of discretion in balancing environmental priorities among potential impacts in relation to the extent to which the alternative would meet the program objectives. If the key criterion for identifying the environmentally superior alternative is avoiding significant and unavoidable impacts and priority is given to issues related to human health, Alternative A would become the environmentally superior alternative, because it would reduce air quality impacts of the proposed program related to short-term exposure of people to toxic air contaminants during prescribed burning. If the key criterion for identifying the environmentally superior alternative is achieving program objectives and reducing risks of high-severity wildfire, then the proposed program would be the environmentally superior alternative.

AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

The NOP for this PTEIR was distributed on June 13, 2019, to responsible agencies, interested parties, and organizations, as well as private organizations and individuals that may have an interest in the project. CAL FIRE held public scoping meetings on June 13 and June 28, 2019 to provide information on the proposed program and solicit public input on the scope and content of the PTEIR.

Comments were received during the scoping process that expressed support for the proposed program, but the following environmental concerns and issues were also expressed:

- ▶ Impacts on biological resources from treatment activities
- ▶ Suggestions for the restoration component of the proposed program
- ▶ Incorporation of mitigation measures and best management practices in proposed program activities

These issues are addressed in this PTEIR. A summary of comments received on the NOP and the location where each is addressed in the PTEIR are presented in Appendix C.

Tribal consultation is ongoing pursuant to PRC Section 21080.3 regarding the potential for effects on tribal cultural resources. The consultation process may identify potentially affected tribal cultural resources or result in refinements to mitigation measures. To account for this uncertainty while consultation is actively underway, this PTEIR identifies impacts on tribal cultural resources as potentially significant, notwithstanding the likelihood that consultation may result in an agreement among the parties to measures that mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource.

Table ES-1 Summary of Significant Impacts and Mitigation Measures

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
NI = No impact LTS = Less than significant PS = Potentially significant LTSM = Less than significant with Mitigation SU = Significant and unavoidable			
3.3 Aesthetics			
<p>Impact 3.3-2: Have a Substantial Adverse Effect on Scenic Views from Lake Tahoe Implementation of the proposed program would result in the presence of fewer trees and less dense forests within the program area. This would increase viewing distances in treated areas, bringing greater visibility to distant objects or structures. Later treatment activities located near the most visually sensitive portions of the shoreline could potentially remove vegetation that screens structures or other human-made features that would otherwise be visible from Lake Tahoe, resulting in the degradation of the quality of scenic views from Lake Tahoe. This would be a potentially significant impact.</p> <p>With implementation of Mitigation Measure 3.3-2, treatment activities would retain screening of existing structures and infrastructure in Visually Sensitive and Natural Dominated Shorelines to the extent feasible, which would reduce this impact to a less-than-significant level.</p>	PS	<p>Mitigation 3.3-2: Retain Screening of Existing Structures and Infrastructure in Visually Sensitive and Natural Dominated Shorelines Later treatment activities implemented through the proposed program shall consult with a landscape architect, TRPA Scenic Specialist, or other qualified scenic resources specialist to identify site-specific vegetative screening recommendations that relate to maintaining visual screening of existing structures or infrastructure (e.g., utility lines, roadways, retaining walls) within 300 feet of the shoreline that could be visible from Lake Tahoe. The project proponent shall maintain trees, understory vegetation, and/or patches of dense vegetation that completely or partially screen the structures or infrastructure from view from Lake Tahoe to the extent feasible while meeting program objectives. The project proponent shall flag or otherwise mark screening vegetation for retention before initiating treatments in the vicinity of structures or infrastructure within 300 feet of the Lake Tahoe shoreline in Visually Sensitive or Natural Dominated shorelines.</p>	LTS
<p>Impact 3.3-3: Have a Substantial Adverse Effect on Views from Scenic Roadways Implementation of the proposed program would result in the presence of fewer trees and less dense vegetation within the program area. This would increase viewing distances in treated areas, bringing greater visibility to distant objects or structures. Later treatment activities located near scenic roadways in rural areas could potentially remove vegetation that screens development resulting in greater visibility of structures and the degradation of the scenic quality. This would be a potentially significant impact.</p> <p>Implementation of Mitigation Measure 3.3-3 would require the retention of vegetative screening of existing structures along the most visually sensitive roadway segments. This would reduce the impact to a less than significant level.</p>	PS	<p>Mitigation 3.3-3: Retain Screening of Existing Structures in Rural Roadway Corridors Later treatment activities that propose to remove vegetation within 300 feet of a TRPA-designated rural roadway travel unit, and which would affect 500 linear feet or more of the roadway travel unit shall consult with a landscape architect, TRPA Scenic Specialist, or other qualified scenic resources specialist to identify site-specific vegetative screening recommendations. The recommendations shall identify opportunities to maintain strategically-placed visual screening of existing structures within 300 feet of the rural scenic roadway unit, while still meeting project objectives related to public safety and wildfire risk reduction. The project proponent shall incorporate feasible recommendations from the consultation to maintain selected trees, understory vegetation, patches of dense vegetation that completely or partially screen the structures from view from scenic roadways, and/or other site specific measures to the extent feasible while meeting project public safety and wildfire risk reduction objectives. Recommendations shall consider prioritizing retention of less flammable vegetation, breaking up continuous patches of vegetation that pose a wildfire risk while retaining strategically placed patches of vegetation to screen development, and the potential for replanting less flammable vegetation for screening in targeted areas where flammable vegetation must be removed. The project proponent shall flag or otherwise mark screening vegetation</p>	LTS

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
NI = No impact LTS = Less than significant PS = Potentially significant LTSM = Less than significant with Mitigation SU = Significant and unavoidable			
		for retention before initiating treatments in the vicinity of structures in rural roadway corridors areas that are within 300 feet of scenic roadways.	
3.5 Air Quality			
<p>Impact 3.5-1: Potential to Generate Emissions that Would Contribute to an Exceedance of CAAQS or NAAQS in the LTAB</p> <p>Emissions of criteria air pollutants and precursors generated by treatment activities implemented under the program would likely exceed PCAPCD- and EDCAQMD-established mass emission thresholds and, therefore, result in, or contribute to, ambient concentrations in the LTAB that exceed the NAAQS and CAAQS. These exceedances could result in adverse health effects to receptors and conflict with air quality planning efforts in the LTAB. This would be a significant impact.</p>	S	<p>Mitigation Measure 3.51a: Implement On-Road Vehicle and Off-Road Equipment Exhaust Emission Reduction Techniques</p> <p>Where feasible, off-road equipment utilized in later treatment activities under the program shall implement emission reduction techniques to reduce exhaust emissions. It is acknowledged that because of cost, availability, and the limits of current technology, there may be circumstances where implementation of certain emission reduction techniques would not be feasible. The project proponents will document the emission reduction techniques that will be applied and will explain the reasons other techniques that could reduce emissions are infeasible.</p> <p>Techniques for reducing emissions may include the following:</p> <ul style="list-style-type: none"> ▶ Use renewable diesel fuel in diesel-powered construction equipment. Renewable diesel fuel must adhere to the following criteria: <ul style="list-style-type: none"> ▪ meet California’s Low Carbon Fuel Standards and be certified by CARB Executive Officer; ▪ be hydrogenation-derived (reaction with hydrogen at high temperatures) from 100 percent biomass material (i.e., non-petroleum sources), such as animal fats and vegetables; ▪ contain no fatty acids or functionalized fatty acid esters; and ▪ have a chemical structure that is identical to petroleum-based diesel and complies with American Society for Testing and Materials D975 requirements for diesel fuels to ensure compatibility with all existing diesel engines. ▶ Substitute electric equipment for diesel-powered equipment. ▶ Encourage or, if feasible, require workers to carpool to work sites, and/or use public transportation for their commutes. ▶ Equip off-road equipment, diesel trucks, and generators with Best Available Control Technology for emission reductions of NOX and particulate matter. <p>Mitigation Measure 3.5-1b: Encourage Alternative Burning Techniques and Non-Burning Biomass Disposal</p> <p>Later treatment activities that involve pile burning shall pursue alternative burning techniques and/or alternative means of biomass disposal that do not involve</p>	SU

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
NI = No impact LTS = Less than significant PS = Potentially significant LTSM = Less than significant with Mitigation SU = Significant and unavoidable			
		burning, as feasible. It is recognized that because of site access, cost, or other factors there may be circumstances where implementation of certain alternative burning techniques or non-burning disposal methods would not be feasible. Potential alternative burning techniques could include: <ul style="list-style-type: none"> ▶ Use of air curtain burners, also referred to as Air Curtain Incinerators, FireBoxes, or Trench Burners. These devices produce an “air curtain” over the top of burning biomass, which traps and reburns smoke at high temperatures. Air Curtain burners have been shown to achieve an approximately 23-fold reduction in PM_{2.5} emissions compared to pile burns (Susott et al. 2002). ▶ Development and use of portable biomass energy generators, which can more efficiently burn biomass while generating electrical power that can be stored in a battery or used to directly power a facility. ▶ Consider conservation burning, a technique for burning woody material that reduces the production of smoke particulates and carbon released into the atmosphere, in part by extinguishing the burn pile before the smoldering stage (UCCE Sonoma County 2019). 	
3.6 Biological Resources			
<p>Impact 3.6-1: Potential to Substantially Affect Special-Status Plant Species Either Directly or Through Habitat Modifications</p> <p>Later treatment activities could result in direct removal or destruction, or indirect death or reduced vigor of special-status plants through habitat modifications. Implementation of SPRs BIO-1, BIO-2, BIO-6, and BIO-7 requires special-status plants to be identified prior to treatment activities, Worker Environmental Awareness Program (WEAP) training for workers, and actions to prevent the spread of invasive plants that could threaten special-status plant populations. While SPRs would minimize impacts, treatment activities could inadvertently damage or destroy special-status plants and adversely modify their habitat resulting in reduced growth and reproduction or death and loss of special-status plant occurrences. This would be a potentially significant impact.</p>	PS	<p>Mitigation Measure 3.6-1a: Avoid Loss of Special-Status Plants</p> <p>If special-status plant species are determined to be present through application of SPR BIO-1 and SPR BIO-6, the project proponent will implement the following measures to avoid loss of individuals and maintain habitat function of occupied habitat:</p> <ul style="list-style-type: none"> ▶ Physically avoid the area occupied by the special-status plants by establishing a no-disturbance buffer around the area occupied by species and marking the buffer boundary with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway). The no-disturbance buffers will generally be a minimum of 50 feet from special-status plants, but the size and shape of the buffer zone may be adjusted if a qualified RPF or botanist determines that a smaller buffer will be sufficient to avoid loss of or damaging to special-status plants or that a larger buffer is necessary to sufficiently protect plants from the treatment activity. The appropriate size and shape of the buffer zone will be determined by a qualified RPF or botanist and will depend on plant phenology at the time of treatment (e.g., whether the plants are in a dormant, vegetative, or flowering state), the individual species’ vulnerability to the 	LTS

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
NI = No impact LTS = Less than significant PS = Potentially significant LTSM = Less than significant with Mitigation SU = Significant and unavoidable			
		<p>treatment method being used, and environmental conditions and terrain. Consideration of factors such as site hydrology, changes in light, edge effects, and potential introduction of invasive plants and noxious weeds may inform an appropriate buffer size and shape.</p> <ul style="list-style-type: none"> ▶ Treatments may be conducted within this buffer if the potentially affected special-status plant species is a geophytic, stump-sprouting, or annual species, and the treatment can be conducted outside of the growing season (e.g., after it has completed its annual life cycle) or during the dormant season using only treatment activities that would not damage the stump, root system or other underground parts of special-status plants or destroy the seedbank. ▶ Treatments will be designed to maintain the function of special-status plant habitat. For example, for treatments proposed in locations occupied by special-status plants, if the removal of shade cover would degrade the special-status plant habitat despite the requirement to physically or seasonally avoid the special-status plant itself, habitat function would be diminished and the treatment would need to be modified or precluded from implementation. ▶ No fire ignition (and associated use of accelerants) will occur within the special-status plant buffer. <p>A qualified RPF or botanist with knowledge of the special-status plant species habitat and life history will review the treatment design and applicable impact minimization measures (potentially including others not listed above) to determine if the anticipated residual effects of the treatment would be significant under CEQA because implementation of the treatment would not maintain habitat function of the special-status plant habitat (i.e., the habitat would be rendered unsuitable) or because the loss of special-status plants would substantially reduce the number or restrict the range of a special-status plant species. If the project proponent determines the impact on special-status plants would be less than significant, no further mitigation will be required. If the project proponent determines that the loss of special-status plants or degradation of occupied habitat would be significant under CEQA after implementing feasible treatment design alternatives and impact minimization measures, then Mitigation Measure 3.5-1b will be implemented.</p> <p>The only exception to this mitigation approach is in cases where it is determined by a qualified RPF or botanist that the special-status plants would benefit from treatment in the occupied habitat area even though some of the non-listed special-status plants may be killed during treatment activities. For a treatment to be</p>	

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		<p>considered beneficial to non-listed special-status plants, the qualified RPF or botanist will demonstrate with substantial evidence that habitat function is reasonably expected to improve with implementation of the treatment (e.g., by citing scientific studies demonstrating that the species (or similar species) has benefitted from increased sunlight due to canopy opening, eradication of invasive species, or otherwise reduced competition for resources), and the substantial evidence will be included in the Project Consistency Checklist. If it is determined that treatment activities would be beneficial to special-status plants, no compensatory mitigation will be required.</p> <p>Mitigation Measure 3.6-1b: Compensate for Unavoidable Loss of Special-Status Plants If significant impacts on special-status plants cannot feasibly be avoided as specified under the circumstances described under Mitigation Measure 3.5-1a, the project proponent will prepare a Compensatory Mitigation Plan that identifies the residual significant impacts that require compensatory mitigation and describes the compensatory mitigation strategy being implemented and how unavoidable losses of special-status plants will be compensated. The project proponent will consult with CDFW and/or any other applicable responsible agency prior to finalizing the Compensatory Mitigation Plan to satisfy that responsible agency's requirements (e.g., permits, approvals) within the plan. If the special-status plant taxa are listed under ESA or CESA, the plan will be submitted to CDFW and/or USFWS (as appropriate) for review and comment.</p> <p>The first priority for compensatory mitigation will be preserving and enhancing existing populations outside of the treatment area in perpetuity, or if that is not an option because existing populations that can be preserved in perpetuity are not available, one of the following mitigation options will be implemented by the project proponent instead:</p> <ul style="list-style-type: none"> ▶ creating populations on mitigation sites outside of the treatment area through seed collection and dispersal (annual species) or transplantation (perennial species); ▶ purchasing mitigation credits from a CDFW- or USFWS-approved conservation or mitigation bank in sufficient quantities to offset the loss of occupied habitat; and ▶ if the affected special-status plants are not listed under ESA or CESA, compensatory mitigation may include restoring or enhancing degraded habitats so that they are made suitable to support special-status plant species in the future. <p>If relocation efforts are part of the Compensatory Mitigation Plan, the plan will include details on the methods to be used, including collection, storage,</p>	

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
NI = No impact LTS = Less than significant PS = Potentially significant LTSM = Less than significant with Mitigation SU = Significant and unavoidable			
		<p>propagation, receptor site preparation, installation, long-term protection and management, monitoring and reporting requirements, success criteria, and remedial action responsibilities should the initial effort fail to meet long-term monitoring requirements. The following performance standards will be applied for relocation:</p> <ul style="list-style-type: none"> ▶ the extent of occupied area will be substantially similar to the affected occupied habitat and will be suitable for self-producing populations. Re-located/re-established populations will be considered suitable for self-producing when: <ul style="list-style-type: none"> ▪ habitat conditions allow for plants to reestablish annually for a minimum of 5 years with no human intervention, such as supplemental seeding; and ▪ reestablished habitats contain an occupied area comparable to existing occupied habitat areas in similar habitat types in the region. <p>If preservation of existing populations or creation of new populations is part of the mitigation plan, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands and actions (e.g., the number and type of credits, location of mitigation bank or easement, restoration or enhancement actions), parties responsible for the long-term management of the land, and the legal and funding mechanisms (e.g., holder of conservation easement or fee title). The project proponent will submit evidence that the necessary mitigation has been implemented or that the project proponent has entered into a legal agreement to implement it and that compensatory plant populations will be preserved in perpetuity.</p> <p>If mitigation includes dedication of conservation easements, purchase of mitigation credits, or other offsite conservation measures, the details of these measures will be included in the mitigation plan, including information on responsible parties for long-term management, conservation easement holders, long-term management requirements, funding assurances, and success criteria such as those listed above and other details, as appropriate to target the preservation of long term viable populations.</p> <p>If mitigation includes restoring or enhancing habitat within the treatment area or outside of the treatment area, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored habitat.</p>	

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		If the loss of occupied habitat cannot be offset (e.g., if preservation of existing populations or creation of new populations through relocation efforts are not available for a certain species), and as a result treatment activities would substantially reduce the number or restrict the range of listed plant species, then the treatment will not qualify as within the scope of this PTEIR. Compensatory mitigation may be satisfied through compliance with permit conditions, or other authorizations obtained by the project proponent (e.g., incidental take permit for state-listed plants), if these requirements are equally or more effective than the mitigation identified above.	
<p>Impact 3.6-2: Substantially Affect Special-Status Wildlife Species Either Directly or Through Habitat Modifications</p> <p>Later treatment activities implemented under the proposed Tahoe PTEIR, including prescribed burning, mechanical treatment, and manual treatment could result in direct or indirect adverse effects to special-status wildlife species. SPRs require pre-treatment surveys to identify special-status wildlife and habitats and avoidance and protection of certain sensitive habitats. While implementation of SPRs would minimize impacts, later treatment activities would still remove vegetation and disturb the ground surface, which could result in the disturbance to or loss of individuals, reduced breeding productivity of affected species, or loss of habitat function. The loss of special-status wildlife species and habitat function would be a potentially significant impact.</p>	PS	<p>Mitigation Measure 3.6-2a: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Federally and State-Listed Wildlife Species</p> <p>If wildlife species listed under ESA or CESA (e.g., willow flycatcher, Sierra Nevada yellow-legged frog) are observed during reconnaissance surveys (conducted pursuant to SPR BIO-1) or focused or protocol-level surveys (conducted pursuant to SPR BIO-8), the project proponent will avoid adverse effects on the species by implementing the following.</p> <p><u>Avoid Mortality, Injury, or Disturbance of Individuals</u></p> <ul style="list-style-type: none"> ▶ The project proponent will implement one of the following two measures to avoid mortality, injury, or disturbance of individuals: <ol style="list-style-type: none"> 1. Treatment will not be implemented within the occupied habitat. Any treatment activities outside occupied habitat will be a sufficient distance from the occupied habitat such that mortality, injury, or disturbance of the species will not occur, as determined by a qualified RPF or biologist, in consultation with CDFW and/or TRPA (depending on the potentially affected species), using current and commonly-accepted science and considering published agency guidance; OR 2. Treatment will be implemented outside the sensitive period of the species' life history (e.g., outside the breeding or nesting season) during which the species may be more susceptible to disturbance, or disturbance could result in loss of eggs or young. For species present year-round, CDFW and/or USFWS will be consulted to determine if there is a period of time within which treatment could occur that would avoid mortality, injury, or disturbance of the species. 	LTS

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		<p>▶ For species listed under ESA or CESA, if the project proponent cannot avoid mortality, injury or disturbance by implementing one of the two options listed above, the project proponent will implement Mitigation Measure 3.5-2c.</p> <p><u>Maintain Habitat Function</u></p> <p>▶ The project proponent will design treatment activities to maintain the habitat function, by implementing the following:</p> <ul style="list-style-type: none"> ▪ While performing review and surveys for SPR BIO-1 and SPR BIO-8, a qualified RPF or biologist will identify any habitat features that are necessary for survival (e.g., habitat necessary for breeding, foraging, shelter, movement) of the affected wildlife species. These habitat features will be marked and treatments applied to the features will be designed to minimize or avoid the loss or degradation of suitable habitat for listed species during treatments. Identification and treatment of these features will be based on the life history and habitat requirements of the affected species and the most current, commonly accepted science. ▪ If it is determined during implementation of SPR BIO-1 and SPR BIO-8 that federally or state-listed wildlife with specific requirements for dense vegetation cover (e.g., willow flycatcher) are present within a treatment area, then vegetation cover within existing suitable areas will be retained at the percentage preferred by the species (as determined by expert opinion, published habitat association information, or other documented standards that are commonly accepted) such that habitat function is maintained. <p>▶ A qualified RPF or biologist will determine if, after implementation of the impact avoidance measures listed above, the habitat function will remain for the affected species after implementation of the treatment. Because this measure pertains to species listed under CESA or ESA, the qualified RPF or biologist will consult with CDFW and/or USFWS regarding the determination that habitat function is maintained. If consultation determines that the treatment will not maintain habitat function for the special-status species, the project proponent will implement Mitigation Measure 3.6-2c.</p> <p>Mitigation Measure 3.6-2b: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Other Special-Status Wildlife Species</p> <p>If other special-status wildlife species (i.e., species not listed under CESA or ESA, but meeting the definition of special status as stated in Section 3.5.3 of the PTEIR) are observed during reconnaissance surveys (conducted pursuant to SPR BIO-1) or</p>	

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				<p>focused or protocol-level surveys (conducted pursuant to SPR BIO-8), the project proponent will avoid or minimize adverse effects to the species by implementing the following.</p> <p><u>Avoid Mortality, Injury, or Disturbance of Individuals</u></p> <p>The project proponent will implement the following to avoid mortality, injury, or disturbance of individuals:</p> <ul style="list-style-type: none"> ▶ For all treatment activities except prescribed burning, the project proponent will establish a no-disturbance buffer around occupied sites (e.g., nests, dens, bat roosts, burrows). Buffer size will be determined by a qualified RPF or biologist, in consultation with CDFW and/or TRPA (depending on the potentially affected species), using the most current, commonly accepted science and will consider published agency guidance; however, buffers will generally be a minimum of 500 feet for special-status birds and 100 feet for other special-status wildlife species, unless site conditions indicate a smaller buffer would be sufficient for protection or a larger buffer would be needed. Factors to be considered in determining buffer size will include, but not be limited to, the species' tolerance to disturbance; the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; baseline levels of noise and human activity; and treatment activity. Buffer size may be adjusted if the qualified RPF or biologist determines that such an adjustment would not be likely to adversely affect (i.e., cause mortality, injury, or disturbance to) the species within the nest, den, burrow, or other occupied site. If a no-disturbance buffer is reduced below these minimum standards around an occupied site, a qualified RPF or biologist will provide the project proponent with a site- and/or treatment activity-specific explanation for the buffer reduction, which will be included in the Project Consistency Checklist. ▶ No-disturbance buffers will be marked with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway). No activity will occur within the buffer areas until the qualified RPF or biologist has determined that the young have fledged or dispersed; the nest, den, roost, or other occurrence is no longer active; or reducing the buffer would not likely result in disturbance, mortality, or injury. A qualified RPF, biologist, or biological technician will be required to monitor the effectiveness of the no-disturbance buffer around the nest, den, burrow, or other occurrence during treatment. If treatment activities cause agitated behavior of the individual(s), the buffer distance will be increased, or treatment activities modified until the agitated 	

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		<p>behavior stops. The qualified RPF, biologist, or biological technician will have the authority to stop any treatment activities that could result in mortality, injury or disturbance to special-status species.</p> <ul style="list-style-type: none"> ▶ For prescribed burning, the project proponent will implement the treatment outside the sensitive period of the species' life history (e.g., outside the breeding or nesting season) during which the species may be more susceptible to disturbance, or disturbance could result in loss of eggs or young. For species present year-round, the qualified RPF or biologist will determine the period of time within which prescribed burning could occur that will avoid or minimize mortality, injury, or disturbance of the species. The project proponent may consult with CDFW and/or USFWS for technical information regarding appropriate limited operating periods. <p><u>Maintain Habitat Function</u> For all treatment activities, the project proponent will design treatment activities to maintain the habitat function by implementing the following:</p> <ul style="list-style-type: none"> ▶ While performing review and surveys for SPR BIO-1 and SPR BIO-8, a qualified RPF or biologist will identify any habitat features that are necessary for survival (e.g., habitat necessary for breeding, foraging, shelter, movement) of the affected wildlife species (e.g., trees with complex structure, trees with large cavities, trees with nesting platforms; tree snags; large raptor nests [including inactive nests]; downed woody debris). These habitat features will be marked and treatments applied to the features will be designed to minimize or avoid the loss or degradation of suitable habitat for listed species during treatments. Identification and treatment of these features will be based on the life history and habitat requirements of the affected species and the most current, commonly accepted science. ▶ If it is determined during implementation of SPR BIO-1 and SPR BIO-8 that special-status wildlife with specific requirements for dense canopy or vegetation cover (e.g., northern goshawk, California spotted owl, Sierra Nevada mountain beaver) are present within a treatment area, then tree or shrub canopy cover within existing suitable areas will be retained at the percentage preferred by the species (as determined by expert opinion, published habitat association information, or other documented standards that are commonly accepted) such that the habitat function is maintained. 	

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		<p>▶ A qualified RPF or biologist will determine if, after implementation of the impact avoidance measures listed above, the habitat function will remain for the affected species after implementation of the treatment. The qualified RPF or biologist may consult with CDFW and/or USFWS for technical information regarding habitat function.</p> <p>A qualified RPF or biologist with knowledge of the special-status wildlife species habitat and life history will review the treatment design and applicable impact minimization measures (potentially including others not listed above) to determine if the anticipated residual effects of the treatment would be significant under CEQA because implementation of the treatment will not maintain habitat function of the special-status wildlife species' habitat or because the loss of special-status wildlife would substantially reduce the number or restrict the range of a special-status wildlife species. If the project proponent determines the impact on special-status wildlife would be less than significant, no further mitigation will be required. If the project proponent determines that the loss of special-status wildlife or degradation of occupied habitat would be significant under CEQA or may conflict with the TRPA Code after implementing feasible treatment design alternatives and impact minimization measures, then Mitigation Measure 3.5-2c will be implemented.</p> <p>The only exception to this mitigation approach is in cases where it is determined by a qualified RPF or biologist that the non-listed special-status wildlife would benefit from treatment in the occupied habitat area even though some of the non-listed special-status wildlife may be killed, injured, or disturbed during treatment activities. For a treatment to be considered beneficial to non-listed special-status wildlife, the qualified RPF or biologist will demonstrate with substantial evidence that habitat function is reasonably expected to improve with implementation of the treatment (e.g., by citing scientific studies demonstrating that the species (or similar species) has benefitted from increased sunlight due to canopy opening, eradication of invasive species, or otherwise reduced competition for resources), and the substantial evidence will be included in the Project Consistency Checklist. If it is determined that treatment activities would be beneficial to special-status wildlife, no compensatory mitigation will be required. The qualified RPF or biologist may consult with CDFW and/or USFWS for technical information regarding the determination that a non-listed special-status species would benefit from the treatment.</p>	

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		<p>Mitigation Measure 3.6-2c: Compensate for Mortality, Injury, or Disturbance and Loss of Habitat Function for Special-Status Wildlife if Applicable</p> <p>If the provisions of Mitigation Measure 3.6-2a or 3.6-2b cannot be implemented and the project proponent determines that additional mitigation is necessary to reduce significant impacts, the project proponent will compensate for such impacts to species or habitat by acquiring and/or protecting land that provides (or will provide in the case of restoration) habitat function for affected species that is at least equivalent to the habitat function removed or degraded as a result of the treatment.</p> <p>Compensation may include:</p> <ol style="list-style-type: none"> 1. Preserving existing habitat outside of the treatment area in perpetuity; this may entail purchasing mitigation credits and/or lands from a CDFW- or USFWS- approved entity in sufficient quantity to offset the residual significant impacts, generally at a ratio of 1:1 for habitat; and 2. Restoring or enhancing existing habitat within the treatment area or outside of the treatment area (including decommissioning roads, adding perching structures, removing existing perching structures, or removing existing movement barriers or other existing features that are adversely affecting the species). <p>The project proponent will prepare a Compensatory Mitigation Plan that identifies the residual significant effects that require compensatory mitigation and describes the compensatory mitigation strategy being implemented to reduce residual effects, and:</p> <ol style="list-style-type: none"> 1. For preserving existing habitat outside of the treatment area in perpetuity, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands (e.g., the number and type of credits, location of mitigation bank or easement), parties responsible for the long-term management of the land, and the legal and funding mechanisms for long-term conservation (e.g., holder of conservation easement or fee title). The project proponent will submit evidence that the necessary mitigation has been implemented or that the project proponent has entered into a legal agreement to implement it and that compensatory habitat will be preserved in perpetuity. 2. For restoring or enhancing habitat within the treatment area or outside of the treatment area, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the 	

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		<p>performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored habitat.</p> <p>Review requirements are as follows:</p> <ul style="list-style-type: none"> ▶ The project proponent will consult with CDFW and/or any other applicable responsible agency prior to finalizing the Compensatory Mitigation Plan in order to satisfy that responsible agency's requirements (e.g., permits, approvals) within the plan. ▶ For species listed under ESA or CESA, the project proponent will submit the mitigation plan to CDFW and/or USFWS for review and comment. ▶ For other special-status wildlife species the project proponent may consult with CDFW and/or USFWS regarding the availability and applicability of compensatory mitigation and other related technical information. <p>Compensatory mitigation may be satisfied through compliance with permit conditions, or other authorizations obtained by the project proponent (e.g., incidental take permit, if required), if these requirements are equally or more effective than the mitigation identified above.</p>	
<p>Impact 3.6-6: Potential to Interfere Substantially with Fish and Wildlife Movement Corridors or Impede Use of Nurseries</p> <p>Later treatment activities implemented under the proposed program could be located in areas used as fish and wildlife movement corridors or nurseries. Treatment-related noise and disturbance could lead to temporary changes in migration or movement patterns. Wildlife nursery sites could be disturbed or essential nursery habitat components could be degraded by later treatment activities. SPRs BIO-1, BIO-3, BIO-4, BIO-8, HYD-1, HYD-3, and HYD-4 require identification of nursery sites prior to treatment activities and actions to prevent degradation of aquatic and riparian corridors. Temporary shifts in wildlife movements to avoid or navigate around active treatment sites and associated disturbances would not substantially interfere with movement requirements or migration patterns; and program implementation would not create long-term barriers to local or landscape-level movements. While implementation of SPRs would minimize impacts, nursery sites could still be removed, degraded, or disturbed during treatment activities. This would be a potentially significant impact.</p>	<p>PS</p>	<p>Mitigation Measure 3.6-6: Retain Nursery Habitat and Implement Buffers to Avoid Nursery Sites</p> <p>The project proponent will implement the following measures while working in treatment areas that contain nursery sites identified in surveys conducted pursuant to SPR BIO-8:</p> <ul style="list-style-type: none"> ▶ Retain Known Nursery Sites. A qualified RPF or biologist will identify the important habitat features of the wildlife nursery and, prior to treatment activities, will mark these features for avoidance and retention during treatment. ▶ Establish Avoidance Buffers. The project proponent, in consultation with CDFW and/or TRPA (depending on the potentially affected species), will establish a non-disturbance buffer around the nursery site if activities are required while the nursery site is active/occupied. The appropriate size and shape of the buffer will be determined by a qualified RPF or biologist, based on potential effects of project-related habitat disturbance, noise, visual disturbance, and other factors. No treatment activity will commence within the buffer area until a qualified RPF or biologist confirms that the nursery site is no longer active/occupied. Monitoring of the effectiveness of the non-disturbance buffer around the 	<p>LTS</p>

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		nursery site by a qualified RPF, biologist, or biological technician during and after treatment activities will be required. If treatment activities cause agitated behavior of the individual(s), the buffer distance will be increased, or treatment activities modified until the agitated behavior stops. The qualified RPF, biologist, or biological technician will have the authority to stop any treatment activities that could result in potential adverse effects to special-status species.	
3.7 Archaeological, Historical, and Tribal Cultural Resources			
<p>Impact 3.7-2: Cause a Substantial Adverse Change in the Significance of Unique Archaeological Resources or Subsurface Historical Resources</p> <p>Later treatment activities could occur on lands that contain resources that may qualify as unique archaeological resources or subsurface historical resources. It is possible that unique archaeological or subsurface historical resources would be disturbed during treatment activities. SPRs CUL-1, CUL-2, CUL-3, CUL-4, CUL-5, and CUL-7 require a records search, pre-field research, an archaeological survey, coordination with Native American groups, worker training to recognize sensitive cultural resources, and avoiding or protecting known resources. Despite implementation of these SPRs, unknown unique archaeological resources or subsurface historical resources could be inadvertently damaged during treatment activities. This would be a potentially significant impact.</p>	PS	<p>Mitigation Measure 3.7-2: Protect Inadvertent Discoveries of Unique Archaeological Resources or Subsurface Historical Resources</p> <p>If any prehistoric or historic-era subsurface archaeological features or deposits, including locally darkened soil (“midden”), that could conceal cultural deposits, are discovered during ground-disturbing activities, all ground-disturbing activity within 100 feet of the resources will be halted and a qualified archaeologist or archaeologically trained resource professional will assess the significance of the find. The qualified archaeologist will work with the project proponent to develop a primary records report that will comply with the current “Archaeological Review Procedures for CAL FIRE Projects” or equivalent state or local agency procedures, if applicable. If the archaeologist determines that further information is needed to evaluate significance, a data recovery plan will be prepared. If the find is determined to be significant by the qualified archaeologist (i.e., because the find constitutes a unique archaeological resource, subsurface historical resource, or tribal cultural resource), the archaeologist will work with the project proponent to develop appropriate procedures to protect the integrity of the resource. Procedures could include preservation in place (which is the preferred manner of mitigating impacts to archaeological sites), archival research, subsurface testing, or recovery of scientifically consequential information from and about the resource. Any find will be recorded standard DPR Primary Record forms (Form DPR 523) will be submitted to the appropriate regional information center.</p>	LTS
<p>Impact 3.7-3: Cause a Substantial Adverse Change in the Significance of a Tribal Cultural Resource</p> <p>Tribal consultation is ongoing and could result in the identification of tribal cultural resources as described under PRC Section 21074. Tribal cultural resources may be identified within program area during consultation and could be affected by treatments implemented under the proposed PTERI. This would be a potentially significant impact.</p>	PS	<p>Mitigation Measure 3.7-3: Complete Tribal Consultation (PRC Section 21080.3.1) and Avoid Potential Effects on Tribal Cultural Resources</p> <p>CAL FIRE will complete tribal consultation pursuant to PRC Section 21080.3.1.</p> <p>If no tribal cultural resource is identified during consultation, no further mitigation is required.</p>	LTS

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		If the project proponent determines that a treatment may cause a substantial adverse change to a tribal cultural resource, and measures to protect the resource are not otherwise identified in the consultation process, provisions under PRC Section 21084.3(b) describe mitigation measures that may avoid or minimize the significant adverse impacts. Examples include: <ol style="list-style-type: none"> 1. Avoidance and preservation of the resources in place, including, but not limited to, designing the treatment to avoid the resources and protect the cultural and natural context. 2. Treating the resource with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following: <ol style="list-style-type: none"> A. Protecting the cultural character and integrity of the resource. B. Protecting the traditional use of the resource. C. Protecting the confidentiality of the resource. 3. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places. 4. Protecting the resource. 	
3.10 Greenhouse Gas Emissions and Climate Change			
Impact 3.10-2: Potential to Generate GHG Emissions through Treatment Activities Direct GHG emissions from the proposed increase in treatment activities conducted under the proposed program would be substantial, recognizing planned levels of treatment would increase to 1,250 acres per year. At the full target rate of 1,250 acres per year, GHG emissions from treatments would be an estimated 23,298 MTCO ₂ e annually. Consistent with the goals of the proposed fuel treatments to decrease the occurrence of high-severity wildfires and increase the potential rates of carbon sequestration, implementation of the proposed program could result in a cumulative net carbon benefit over the long term, which is the most relevant timeframe and global context of GHG-caused, climate change-related environmental effects. However, there is uncertainty in predicting future wildfire occurrence, related emissions, and carbon sequestration rates, which are highly variable and depend on many factors. Future wildfire intensities and carbon sequestration in treated areas are the subjects of continued scientific research and debate. To meet CEQA's mandate of good faith disclosure and acknowledge	PS	Mitigation Measure 3.10-2: Implement GHG Emission Reduction Techniques During Prescribed Burns When planning for and conducting a prescribed burn, project proponents implementing a prescribed burn will incorporate feasible methods for reducing GHG emissions, including the following, which are identified in the National Wildfire Coordinating Group Smoke Management Guide for Prescribed Fire (NWCG 2018): <ul style="list-style-type: none"> ▶ reduce the total area burned by isolating and leaving large fuels (e.g., large logs, snags) unburned; ▶ reduce the total area burned through mosaic burning; ▶ burn when fuels have a higher fuel moisture content; ▶ reduce fuel loading by removing fuels before ignition. Methods to remove fuels include mechanical treatments, manual treatments, and biomass utilization; and ▶ schedule burns before new fuels appear. 	Potentially SU

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<p>potential future impacts in light of uncertainties, this impact is considered potentially significant, recognizing the reliability of estimates for direct GHG emissions and the uncertainty of the intended net carbon benefits of reduced wildfire intensity and increased carbon sequestration in treated areas.</p>		<p>As the science evolves, other feasible methods or technologies to sequester carbon could be incorporated, such as conservation burning, a technique for burning woody material that reduces the production of smoke particulates and carbon released into the atmosphere and generates more biochar. Biochar is produced from the material left over after the burn and can be spread with compost to increase soil organic matter and soil carbon sequestration. Technologies may also include portable units that perform gasification to produce electricity that can be placed on the grid (e.g., the Powertainer model currently being developed by All Power Labs) or pyrolysis that produces biooil that can be used as liquid fuel and/or syngas for use in electricity generation (e.g., the CM600 made by Biogreen) (All Power Labs 2019; Biogreen 2019).</p> <p>The project proponent will document in the Burn Plan required pursuant to SPR AQ-3 which methods for reducing GHG emissions can feasibly be integrated into the treatment design.</p>	
3.14 Recreation			
<p>Impact 3.14-2: Result In Adverse Physical Effects On the Environment From New or Expanded Recreational Facilities</p> <p>Implementation of the proposed program would not result in the construction of any new recreational facilities. Treatment activities could remove vegetation that currently serves as a barrier to vehicular access or could include construction of features such as landings, skid trails, or improvements to existing roads that would create new access points for recreational use of motor vehicles and off-highway vehicles (OHVs). These new access points could increase the long-term unmanaged use of motor vehicles and OHVs in the program area. This increase in OHV use and recreation user motor vehicle access could result in adverse physical effects on the environment. This impact would be potentially significant.</p> <p>With implementation of Mitigation Measure 3.13-2, the project implementer would install physical barriers to restrict new access by motor vehicles or OHVs, which would reduce this impact to less than significant.</p>	PS	<p>Mitigation Measure 3.14-2: Install Barriers to Prevent New Motor Vehicle Access</p> <p>To eliminate the potential for new motor vehicle access points into the forest at new landings and skid trails created in the program area, the project implementer (e.g., Licensed Timber Operator, forestry contractor, or public agency field crew, such as the California Conservation Corps, Conservancy Forestry Crews, or Fire District Crews) shall establish physical barriers adjacent to new landings, or skid trails where they access the forest from existing roads or trails to discourage post-treatment motor vehicle access to the project area. The project implementer shall also revegetate and spread mulch and/or slash in the landing area or along skid trails to reduce the visibility of disturbance of the cleared area and expedite restoration. These physical barriers and restoration activities shall be established within 15 days of completion of operations in the treatment unit. The types of physical barriers that could be used include boulders, split rail fencing, or other permanent physical features that are visually compatible with the forest setting.</p>	LTS
3.15 Transportation			
<p>Impact 3.15-2: Conflict or be Inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) Regarding Vehicle Miles Traveled</p> <p>Under the proposed program, the scale of treatment activities would increase to treat approximately 850 acres per year within Planned CWPP Projects plus an</p>	PS	No feasible mitigation is available.	Potentially SU

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<p>estimated average of 400 acres per year within the Community Fuel Reduction Area. With the increase in treatment acreage, the daily VMT generated by treatment activities in comparison to existing conditions is anticipated to increase by approximately 8,061 VMT because more individual treatment projects would be implemented. A key goal of the proposed program is to reduce the risk of catastrophic wildfires. Reducing the risk of catastrophic wildfires would result in a reduction in fire suppression activity and trips, which would be reasonably expected to decrease VMT over the long term, compared to conditions without the proposed program. However, it is not feasible to predict changes in wildfire occurrence sufficiently to quantify potential changes in fire response VMT. Thus, to meet CEQA’s mandate of good faith disclosure and to not risk understating potential future impacts in light of the uncertainties, this impact would be potentially significant, because VMT generated by later treatment activities under the proposed program would increase in comparison to existing conditions, notwithstanding the potential VMT-reducing effects of reduced wildfire response.</p>			

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1 INTRODUCTION

This Program Timberland Environmental Impact Report (PTEIR or Tahoe PTEIR) evaluates the environmental impacts of the proposed Tahoe timberland program (proposed program). It has been prepared according to the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 et seq.), the State CEQA Guidelines (California Code of Regulations [CCR], Title 14, Section 15000 et seq. [14 CCR Section 15000 et seq.]), Z'berg-Nejedly Forest Practice Act (FPA) (PRC Section 4511 et seq.), and the California Forest Practice Rules (CFPR) (14 CCR Section 1092.01) under the direction of the California Department of Forestry and Fire Protection (CAL FIRE). CAL FIRE is the CEQA lead agency. Members of the Tahoe Fire and Fuels Team (TFFT) including the California Tahoe Conservancy (Conservancy), Lake Valley Fire Protection District, and North Tahoe Fire Protection District are CEQA responsible agencies that would implement later activities under the Tahoe PTEIR. These responsible agencies collaborated with CAL FIRE in the preparation of this PTEIR.

1.1 PROJECT REQUIRING ENVIRONMENTAL ANALYSIS

The proposed program consists of forest management and fuel reduction activities and associated environmental protections that would occur within the approximately 17,490-acre program area (Figure 2-1) to reduce wildfire risks to communities and improve forest health through vegetation management activities primarily in the Wildland-Urban Interface (WUI) on the California side of the Lake Tahoe Basin. The proposed program would be implemented through a long-term series of later activities for forest fuel reduction that includes initial treatments and retreatments of project areas. The proposed program includes a variety of forest treatment activities to reduce the risk of high severity wildfire, including mechanical thinning, manual/hand thinning, prescribed understory burning, pile burning, sale and transport of merchantable timber, and the transport and use of biomass for energy generation and wood pulp products. Herbicide treatment is not proposed. Additional detail on the proposed program is provided in Chapter 2, "Program Description."

1.2 SCOPE OF THIS DRAFT PTEIR

This PTEIR includes an evaluation of the following 15 environmental issue areas, as well as other CEQA-mandated topics (e.g., cumulative impacts, growth-inducing impacts, significant unavoidable impacts, alternatives):

- ▶ Aesthetics;
- ▶ Agricultural and Forestry Resources;
- ▶ Air Quality;
- ▶ Biological Resources;
- ▶ Archaeological, Historical, and Tribal Cultural Resources;
- ▶ Energy;
- ▶ Geology, Soils, and Land Capability;
- ▶ Greenhouse Gas Emissions and Climate Change;
- ▶ Hazards and Hazardous Materials;
- ▶ Hydrology and Water Quality;
- ▶ Noise and Vibration;
- ▶ Recreation;
- ▶ Transportation;
- ▶ Wildfire; and
- ▶ Mandatory Findings of Significance.

This PTEIR also includes an evaluation of social and economic effects, consistent with guidance provided by CAL FIRE and the California Board of Forestry and Fire Protection (Board and CAL FIRE 2014). The State CEQA Guidelines Section 15131 also provides guidance related to inclusion of social and economic effects of a project into an EIR, but states that “[e]conomic or social effects of a project shall not be treated as significant effects on the environment.”

Under the CEQA statutes and the State CEQA Guidelines, a lead agency may limit an EIR’s discussion of environmental effects when such effects are not potentially significant (PRC Section 21002.1[e]; State CEQA Guidelines Sections 15128 and 15143). Information used to determine which impacts would be potentially significant was derived from review of the proposed program; review of applicable planning documents and CEQA documentation; feedback from public and agency consultation; and comments received on the Notice of Preparation (NOP) (see Appendix C of this Draft EIR). The effects that were determined to not be significant, and thus do not warrant detailed review in this PTEIR are described in Section 1.8, “Effects Not Found to be Significant,” and include land use and planning, mineral resources, population and housing, public services, and utilities and service systems.

1.3 PUBLIC REVIEW PROCESS

As identified above in Section 1.3, “Scope of this Draft EIR,” in accordance with CEQA and the State CEQA Guidelines, an NOP was distributed on June 13, 2019, to responsible agencies, interested parties and organizations, and private organizations and individuals that could have interest in the program. The NOP was available on the Tahoe PTEIR website at <https://www.ntfire.net/tahoepteir> and availability of the NOP was advertised in the Sierra Sun and Tahoe Daily Tribune. The purpose of the NOP was to provide notification that a PTEIR for the proposed program was being prepared and to solicit input on the scope and content of the document. Two public scoping meetings were held during the scoping period at the following times and locations:

- ▶ June 13, 2019, 6:00 pm at the North Tahoe Events Center in Kings Beach, CA
- ▶ June 28, 2019, 7:00 pm at the Taylor Creek Visitor Center near the City of South Lake Tahoe, CA

The NOP and responses to the NOP are included in Appendix C of this Draft PTEIR.

This Draft PTEIR is being circulated for public review and comment for a period of 45 days. During this period, comments from the general public as well as organizations and agencies on environmental issues may be submitted to the lead agency. Copies of the Draft EIR may be reviewed online at, or downloaded from, <https://www.ntfire.net/tahoepteir>. Due to the COVID-19 pandemic, hard copies will not be made readily available for review. Individuals that are unable to access the Draft PTEIR at the website listed above should contact North Tahoe Fire Protection District at TahoePTEIR@ntfire.net or 530-584-2344 to obtain a copy.

A public webinar on the Draft PTEIR will be held on June 17, 2020, at 5:30 p.m. Instructions on attending the webinar are available at the following link <https://www.ntfire.net/tahoe-pteir>. The purpose of the webinar is to present the findings of, and receive comments on, the Draft PTEIR.

Upon completion of the public review and comment period, a Final Tahoe PTEIR will be prepared that will include both written and oral comments on the Draft Tahoe PTEIR received during the public-review period, responses to those comments, and any revisions to the Draft Tahoe PTEIR made in response to public comments. The Draft Tahoe PTEIR and Final Tahoe PTEIR will comprise the Tahoe PTEIR for the program.

Before approving the proposed program, the CAL FIRE is required to certify that the PTEIR has been completed in compliance with CEQA and the CFPR, that the decision-making body reviewed and considered the information in the PTEIR, and that the PTEIR reflects the independent judgment of the lead agency (State CEQA Guidelines Section 15090 and 14 CCR Section 1092.02).

1.4 DRAFT PTEIR ORGANIZATION

This Draft PTEIR is organized into chapters, as identified and briefly described below. Chapters are further divided into sections (e.g., Chapter 3, “Environmental Impacts and Mitigation Measures” and Section 3.2, “Aesthetics”):

- ▶ “Executive Summary”: This chapter introduces the Tahoe PTEIR; provides a summary of the environmental review process, effects found not to be significant, and key environmental issues; and lists significant impacts and mitigation measures to reduce significant impacts to less-than-significant levels.
- ▶ Chapter 1, “Introduction”: This chapter provides a description of the lead and responsible agencies, the legal authority and purpose for the document, and the public review process.
- ▶ Chapter 2, “Program Description”: This chapter describes the location, background, and goals and objectives for the proposed program, and describes the program elements in detail.
- ▶ Chapter 3, “Environmental Impacts and Mitigation Measures”: The sections within this chapter evaluate the expected environmental impacts generated by the proposed program, arranged by subject area (e.g., Land Use, Hydrology and Water Quality). Within each subsection of Chapter 3, the regulatory background, environmental setting, analysis methodology, and thresholds of significance are described. The anticipated changes to baseline conditions after implementation of the program are then evaluated for each subject area. For any significant or potentially significant impact that would result from project implementation, mitigation measures are presented and the level of impact significance after mitigation is identified. Environmental impacts are numbered sequentially within each section (e.g., Impact 3.2-1, Impact 3.2-2, etc.). Any required mitigation measures are numbered to correspond to the impact numbering; therefore, the mitigation measure for Impact 3.2-2 would be Mitigation Measure 3.2-2.
- ▶ Chapter 4, “Social and Economic Effects”: This chapter includes analysis of the social and economic effects of the program in accordance with *Guidance in the Preparation and Review of PTEIRs* (Board and CAL FIRE 2014).
- ▶ Chapter 5, “Cumulative Impacts”: This chapter provides information required by CEQA regarding cumulative impacts that would result from implementation of the proposed program together with other past, present, and probable future projects.
- ▶ Chapter 6, “Alternatives”: This chapter evaluates alternatives to the proposed program, including alternatives considered but eliminated from further consideration, the No-Program Alternative, and three alternative program options. The environmentally superior alternative is identified.
- ▶ Chapter 7, “Other Sections Required by Statute”: This chapter evaluates growth-inducing impacts and irreversible and irretrievable commitment of resources, and discloses any significant and unavoidable adverse impacts.
- ▶ Chapter 8, “Report Preparers”: This chapter identifies the preparers of the document.
- ▶ Chapter 9, “References”: This chapter identifies the organizations and persons consulted during preparation of this Draft EIR and the documents and individuals used as sources for the analysis.

1.5 STANDARD TERMINOLOGY

The following are key terms used in this PTEIR to describe important components of the proposed program:

- ▶ “Project proponent” refers to a public agency proposing to implement a treatment project which could include CAL FIRE, the Conservancy, fire districts, or other public agencies or landowners with land ownership and/or management responsibilities seeking to implement individual treatment activities using this PTEIR for CEQA and/or FPA compliance.
- ▶ “Project implementer” refers to the entities that would be carrying out treatment activities under the Tahoe PTEIR and could include Licensed Timber Operators, forestry contractors, or public agency field crews, such as the California Conservation Corps, Conservancy Forestry Crews, or Fire District Crews.

- ▶ “Program area” is the 17,490-acre area within which later treatment activities under the Tahoe PTEIR could be implemented (refer to Section 2.2 of Chapter 2 “Program Description” for additional description).
- ▶ “Later treatment activity” is a future proposed fuels treatment project that is consistent with the treatment methods described in this PTEIR, would not result in new or substantially more severe significant effects relative to those identified in this PTEIR, and would otherwise be considered within the scope of this EIR pursuant to State CEQA Guidelines Section 15168(c)(2).
- ▶ “Treatment activity” includes manual treatments, mechanical treatments, prescribed understory burning, and pile burning (each is described in Section 2.4 of Chapter 2 “Program Description”); any of these activities could be used in various combinations to comprise a later treatment activity.

This PTEIR uses the following terminology to describe environmental effects of the proposed program:

- ▶ “No impact” means no change from baseline conditions (no mitigation is needed).
- ▶ “Less-than-significant impact” means no substantial adverse change in the physical environment within the area affected by the program (no mitigation is needed).
- ▶ “Potentially significant impact” means an impact that might cause a substantial adverse change in the environment, although it is uncertain whether the impact would occur (mitigation is recommended because potentially significant impacts are treated as significant).
- ▶ “Significant impact” means an impact that would cause a substantial adverse change in the physical environment within the area affected by the program (mitigation is recommended).
- ▶ “Significant and unavoidable impact” means an impact that would cause a substantial adverse change in the physical environment and that cannot be avoided, even with the implementation of all feasible mitigation.
- ▶ “Mitigation measure” is a modification to the proposed program or an additional action that would:
 - avoid the impact altogether by not taking a certain action or parts of an action;
 - minimize impacts by limiting the degree of magnitude of the action and its implementation;
 - rectify the impact by repairing, rehabilitating, or restoring the affected environment;
 - reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action; and/or
 - compensate for the impact by replacing or providing substitute resources or environments, including through permanent protection of such resources in the form of conservation easements (State CEQA Guidelines Section 15370).

1.6 EFFECTS NOT FOUND TO BE SIGNIFICANT

The CEQA Guidelines (Section 15128) allow an EIR to identify environmental effects that were determined to not be significant and to briefly describe the reasons. Such effects can be dismissed from detailed review in the PTEIR. The proposed program would not result in significant effects related to the topics described below and are dismissed from detailed review in this PTEIR. These issue areas are organized below to address the topics in the State CEQA Guidelines Appendix G Environmental Checklist Form.

- ▶ **Land Use and Planning:** Forest management and fuel reduction activities are allowed in all land use and zoning districts in each of the Area Plans, Plan Area Statements, and applicable local jurisdiction zoning within the program area. Treatment activities would be located in forested areas within and outside of developed communities. Activities would be short-term and temporary, thus implementation of the Tahoe PTEIR would not divide an established community. Some treatment activities could occur on discrete lots within communities, but would not result in any temporary or permanent land use changes or any actions that would result in physical division of an established community. Therefore, the proposed program would not affect land use and planning.

- ▶ **Mineral Resources:** The proposed program would include temporary forest management and fuel reduction activities that would not preclude the use of a state or locally important mineral resources. Additionally, mining activities are not an identified allowable use in the Tahoe Basin (Chapter 21, "Permissible Uses," in the TRPA Code of Ordinances). Thus, the proposed program would not result in loss of a known mineral resource or a locally important mineral resource recovery site.
- ▶ **Population and Housing:** The proposed program would occur on forested land that is primarily in public ownership and would not displace people or existing housing. The proposed program could result in an increase in workers to implement fuel reduction treatments. Employee demand generated by the proposed program would be met by Licensed Timber Operators, other forestry contractors, or public agency field crews, such as California Conservation Corps, Tahoe Conservancy Forestry Crews or Fire District Crews. The demand for employees would be a small incremental increase over existing regional job demands, and workers would be expected to come from the existing local workforce or could result in some people relocating to near or within the program area. Implementation of the Tahoe PTEIR would not result in substantial unplanned population growth such that construction of additional housing would be required. Implementation of the Tahoe PTEIR would also not include the extension of roads or other infrastructure that could indirectly induce substantial unplanned population growth in the program area.
- ▶ **Public Services:** The proposed program would not generate an increased need for public services, such as fire or police protection, schools, or parks, because there would be no substantial changes in population or any new housing resulting from the proposed treatments. The proposed program would not result in the need for new or altered governmental facilities and would, therefore, not affect public services.
- ▶ **Utilities and Service Systems:** Implementation of the proposed program would not result in new permanent structures or uses that would generate demand for electricity or natural gas, or solid waste that would be disposed of in landfills. Biomass generated from treatment activities would not be disposed of in landfills. Issues related to stormwater runoff are addressed in Section 3.11, "Hydrology and Water Quality."
 - For treatment activities that may occur for a long period of time (i.e., more than a few days), portable restrooms may be used by project implementers. This would be the only source of wastewater generated by the proposed program. Portable restrooms would be cleaned periodically, and the waste would be hauled off site to a wastewater treatment facility for disposal. This service is typically provided by an independent contractor permitted to handle, haul, and dispose of sanitary sewage. Pursuant to 40 CFR Section 403.5, hauled waste must be disposed of at a designated publicly owned treatment facility. Typically, publicly owned treatment facilities are responsible for implementing permit programs for hauled waste and ensure that adequate treatment capacity exists. Because the use of portable restrooms would be incrementally greater than currently occurs, the demand for wastewater treatment would be minimal. Therefore, wastewater treatment demand would not exceed the capacity of any wastewater treatment provider.
 - Water trucks could be used for dust suppression during manual or mechanical treatments. Water trucks may also be stored on the treatment site for fire suppression during prescribed burning or pile burning activities. Water would be supplied (from surface or groundwater by a municipal water source) via nearby fire hydrants or other municipal sources. In some instances where it is infeasible for water trucks to access a site, water drafting from surface water sources located close to treatment sites could occur. Because treatment activities occur for a temporary duration with limited water demand, local municipal water suppliers would have sufficient water supplies to serve the level of water use associated with implementation of the proposed program.

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2 PROGRAM DESCRIPTION

2.1 BACKGROUND AND PROGRAM OBJECTIVES

The Tahoe Fire and Fuels Team (TFFT) has worked for years to create fire-adapted communities, restore forest resilience, and achieve other objectives consistent with the Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy (Multi-Jurisdictional Strategy) (TFFT 2017) and the Lake Tahoe Community Wildfire Protection Plan (CWPP). The TFFT is comprised of 22 fire districts, land management agencies, universities and regulatory agencies with a role in managing wildfire fuel in the Lake Tahoe Basin. The TFFT has achieved significant results, treating thousands of acres to manage forest conditions in the Wildland-Urban Interface ([WUI], i.e., the forested areas within and adjacent to developed communities) surrounding Tahoe's communities. However, significant portions of the WUI and other forested areas still require fuel reduction treatments and long-term management to maintain forest resiliency near communities.

The TFFT proposes to increase the pace and scale of forest management activities that reduce wildfire risk to communities and improve forest health through vegetation management activities in and adjacent to the WUI on the California side of the Lake Tahoe Basin (the proposed program). The project-by-project approach that has typically been used to comply with California Environmental Quality Act (CEQA), California Forest Practice Act (FPA), California Forest Practice Rules (CFPR), and other regulatory requirements can lead to inefficiencies, delays, excess costs, and inconsistencies in project planning. In addition, a project-by-project approach to fuel reduction planning and environmental review provides limited opportunities to analyze and understand the long-term and cumulative effects of forest management programs. This Program Timberland Environmental Impact Report (PTEIR or Tahoe PTEIR) more efficiently and comprehensively evaluates the environmental effects of the proposed program to facilitate an increase in the pace and scale of fuel reduction treatments.

This PTEIR is being prepared under the direction of the California Department of Forestry and Fire Protection (CAL FIRE) as lead agency, because CAL FIRE must approve the proposed program in accordance with the CFPR and FPA. CAL FIRE is coordinating with other TFFT agencies to evaluate the potential significant environmental effects of the proposed activities in conformance with these regulations and CEQA.

This PTEIR functions as a program EIR in accordance with State CEQA Guidelines Section 15168 and evaluates at a program level treatment approaches and covered lands in order to provide a comprehensive cumulative analysis of forest management activities. The Tahoe PTEIR would allow project proponents to more efficiently complete environmental review of later activities consistent with the program, while maintaining flexibility for project implementers to determine the most appropriate treatment methods for individual later treatment activities. Environmental review of later activities within the scope of the Tahoe PTEIR would be streamlined through provisions in Section 15168 of the State CEQA Guidelines for program EIRs and features of the FPA and CFPR. Through a checklist-based approach for environmental review of later project activities, this PTEIR is designed to facilitate an increased pace and scale of forest management activities informed by rigorous analysis of site-specific and cumulative effects. As described in detail under Section 2.7, "Later Activity Review, Permits, and Approvals," below, the Project Consistency Checklist (Appendix A) would be used to determine if a proposed later activity is within the scope of the Tahoe PTEIR.

The objectives of the program are to:

- ▶ reduce the risk of catastrophic wildfires that could damage Lake Tahoe Basin forests, watersheds, habitats, and communities;
- ▶ increase Lake Tahoe Basin forest resilience to effects of climate change, including prolonged drought, pest and disease outbreaks and increased tree mortality;
- ▶ protect and restore meadow and riparian ecosystems, and forest habitat quality in the Lake Tahoe Basin;
- ▶ develop and implement all-lands fuel reduction, forest health improvement, and restoration projects that deliver multiple community and ecosystem service benefits; and
- ▶ increase the pace and scale of fuel reduction projects to assist in achieving the goals of Executive Order B-52-18.

2.2 PROGRAM AREA LOCATION

Forest management and fuel reduction activities analyzed in this PTEIR would occur within a program area located on private, local jurisdiction, federal, and California Tahoe Conservancy (Conservancy) lands both in the WUI and select contiguous areas of general forest outside of the WUI throughout the California side of the Tahoe Basin (see Figure 2-1). The program area covers approximately 17,490 acres in the City of South Lake Tahoe and in unincorporated areas of El Dorado and Placer Counties, including, but not limited to: Meyers, Cascade properties near Cascade Lake, Tahoma, Homewood, Alpine Peaks, Tahoe City, Dollar Point, Carnelian Bay, Tahoe Vista, and Kings Beach.

The majority of the proposed program would be located within the WUI, with areas targeted for vegetation treatments consisting of the WUI defense zone and WUI threat zone (see Figure 2-1). The WUI defense zone is the land between developed communities and wildlands, where more intensive vegetation management is needed to protect abutting and nearby communities. The WUI threat zone is those wildland areas outside of the WUI defense zone where it may be desirable to reduce the vertical and horizontal continuity of vegetation to modify wildland fire behavior to protect adjacent communities.

The program area includes 11,640 acres of land identified as "Planned CWPP Projects." Planned CWPP Projects consist primarily of larger-acreage parcels of public land. These include undeveloped open space within and near developed communities. Treatments in these areas could include any of the silvicultural prescriptions described in Section 2.3.1, and any of the proposed vegetation treatment methods described in Section 2.4.

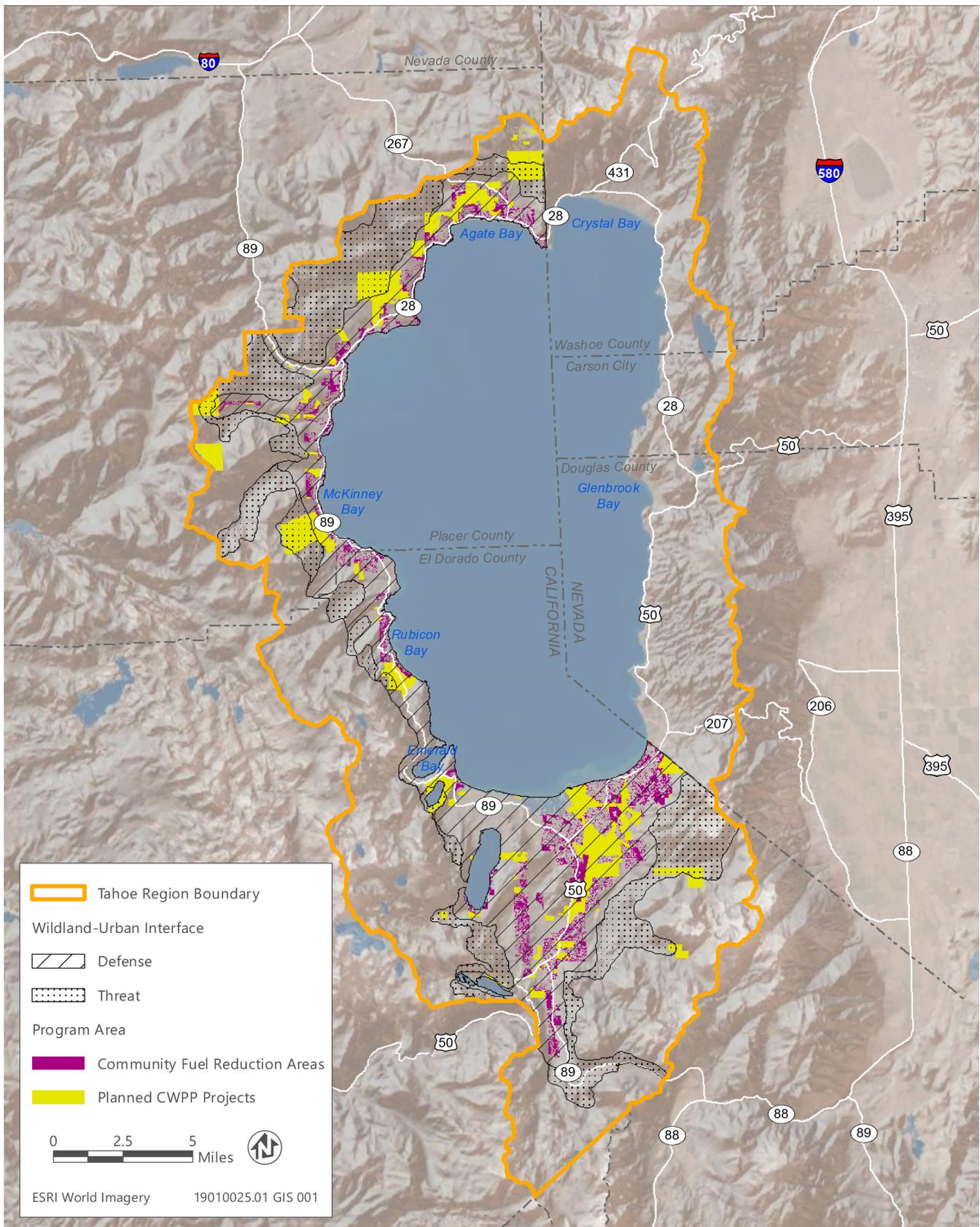
The remaining 5,850 acres of the program area are identified as "Community Fuel Reduction Areas." Community Fuel Reduction Areas include smaller-acreage parcels that are publicly or privately owned. These areas include developed parcels and undeveloped urban lots within and surrounding developed neighborhoods. Silvicultural prescriptions within Community Fuel Reduction Areas would predominately consist of shaded fuel break/defensible space prescriptions as described in Section 2.3.1. Treatment methods in these areas would predominantly consist of manual treatments as described in Section 2.4.2, although other treatment methods described in Section 2.4, "Proposed Treatment Methods," could occur depending on site-specific characteristics. Figures 2-2 through 2-7, show additional detail on locations that could be subject to forest fuel treatments within the program area.

A portion of the program area includes U.S. Forest Service urban lots that are interspersed between private and state-owned lots and are within the Community Fuel Reduction Areas. Fuels treatments on these lands would be permissible under the Tahoe PTEIR through a Good Neighbor Authority agreement (i.e., a cooperative agreement or contracts between the U.S. Forest Service and the state) or a possible future transfer of this federal land to the state. The PTEIR does not include environmental analysis required under the National Environmental Policy Act (NEPA) to support federal approval or treatment of federal lands.

Treatments in the program area would be in addition to defensible space treatments required under Public Resources Code (PRC) Section 4291. This PTEIR does not cover portions of private parcels within 100 feet of developed structures that are required to meet the defensible space requirements of PRC Section 4291; however, project proponents could conduct forest management and fuel reduction activities on private lands whose property lines may fall within 100 feet of neighboring and separately owned structures.

2.3 PROPOSED FOREST MANAGEMENT TREATMENTS

The proposed program consists of a long-term, vegetation management program to reduce forest fuels that can contribute to large, high-severity wildfires. The long-term program includes initial treatments and retreatments of project areas shown in Figures 2-1 through 2-7. The program includes numerous forest treatment activities to reduce the risk of wildfire including mechanical thinning, manual/hand thinning, prescribed understory burning, pile burning, sale and transport of merchantable timber, and the transport and use of biomass for energy generation and wood pulp products. To provide revenue to support the wildfire risk reduction and forest habitat related treatments, forest products with commercial value (e.g., timber, biomass, etc.) may be removed and sold or bartered as an accessory activity. Herbicide treatment is not proposed.



Source: Data received from CTC in 2012, Tahoe Resource Conservation District in 2018, and TRPA in 2011; adapted by Ascent in 2018

Figure 2-1 Program Area

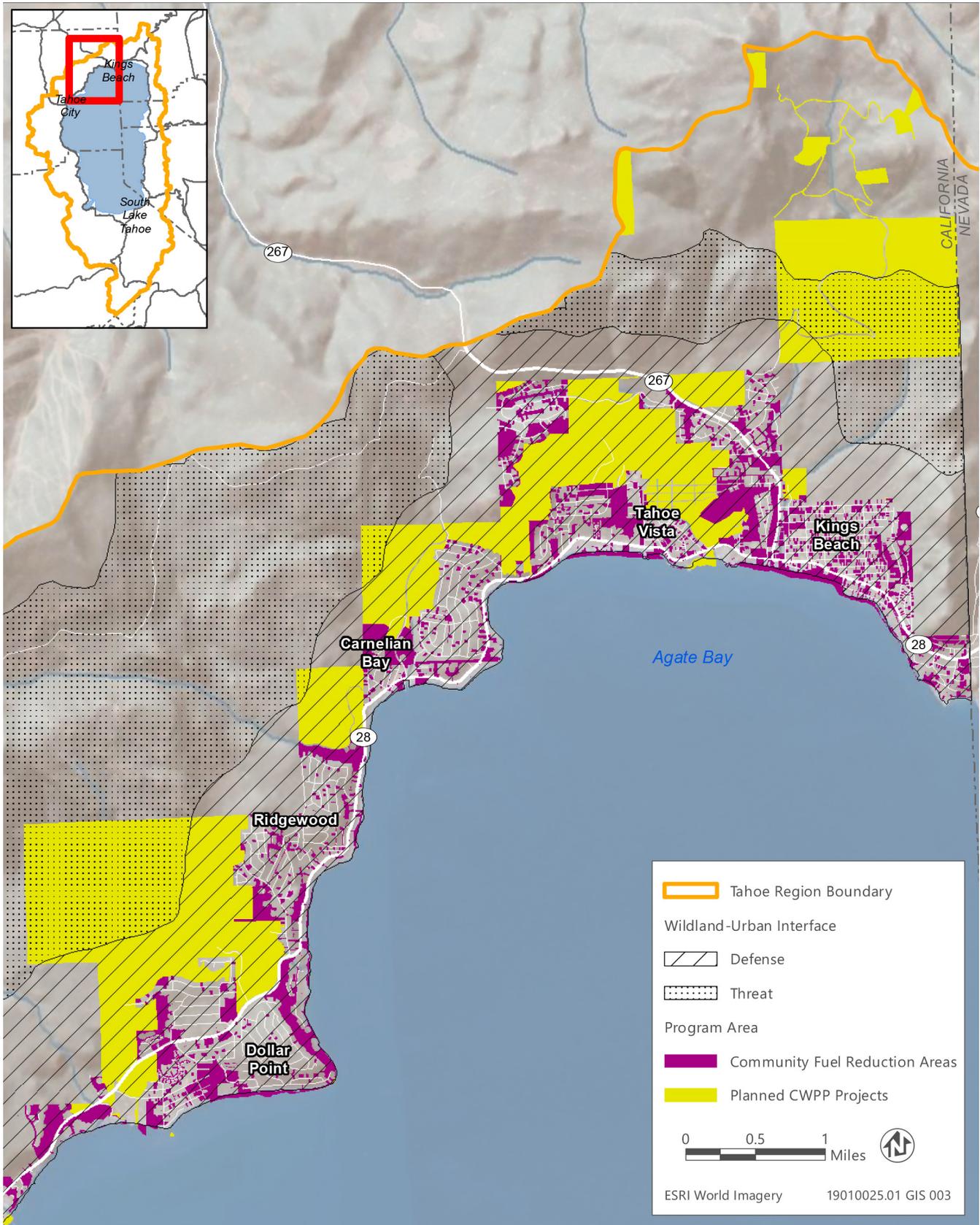


Figure 2-2 Program Area: Kings Beach to Dollar Point

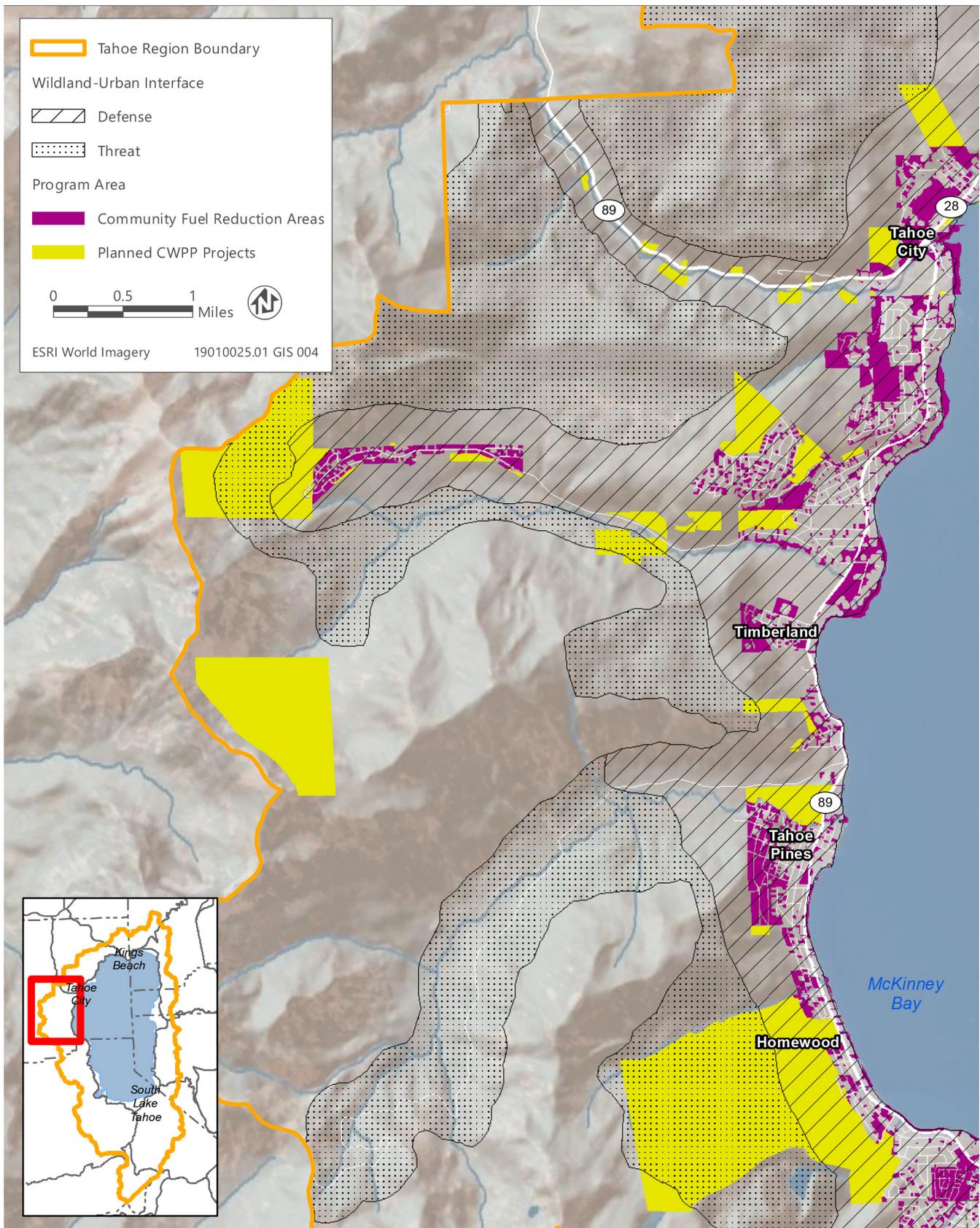


Figure 2-3 Program Area: Tahoe City to Homewood

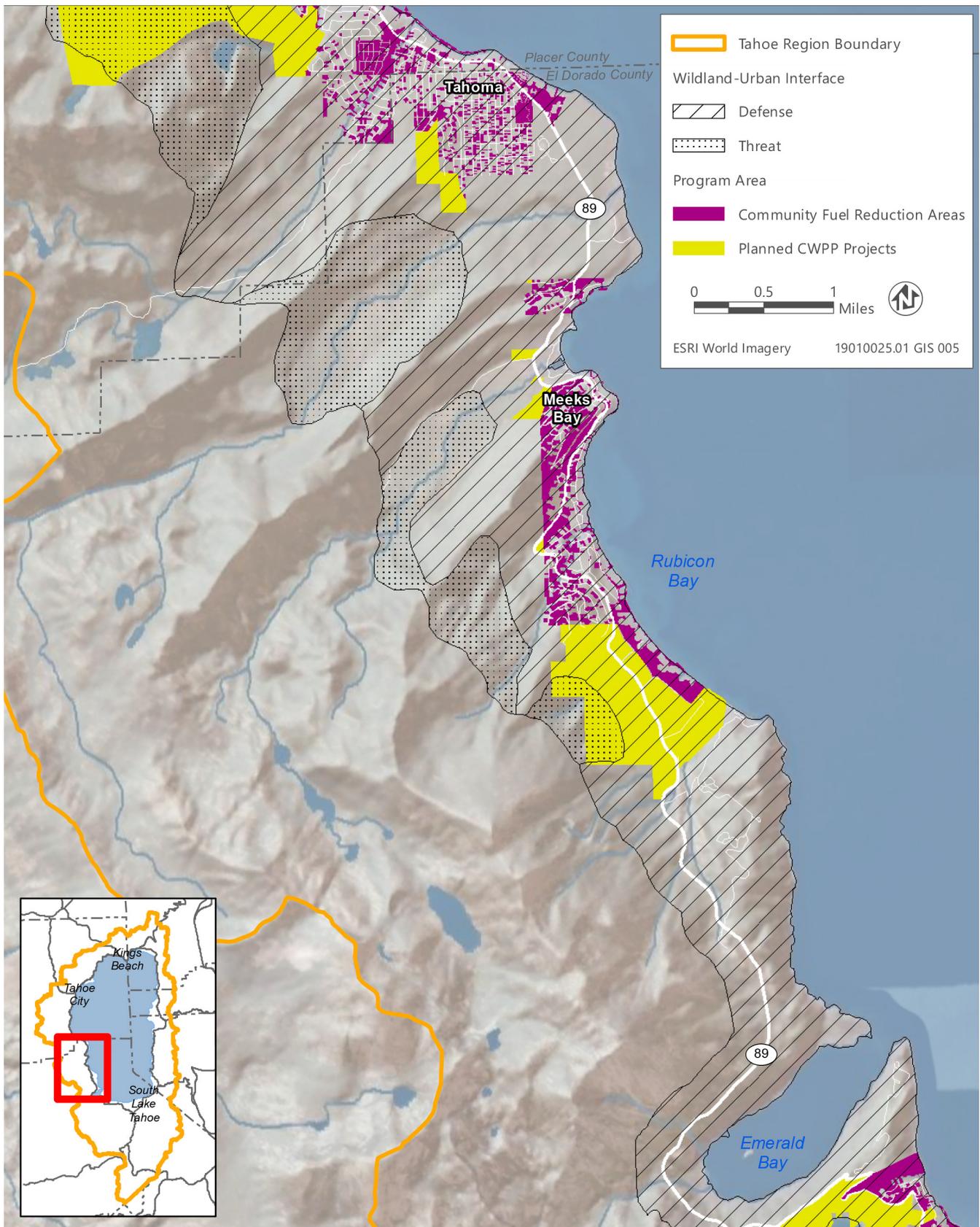
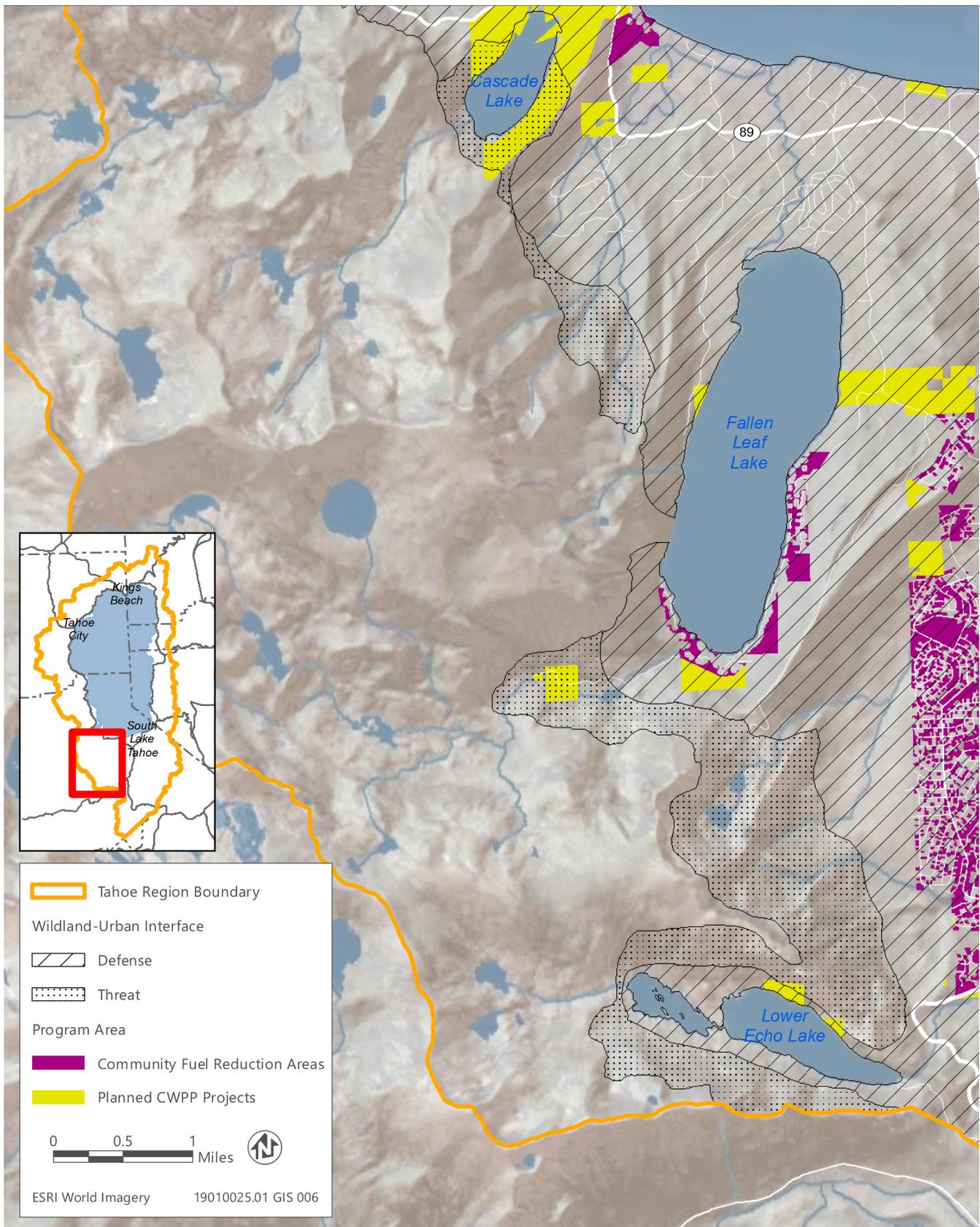


Figure 2-4 Program Area: Tahoma to Emerald Bay



Source: Data received from CTC in 2012, Tahoe Resource Conservation District in 2018, and TRPA in 2011; adapted by Ascent in 2018

Figure 2-5 Program Area: Cascade Lake to North Upper Truckee

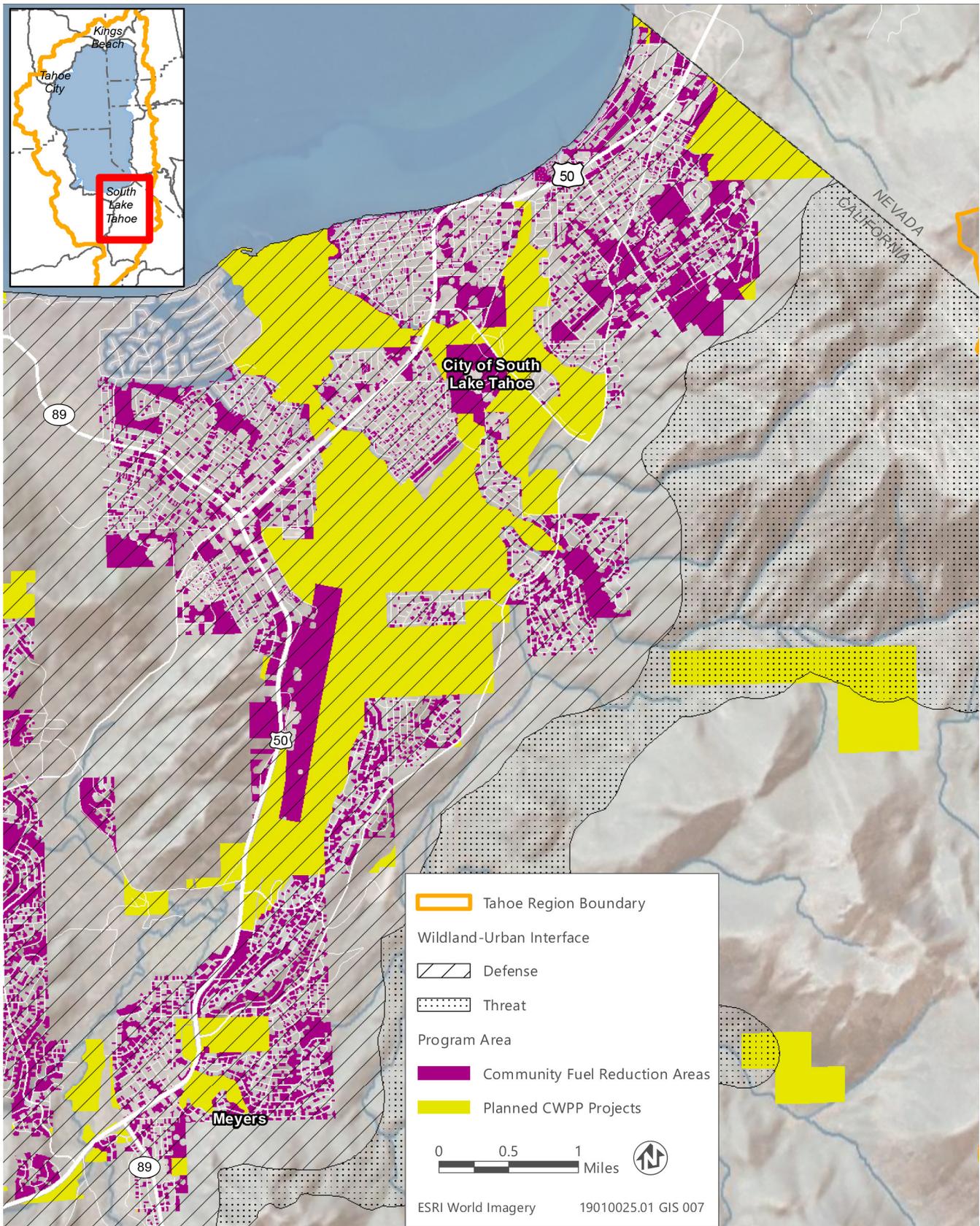
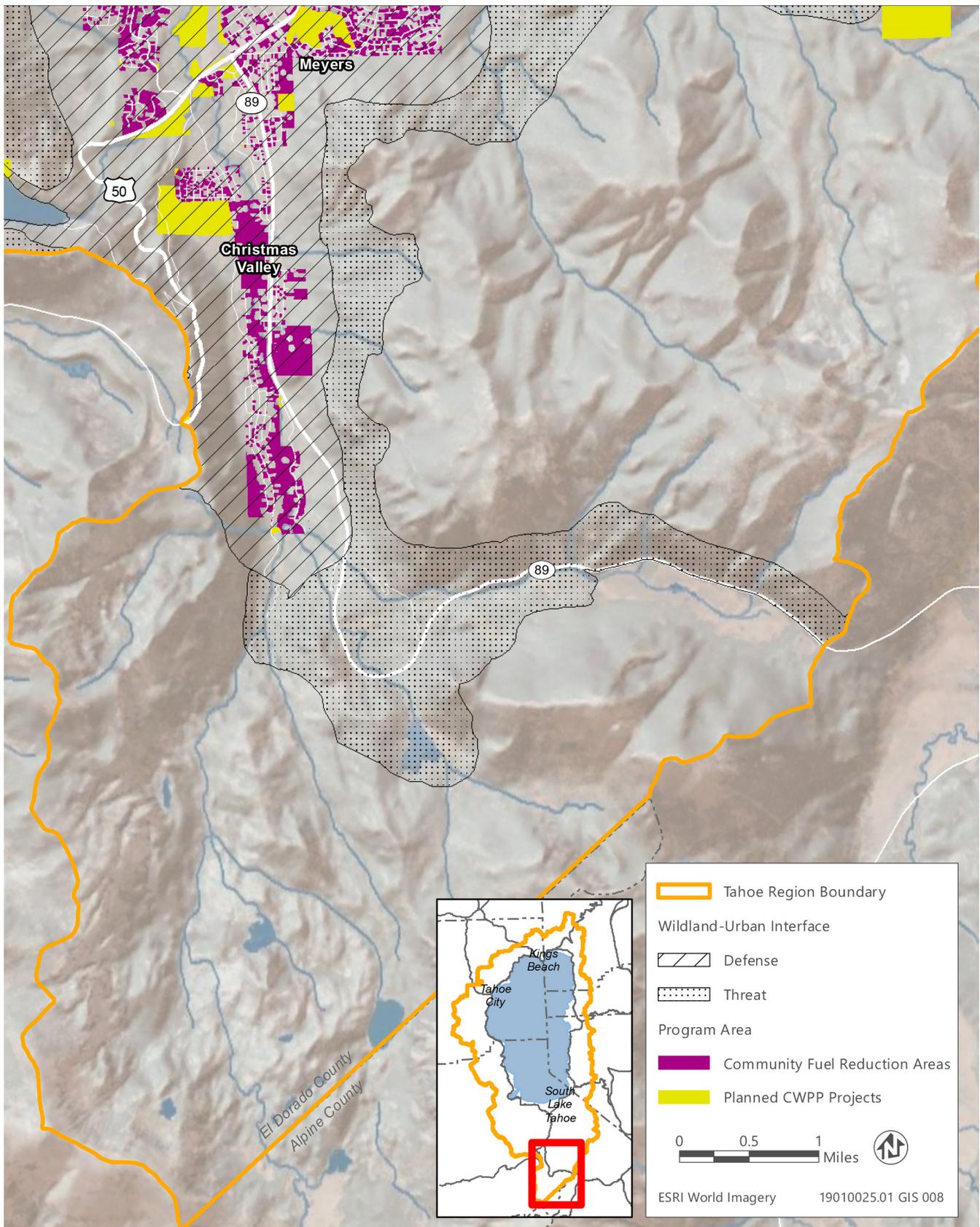


Figure 2-6 Program Area: South Lake Tahoe



Source: Data received from CTC in 2012, Tahoe Resource Conservation District in 2018, and TRPA in 2011; adapted by Ascent in 2018

Figure 2-7 Program Area: Christmas Valley

2.3.1 Silvicultural Prescriptions

Silviculture is the practice of managing forest composition, structure, and growth. Silvicultural prescriptions can depend on the goals of a forest management project, which in this case is for forest fuel and wildfire risk reduction. In general, silvicultural prescriptions would be intended to achieve and maintain residual basal areas (i.e., the surface area covered by the trunks of living trees) of 70 to 120 square feet (sq. ft.) per acre, with some treatments potentially resulting in minimum residual basal area of 50 sq. ft. per acre, where warranted by site conditions. The proposed program would include a combination of the following silvicultural prescriptions, with the specific prescription for each later activity selected based on site-specific characteristics and goals:

- ▶ **Shaded fuel break/defensible space:** Shaded fuel breaks and defensible space prescriptions alter vegetation to reduce the potential for high-severity wildfire and to improve the create conditions that increase the ability of firefighters to suppress wildfire. This treatment is intended to reduce the rate of wildfire spread, duration, intensity, fuel ignitability, and to provide safe access for wildfire suppression efforts. This method involves removal of surface (i.e., ground), ladder (i.e., branches and small trees that can allow a ground fire to burn higher into the forest canopy), and crown (i.e., forest canopy) fuels such that the treated stand exhibits reduced vertical and horizontal fuel continuity. Generally, this approach is similar to thinning from below, where the smaller diameter trees and surface fuels are targeted for removal or rearrangement, leaving a stand of the largest, most fire resilient trees available in a discontinuous array.
- ▶ **Single-tree and group selection:** Single-tree selection and group selection are uneven-age methods that support and enhance uneven stand structure (i.e., a variety of tree sizes and ages). Utilizing these methods, trees are removed singly or in small groups ranging from 0.25 to 2.5 acres in size, although only 20 percent of the total treatment area may be covered by the group clearings. Implementation of these silvicultural methods is intended to hasten the growth of remaining trees; reduce competition for water, sunlight, and soil nutrients; support stand health and vigor; and support site conditions required for natural regeneration of the stand. Minimum standards apply to use of this prescription to ensure the retention of an uneven-age stand, and also require that the remaining trees have full crowns that are capable of seed production and represent the best species characteristics available in the stand.
- ▶ **Tree thinning:** Individual trees can be removed to promote forest growth and vigor. This silvicultural prescription is similar to the shaded fuel break/defensible space prescription above, but is focused on forest health as well as fire behavior. It is intended to maintain or increase the average tree diameter in the stand through reduction of tree density, which ultimately hastens tree growth. Minimum standards apply to use of this prescription to ensure that the average stand diameter of the post-treatment stand is equal to or greater than that of the pre-treatment stand. Tree thinning would reduce fuels and would also promote forest growth, improve forest resiliency, and reduce the potential for insect infestation. Tree thinning could be included in non-commercial, pre-commercial, and commercial projects.
- ▶ **Sanitation-salvage:** Sanitation-salvage is used to protect, support, and enhance the overall forest health of the stand. Sanitation cutting refers to the removal of insect-attacked or diseased trees to maintain or improve the overall health of the stand. Salvage cutting is the removal of only those trees that are dead, dying, or deteriorating because of damage from fire, wind, insects, disease, flood, or other reasons. Salvage cutting includes dead or dying trees that still retain some commercial value. It is intended to economically recover trees before a total loss of their wood value. The sanitation and salvage methods may be combined to provide flexibility in addressing varying levels and types of damage within a stand.
- ▶ **Aspen, meadow, and wet-area restoration:** Aspen, meadow, riparian, and wet-area restoration is a special prescription intended to restore, retain, or enhance such areas for their ecological value by removing encroaching conifers. The degraded conditions of the aspen, meadow, riparian, and/or wet area are identified, which often includes encroachment by other vegetation and excessive shading by conifers. Treatment measures are based on the site-specific conditions, but typically involve the removal of conifers to reduce shading and competition with aspen, meadow, or other wet-area communities.

2.4 PROPOSED TREATMENT METHODS

2.4.1 Pace and Scale of Treatments

Since 2007, project proponents have treated an average of 503 acres each year within the program area, with an average of 199 acres treated by hand thinning, 200 acres treated by mechanical thinning, and 104 acres of pile burning. The proposed program would increase the pace of treatment activities and treat an estimated 1,250 acres per year, including an estimated 850 acres per year within Planned CWPP Project areas plus and additional estimated 400 acres per year within Community Fuel Reduction Areas through a combination of manual activities, mechanical activities, and prescribed burning. These estimated acreages are a reasonable estimate of the typical number of acres that would be treated each year with implementation of the Tahoe PTEIR. The actual acres treated per year would vary and could be influenced by a variety of factors, such as funding availability, market conditions, staffing resources, and complexity of project planning. It is anticipated that completion of initial-entry treatments across all of the Planned CWPP Projects would be prioritized initially, followed by ongoing retreatments. It is estimated that initial treatments would be completed within 15 years. Table 2-1 shows the average number of acres treated each year under existing conditions, the total acres expected to be treated in a typical year under the proposed program, and the incremental annual increase in the scale of treatments that is expected to result from implementation of the proposed program.

Table 2-1 Estimated Increase in Annual Acres Treated by Treatment Type Under the Proposed Program

	Manual Treatments	Mechanical Treatments	Pile Burning	Prescribed Understory Burning	Total Acres Treated per Year
Total Acres Treated Under the Proposed Program	500	300	250	200	1,250
Total Acres Treated Under Existing Conditions ¹	199	200	104	0	503
Net Increase in Acres Treated as a Result of the Proposed Program	301	100	146	200	747

¹ Acres treated under existing conditions are based on the annual average acres treated within the program area between 2007 and 2018.

Source: Compiled by Ascent Environmental in 2019

The number of treatments that could occur at one time would vary based on time of year, availability of funding and crews, and size and complexity of individual treatments. The maximum number of treatments that could reasonably occur at one time would be 10 separate treatments. Activities associated with these treatments include: tree felling; prescribed burning; skid trail, fire containment line, and landing construction; forest road maintenance and restoration; removal of forest products; management of biomass through lopping, mastication, chipping, burning; transportation and hauling of forest products; and other activities incidental to treatment operations. Each method would also involve access and may include removal of forest materials from the treatment site. Equipment use would only occur during daylight hours.

All treatments would be consistent with applicable CFPR, Tahoe Regional Planning Agency (TRPA), Lahontan Regional Water Quality Control Board (Lahontan RWQCB), and other applicable laws and regulations. The analysis in this PTEIR includes evaluation of a scenario where TRPA Code Sections 61.1.6.D.1 and 61.1.6.F.1 change to allow mechanical thinning on slopes greater than 30 percent and skidding on frozen ground (instead of only over snow). If TRPA revises those Code sections in the future, later treatment activities under the PTEIR can incorporate the revised provisions. Until such time that the Code sections are revised, all treatment activities would comply with the existing TRPA Code.

2.4.2 Manual Treatments

In manual treatment operations, a crew would fell trees using chainsaws and limb the log directly at the stump (Figure 2-8). Through this process, the logs, tree limbs, and slash are either immediately piled into burn piles, chipped (with the chip either spread on site or removed) or scattered throughout the treatment area creating a “slash mat,” which protects the forest floor from disturbance. Individual or small groups of logs could be pulled to landing by hand or with a cable skidder or grapple skidder. At the landing, logs could be cut to length and loaded onto trucks by an excavator or backhoe, or left for private individuals to pick up and use for firewood. Typically, one hand crew (i.e., 10 crew members) and four to eight chainsaws are used for manual treatments. Masticators and chippers are used occasionally to assist with manual treatments. Crews can typically treat 1 acre per day, although the rate of treatment varies depending on existing vegetation, terrain, silvicultural prescription, crew size, and other factors.



Source: LA Times

Figure 2-8 Tree-Felling Hand Crew

2.4.3 Mechanical Treatments

With mechanical treatments, a forestry contractor or Licensed Timber Operator (LTO) would implement silvicultural prescriptions with ground-based mechanical equipment. Mechanical treatments within the program area typically employ cut-to-length methods, although they may also include whole-tree-yarding methods, or a combination of methods.

Typically, one crew of up to 10 workers is used for mechanical treatments. Equipment that could be used for mechanical treatments include chain saws, harvesters, forwarders, skid steers, excavators, dozers and dozer transport, loaders, tow chippers, track chippers, masticators, feller/bunchers, and rubber-tired skidder. The duration and rate of these treatments vary depending on the size of the treatment area, terrain, and the vegetation being treated. Mechanical treatment of forested lands by a single treatment crew progresses at an average rate of approximately 5 acres per day (Conservancy 2018). The harvesting or cutting machines can move through 5-10 acres per day depending on setting (i.e., slope, tree density, tree size, etc.). After the initial disturbance of cutting, log forwarding and biomass removal could continue to occur in the area. Duration and intensity depend on forwarding method from choices below. Mechanical treatments are generally limited to the grading season (May 1 – October 15) in the Tahoe Basin; however, TRPA Code currently allows mechanical treatments over snow. If TRPA revises the TRPA Code Section

61.1.6.F.1, then mechanical treatments could also occur on frozen ground (rather than over snow). Water supplies for dust suppression during mechanical treatments would generally be provided via water truck or water trailer from municipal sources in or near the program area. Some limited use of water drafting from streams within the program area for dust suppression may occur if necessary.

CUT-TO-LENGTH METHODS

In cut-to-length operations, a harvester would limb and buck the tree into manageable logs directly at the stump. Through this process, the tree limbs and slash are scattered throughout the treatment area creating a “slash mat,” which protects the forest floor and reduces erosion and soil compaction. A forwarder would then collect the logs and bring them to the landing area. The harvester and forwarder used in cut-to-length systems are low ground pressure machines with larger rubber tires or tracks (see Figures 2-9, 2-10, and 2-11).



Source: Wikipedia Commons

Figure 2-9 Cut-to-Length Harvester



Source: Wikimedia Commons

Figure 2-10 Tracked Harvester



Source: Wikipedia Commons

Figure 2-11 Forwarder

WHOLE-TREE YARDING

Where whole-tree yarding is used, the entire tree would be cut and removed to the landing for processing. The feller/buncher (Figure 2-12) cuts and bunches a group of trees and leaves them on a skid trail where they are retrieved by a skidder (Figure 2-13). The skidder pulls the group of trees back to the landing where they are processed and cut to market length.

Whole-tree yarding can also involve cable yarding to move material to a landing area. Cable yarding is a yarding method used to retrieve cut material from the treatment site either partially or fully suspended in the air. This system requires a yarder that uses a system of cables to pull or fly logs from the stump to the landing. Aerial yarding, which entails lifting cut vegetation from the treatment site with a helicopter or balloon, would not typically occur, although it could be used in limited circumstances in inaccessible locations.

MASTICATION

Mechanical treatments can also involve grinding and mulching forest material instead of, or in addition to, cut-to-length or whole tree yarding methods. Mechanical mastication is a method of rearranging fuels to reduce vertical and horizontal fuel continuity. With this method, vegetation targeted for treatment would not be removed from the site, but instead masticated into smaller pieces that would be spread throughout the site. Masticators are often excavator chassis machines with a specialized grinding head attached (Figure 2-14). These machines move through the unit to masticate brush, shrubs, down woody debris concentrations, and suppressed and intermediate trees. The targeted vegetation is masticated in place, with resulting material broadcast upon the site to an average depth of 2 to 4 inches, depending on the height and density of material treated.



Source: Wikipedia commons

Figure 2-12 Feller/Buncher



Source: Wikipedia commons

Figure 2-13 Skidder



Source: Sierra Sun

Figure 2-14 Masticator

2.4.4 Prescribed Burning

Prescribed burning uses controlled fire to achieve management objectives. The proposed program involves pile burning and understory burning techniques. With implementation of the Tahoe PTEIR, prescribed burning would primarily be applied within Planned CWPP Projects (i.e., larger-acreage public lands), and would not be a typical treatment method in the Community Fuel Reduction Areas. Within the program area, pile burning is typically limited to the fall through spring months (October through May), while understory burning typically occurs in the summer through fall (July through October), depending on weather conditions. If necessary, water supplies for fire containment or suppression during prescribed burning operations would generally be provided via water truck or water trailer from municipal sources in or near the program area. Some limited use of water drafting from streams within the program area for fire containment/suppression may occur, if necessary.

PILE BURNING

Pile burning is a method used to dispose of forest fuels that have removed during a manual or mechanical treatment. Pile burning is often a component of manual treatments, where hand crews cut hazardous fuels and pile them for burning. Piles are required to dry or “cure” before ignition, with pile burning restricted to permissive burn days as dictated by the El Dorado County Air Quality Management District (EDCAQMD) or Placer County Air Pollution Control District (PCAPCD). Iron/phosphorous-based hydrocarbon gelling agents are used in addition to the traditional “burn mix”—a combination of gasoline and diesel fuels. All accelerants used are assumed to fully combust during the ignition phase of prescribed burning. Pile burning would be conducted in accordance with a smoke management plan approved by the applicable air district. Ignition operations for pile burning typically treats 10 acres per day. Burndown of the piles can continue to produce smoke for 5-7 days after ignition operations are completed. Pile burns typically last 1 day and may occur for up to 1 week within a single treatment area. A typical pile burning operation would require a crew of up to 10 employees.

UNDERSTORY BURNING

Understory burning is used to reduce fuels over a larger area or restore fire resiliency in target fire-adapted plant communities. In this method of treatment, the understory of the forest would be burned using fire with a control line along the perimeter of a treatment site to prevent the unintentional spread of fire beyond the treatment site. Understory burning would be conducted under specific conditions related to fuels, weather, topography, and other variables. All understory burning included in the proposed program would adhere to procedures described in the Interagency Prescribed Fire Planning and Implementation Procedures Guide (NWCG 2017). These procedures address minimum requirements for prescribed fire planning and implementation that address risk management and prioritize public safety. Prescribed understory burning would generally be limited to the Planned CWPP Projects.

“Understory burn” prescriptions, using patterned lighting techniques and timing the fires during periods of high humidity and high fuel moisture content, typically result in partial removal of understory or groundcover vegetation. The goal of understory burns is to conduct a low intensity burn that only burns the targeted fuel types (i.e., ground, ladder, and litter fuels). The existing groundcover vegetation would be partially retained in a mosaic pattern in forest and shrub communities. While the amount of vegetation remaining following a prescribed burn varies, up to 70 percent of the vegetation typically remains. Fire behavior and burn severity would also depend on criteria humidity, fuel moisture content, the properties of various fuel layers and the horizontal and vertical continuity of those layers (Graham et al. 2010).

Prescribed burns under the Tahoe PTEIR would first require preparation of a burn plan that includes a smoke management plan, as mandated by EDCAQMD or PCAPCD. Prescribed burns typically last 1 day and may occur for up to 1 week. The average number of workers onsite for a prescribed burn would be 10 workers, which would include one burn boss, one hand crew, and one engine company. Support crews and equipment used for an understory burn could include between 2 and 10 engines, two to four crews, onsite water truck for fire suppression, and hand torches. One crew could treat an average of 25 acres per day during prescribed burns. Iron/phosphorous-based hydrocarbon gelling

agents are used in addition to the traditional “burn mix”—a combination of gasoline and diesel fuels. All accelerants used are assumed to fully combust during the ignition phase of prescribed burning. No fire retardants or suppression chemicals would be used under the Tahoe PTEIR. Containment lines would be used to control the burn perimeter and “scratch lines” would be used for protection of resources (e.g., large trees, quality snags, etc.)

BURN PLANS AND SMOKE MANAGEMENT PLANS

Prescribed burning would be conducted in accordance with burn planning and smoke management planning requirements established by the applicable air districts and TRPA, where applicable. After the air district approves all the burn planning requirements, including the permit and smoke management plan, the burner may begin making final preparations to carry out the burn. This includes putting into place the resources needed to conduct the burn, notifying the public about the planned timing and specifics of the burn, and obtaining a final air district authorization to burn. The burner may contact the air district up to 96 hours before the desired burn time to obtain a forecast of the meteorology and air quality needed to safely conduct the burn. The burner will continue to work with the air district and California Air Resources Board until the day of the burn to update the forecast information. Air district authorization to conduct a prescribed burn is provided to the burner no more than 24 hours before the burn.

The smoke management plan prepared for inclusion in the burn plan identifies the affected air district(s), sensitive receptors, wind direction, venting elevation, and visibility factors related to smoke dispersal. Smoke management plans are designed to minimize public exposure to air pollutants generated by prescribed burns.

The individual who is granted the authority to burn (burn manager) is responsible for assuring that all conditions in the approved smoke management plan and burn permit are met throughout the burn. Once the fire has been ignited, burners must make all reasonable efforts to assure the burn stays within its smoke plan prescription. If a burn goes out of its prescription, or adverse smoke impacts are observed, the burn manager will implement smoke mitigation measures as described in the smoke management plan. Air quality requirements are further discussed in Section 3.4, “Air Quality,” of this PTEIR.

The Tahoe PTEIR includes several Standard Project Requirements (SPRs) that outline the procedures later treatment activities involving prescribed burning would follow. The SPR procedures include preparation of burn plans, smoke management plans, and burn safety procedures, which would involve preparation and implementation of safety procedures included in an approved Incident Action Plan (see SPRs AQ-2, AQ-3, and AQ-5 in Appendix B).

2.4.5 Retreatments

Retreatments would be an ongoing component of the proposed program and would include follow-up treatments to address re-growth of vegetation and maintain the wildfire risk reduction benefits in the treatment sites. It is estimated that retreatments would typically occur approximately 10-15 years after the initial treatment to maintain lower fuel hazards in consideration of the natural fire return interval of the vegetation community and other environmental factors as well as treatment objectives. Retreatments would typically involve manual treatments and/or understory burning, although any treatment method described above could be used for retreatment.

2.4.6 Biomass Disposal

Forest biomass (i.e., logs, limbs, tops, and understory vegetation) removed during treatments would be disposed in the following ways:

- ▶ **Sawlogs:** An LTO would conduct a forest treatment on public or private land and remove merchantable timber as sawlogs. Sawlogs would be hauled to a sawmill to be processed into lumber.
- ▶ **Burning:** Biomass would be piled onsite and burned, or understory vegetation would be burned as described in Section 2.4.4, “Prescribed Burning.”

- ▶ **Biomass Energy Generation:** Biomass would be chipped at a landing onsite. Chips would be loaded into chip vans or trucks, which would haul material to an off-site biomass energy generation facility.
- ▶ **Firewood:** Logs and branches would be cut to manageable lengths and left near roads or access points. Land owners could then sell or donate the material to members of the public who would haul it off site for use as firewood.
- ▶ **Onsite Decomposition:** Biomass would be left onsite as ground cover to eventually decompose. Onsite decomposition could occur through mastication, lop and scatter (where limbs are left on the forest floor), and on-site chipping (where chipped material is spread on the forest floor).
- ▶ **Other Forest Products:** Biomass could be sold or used for other purposes, such as chipping and the use of chipped material for mulch or soil amendments. Also, state programs are defining and evaluating other feasible uses of forest biomass, such as mass timber for buildings.

An estimated average of 10,000 to 15,000 green tons of biomass would be removed each year. The biomass disposal approach or approaches for each later treatment activity would depend on the project goals, location, size, existing vegetation conditions, market conditions, and other factors. It is estimated that biomass generated by the proposed program would be disposed of using the methods above in the following proportions:

- ▶ Sawlogs: 60 percent
- ▶ Burning: 20 percent
- ▶ Biomass Energy Generation: 5 percent
- ▶ Firewood: 5 percent
- ▶ Onsite Decomposition: 5 percent
- ▶ Other Forest Products: 5 percent

2.4.7 Access and Hauling

Vehicle and equipment access for all treatments would be provided by local streets and highways, which could include access through residential areas. Project employees would park along roadways at access points to the treatment sites, or at landings within treatment sites. Access within a treatment site would use temporary skidder trails or existing forest roads. Some reconstruction or grading of existing forest roads would be needed, but no new temporary or permanent road construction would occur. Where possible, skid trails would use existing roads and trails. As few skid trails as possible would be used or created, to get materials to landings. Skid trails would be located to protect residual stands by using natural openings and topographic characteristics. Skid trails would be closed to vehicle use and treated for revegetation (including mulch) no later than 15 days following completion of treatment operations within the unit or at the time of seasonal shutdown, whichever is sooner. All access routes would be consistent with multiple California Forest Practice Rules (CFPRs) described in Appendix B.

Hauling of forest products could occur concurrently with treatment activities, or following completion of treatments. Biomass for energy generation would be loaded into chip vans at landings located within the treatment site and hauled to a biomass energy generation facility in the region. Merchantable sawlogs would be loaded onto logging trucks at landings within treatment sites. Chip vans would include medium-heavy duty diesel-powered vehicles with a Gross Vehicle Weight Rating (GVWR) of greater than 26,000 pounds. Log trucks would include a heavy-duty diesel-powered vehicle with a manufacturer's GVWR greater than 33,000 pounds. Chip vans and log trucks would exit the vicinity of the treatment site on the local streets and travel along state or federal highways to regional sawmills or biomass facilities. Potential biomass facilities and sawmills and their approximate distance from Tahoma, California (near the center of the program area) could include:

- ▶ Cabin Creek biomass energy facility in Truckee, California (27 miles), if it is opened;
- ▶ American Renewable Power biomass facility in Loyalton, California (62 miles);
- ▶ Sierra Pacific Industries biomass and sawmill facility in Quincy, California (100 miles);

- ▶ Sierra Pacific Industries biomass and sawmill facility in Lincoln, California (110 miles); or
- ▶ Greenleaf Honey Lake biomass energy facility in Wendel, CA (155 miles).

For the purpose of environmental analysis in this document, it is assumed that sawlogs would be hauled to the Sierra Pacific Industries facility in Lincoln, CA and biomass would be hauled to the Greenleaf Honey Lake facility in Wendel, CA, which reflect the greatest hauling distances. This is a conservative approach to the environmental analysis, which seeks to avoid the risk of understating potential environmental effects of hauling operations. As a practical matter, because of the cost of hauling, it is reasonable to expect that sawlogs and biomass would be taken to the closest available facility for the intended timber or biomass use. Based on the maximum number of haul trips that have occurred at other similar projects in the Tahoe Basin, the analysis in this PTEIR assumes up to twenty haul trips could occur at a single treatment site per day.

2.5 STANDARD PROJECT REQUIREMENTS AND FOREST PRACTICE RULES

Standard Project Requirements (SPRs) would be incorporated into all proposed treatment activities under the Tahoe PTEIR as a standard part of treatment design and implementation. The SPRs would be incorporated into the project design, in contract specifications, and/or in instructions to all personnel involved in implementing treatments. These measures are intended to avoid or minimize environmental impacts during and after treatment activities. The SPRs include applicable CFPR requirements (14 CCR Chapter 4), as well as additional measures that apply to all projects. The SPRs do not include alternate standards that would apply instead of operational standards identified in the CFPR. Compliance with CFPRs is enforced through preparation and approval of a Program Timber Harvest Plan (PTHHP) or Timber Harvest Plan (THP) for commercial timber activities. The SPRs and applicable CFPRs are included as Appendix B of this PTEIR.

2.6 IMPLEMENTATION

Later treatment activities consistent with this PTEIR would be planned and implemented by the Conservancy, Lake Valley Fire Protection District, North Tahoe Fire Protection District, Fallen Leaf Fire Department, South Lake Tahoe Fire Department, Meeks Bay Fire Protection District, CAL FIRE, or other landowners, special districts, or wildfire organizations within the program area. Treatment activities would be implemented by LTOs, other forestry contractors, or public agency field crews, such as California Conservation Corps, Tahoe Conservancy Forestry Crews, or Fire District Crews.

An estimated average of 900 – 1,300 acres of treatments would be implemented each year within the program area but for the purposes of this analysis, the typical maximum number of acres to be treated would be 1,250 acres. This is not an annual limit but a reasonably foreseeable average response to the adoption of the program. The size of individual projects would vary from small lots that are less than 1 acre to larger parcels of over 500 acres. The exact characteristics of individual later treatments will depend on treatment site characteristics and goals. The total number of acres treated each year would vary from year to year and the acres treated by each treatment method would vary each year. Factors that would influence which treatment activities are implemented each year include site-specific project priorities, goals, locations, market conditions, and other characteristics. The following provides a reasonably foreseeable estimate for purposes of environmental analysis of the typical proportion of acres treated for each treatment method:

- ▶ 24 percent of the acres treated per year by mechanical treatment
- ▶ 40 percent of the acres treated per year by manual treatment
- ▶ 16 percent of the acres treated per year by prescribed understory burning
- ▶ 20 percent of the acres treated per year by pile burning

2.7 PURPOSE AND INTENDED USES OF THIS PTEIR

According to CEQA, preparation of an EIR is required whenever, based on substantial evidence, a proposed project may result in a significant effect on the physical environment. An EIR is an informational document used to inform public-agency decision makers and the general public of the significant environmental impacts of a project, identify feasible ways to mitigate the significant impacts, and describe a reasonable range of alternatives to the project that could feasibly attain most of the basic objectives of the project, while substantially lessening or avoiding any of the significant environmental impacts. Public agencies are required to consider the information presented in the EIR when determining whether to approve a project. This PTEIR has been prepared to meet the requirements of a program EIR as defined by Section 15168 of the State CEQA Guidelines and the requirements of a PTEIR in the CFPR (California Code of Regulations [CCR] Title 14 Section 1092.01). It has also been prepared consistent with the adopted guidance on the preparation of PTEIRs from CAL FIRE and the California Board of Forestry and Fire Protection (Board) (Board and CAL FIRE 2014).

A PTEIR, like other types of EIRs, focuses on the changes in the physical environment that would result from the implementation of a project, including its construction and operation. The Tahoe PTEIR is intended to efficiently and comprehensively evaluate the environmental effects of forest management activities, and facilitate an increase in the pace and scale of forest management and wildfire reduction treatments recognizing the severity of wildfire risk in the region. This PTEIR provides a checklist-based approach to future CEQA and FPA compliance (State CEQA Guidelines Section 15168[c][4]). Later treatment activities would be evaluated, using the Project Consistency Checklist (checklist) included as Appendix A that would be used to document the evaluation of the site and the activity to determine whether the environmental effects of the later activity are within the scope of the analysis in this PTEIR. After determining that a proposed treatment activity is within the scope of the analysis in this PTEIR, a project proponent could prepare a PTHP or “within the scope” findings pursuant to 14 CCR Section 1092.01 or State CEQA Guidelines Section 15168(c), respectively. This process is further explained under Section 2.7, “Later Activity Review, Permits, and Approvals,” in Chapter 2, “Program Description.”

2.7.1 Relationship to Other Forest Management Projects or Programs

LAKE TAHOE WEST RESTORATION PROJECT

The Lake Tahoe West Restoration Project (LTW) is a landscape-level, lake-to-crest, collaborative forest and watershed restoration and fuels reduction project encompassing 59,000 acres from Dollar Point to Emerald Bay in the Basin. The LTW project area consists of multiple land ownerships, including National Forest System lands managed by the LTBMU, state-owned and managed lands, and private or local government lands. The LTW project area overlaps with the Tahoe PTEIR program area. However, the LTW is focused on federal lands in the general forest and state lands. LTW proposes forest thinning, a TRPA Basin-wide Code amendment, biomass utilization and removal, prescribed burning, forest habitat restoration, project-specific Forest Plan Amendment (Protected Activity Centers, Roads in Backcountry), reforestation, meadow and aspen restoration, aquatic habitat restoration, stream restoration, road and stream crossing actions, and temporary forest closures and access considerations. A separate environmental document is anticipated for the LTW. The LTW is considered a cumulative project evaluated in Chapter 5, “Cumulative Impacts” of this PTEIR.

CALIFORNIA VEGETATION TREATMENT PROGRAM

The California Board of Forestry and Fire Protection has developed the California Vegetation Treatment Program (CalVTP), which is a statewide vegetation treatment program. The CalVTP defines vegetation treatment activities and associated environmental protections that would occur for projects within the State Responsibility Area (SRA) to reduce wildfire risks as one component of the range of actions being implemented by the state to respond to

California's wildfire crisis. The CalVTP is an important part of the state's approach to addressing the wildfire crisis with an increase in the pace and scale of vegetation treatment to reduce wildfire risk.

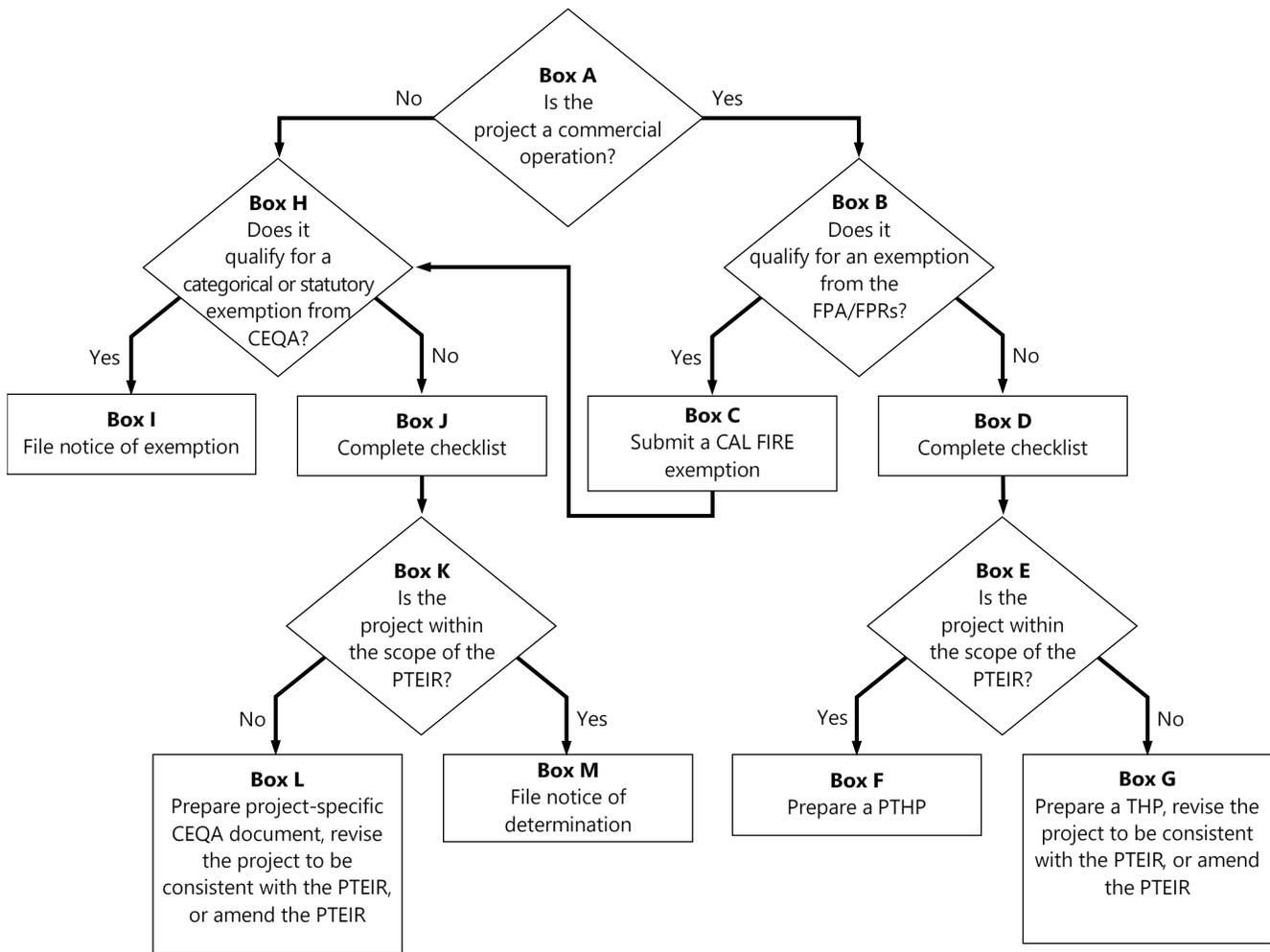
Only a small portion of the program area for the Tahoe PTEIR, generally lands owned by the Conservancy, is within the SRA. Those components of the Tahoe PTEIR could rely on the CalVTP Program Environmental Impact Report (PEIR) to cover the environmental review requirements for later treatment activities identified in the Tahoe PTEIR that are located within the SRA. However, the CalVTP does not cover activities within Local Responsibility Areas (LRA) or the sale of timber from fuel reduction projects, which are elements of this PTEIR. This PTEIR incorporates similar SPRs to protect the environment as the CalVTP, but modifies those requirements to address the Tahoe Basin environment and regional regulatory requirements.

2.8 LATER ACTIVITY REVIEW PROCESS, PERMITS, AND APPROVALS

Future proposed fuels treatment project would be evaluated using a checklist to document the evaluation of the site and the activity to determine whether or not it is a later activity within the scope of the analysis in this PTEIR (Appendix A; State CEQA Guidelines Section 15168[c]). If the activities are determined to be within the scope of the Tahoe PTEIR, the project proponent agency may approve the activities using the Tahoe PTEIR without an additional environmental document (in accordance with Section 15168 of the State CEQA Guidelines for program EIRs); if there is a commercial purpose, the agency may also adopt a PTHP, which is a streamlined THP that incorporates analysis from the Tahoe PTEIR, or Forest Practice Act exemption, as appropriate. Preparation of a PTHP or Forest Practice Act exemption would be prepared under the direction of a Registered Professional Forester. If a later treatment activity would have effects that were not examined in this PTEIR, a new initial study to determine whether the new impact would require preparation of an EIR, negative declaration, or a mitigated negative declaration. That later analysis may tier from the program EIR as provided in State CEQA Guidelines Section 15152.

The flowchart in Figure 2-15, depicts the review process for later fuel reduction activities within the area covered by the Tahoe PTEIR. The review process will vary depending on whether the project includes a timber operation for commercial purposes as defined in PRC Section 4527(a) (i.e., it involves the sale, barter, exchange, or trade of forest materials) (see Figure 2-15, Box A).

Later treatment activities could require permits or approvals from other state, regional, or local agencies (e.g., Lahontan Regional Water Quality Control Board, Conservancy, City of South Lake Tahoe, Placer County, El Dorado County, local fire districts), which are described in Section 2.9.3, "Required Permits and Approvals." It is expected that most of the later treatment activities would be exempt from TRPA review and approval under existing memoranda of understanding between TRPA and project implementers. If a later treatment activity is not exempt from TRPA approval, it would require environmental review and permitting consistent with TRPA requirements.



Source: Compiled by Ascent in 2019

Figure 2-15 Later Treatment Activity Review Process under the Tahoe PTEIR

2.8.1 Timber Operations for Commercial Purposes

If the later activity meets the definition of timber operations for commercial purposes in PRC Section 4527(a) (i.e., projects that involve the sale, barter, exchange, or trade of forest materials), it may require the preparation of a THP. Some timber operations for commercial purposes under the Tahoe PTEIR will likely qualify for an exemption from the requirement to prepare a THP, consistent with the CFPR (14 CCR Section 1038). To determine if a timber operation for commercial purposes is exempt from the preparation of a THP, the project implementer would compare the proposed project to the exemption criteria in 14 CCR Sections 1038 or 1052 (Figure 2-15, Box B). If the project is exempt from the preparation of a THP, the project proponent would prepare an exemption notice and confidential archaeological letter and submit them to CAL FIRE for review in compliance with 14 CCR Section 1038.1 or 1052, as applicable (Figure 2-15, Box C). If the project qualifies for an exemption under the FPA, however, timber operations that qualify for an exemption under the FPA may still require review under CEQA (see Figure 2-15, Box H, described below).

If a timber operation for commercial purposes does not qualify for an exemption from the preparation of a THP, the project proponent should complete the checklist in Appendix A to determine if the project is within the scope of the Tahoe PTEIR (Figure 2-15, Box D). The CFPR require that all PTHPs prepared pursuant to a PTEIR “shall be accompanied

by a checklist which will demonstrate that the proposed operations are within the scope of the PTEIR.” (14 CCR Section 1092.01.b). The checklist will confirm that the later activity is within the scope of the Tahoe PTEIR (Figure 2-15, Box E) if:

- ▶ practices and/or treatments are consistent with the Tahoe PTEIR’s Project Description and were analyzed in the Tahoe PTEIR;
- ▶ site-specific characteristics (e.g., vegetation, soil, slopes, adjoining lands uses) area are within the program area covered by the Tahoe PTEIR and encompassed in the environmental setting described in the Tahoe PTEIR;
- ▶ all deviations to the CFPR (alternate standards) were analyzed in the Tahoe PTEIR and found to provide equal or better protection than the standard rule;
- ▶ all activities resulting in the potential for significant effects are identified;
- ▶ no new significant effects would occur, and no significant effects previously identified in the Tahoe PTEIR would become substantially more severe;
- ▶ the mitigations found in the Tahoe PTEIR are implemented in the PTHP where applicable; and
- ▶ programmatic studies, surveys, and/or adaptive management provisions identified in the Tahoe PTEIR are conducted as required (CCR Sections 1092.01[b], 1092.01[c], 1092.09[n], and 15168[c][4]; Board and CAL FIRE 2014).

If the checklist determines that the activity is within the scope of the Tahoe PTEIR, the project proponent would prepare a PTHP and submit it to CAL FIRE for review, along with a completed checklist (Figure 2-15, Box F). CAL FIRE would approve the project relying on the Tahoe PTEIR, PTHP, and checklist for the environmental review.

If the checklist determines that the project is not within the scope of the Tahoe PTEIR, the project proponent can consider several options (Figure 2-15, Box G). The project proponent could prepare a project-specific CEQA document or prepare and submit to CAL FIRE a full THP, which would be lengthier and more detailed than a PTHP. In both scenarios, the project-specific CEQA document or full THP could use relevant information from the PTEIR, so even in these circumstances, the PTEIR can reduce the effort and cost needed for the additional documentation. The project proponent could also revise the project by removing or modifying project elements to make the project fit within the scope of the Tahoe PTEIR, after which the project proponent would prepare and submit a PTHP and revised checklist. A final option would be to revise this Tahoe PTEIR to expand the scope of analysis to include those elements of the project that are not within the existing scope of the Tahoe PTEIR. This could be accomplished by preparing a supplemental PTEIR or an addendum to this Tahoe PTEIR.

A PTHP should be limited to that area on which timber operations would normally be completed in one 12-month period, but in no case shall it extend beyond 5 years after the PTHP is determined to be in conformance or otherwise becomes effective under PRC Section 4582.7, unless an amendment to extend the effective period is submitted and accepted by CAL FIRE per PRC Section 4590(a)(1).

2.8.2 Projects Not Qualifying as Commercial

Later activities implemented under the Tahoe PTEIR that do not meet the definition of timber operations for commercial purposes in PRC Section 4527(a) (i.e., projects that do not involve the sale, barter, exchange, or trade of forest materials) would not require preparation of a THP or FPA exemption, but would require review under CEQA. Some later activities under the Tahoe PTEIR may qualify for a statutory and categorical exemption from CEQA. To determine if a project would be exempt from CEQA, the project proponent would compare the proposed project to the list of CEQA exemptions in the State CEQA Guidelines Sections 15260-15285 and 15300-15333 (Figure 2-15, Box H). The project proponent would also verify that none of the exceptions to the categorical CEQA exemptions listed in the State CEQA Guidelines Section 15300.2 apply to the project. If the project is exempt from CEQA, the project proponent should prepare a Notice of Exemption and file it with the State Clearinghouse (for state agencies) or the applicable county clerk (for local agencies) (Figure 2-15, Box I; State CEQA Guidelines Section 15062(c)).

If the later activity would not be exempt from CEQA, the project proponent would prepare a checklist (see Appendix A) to document evaluation of the site and the activity to determine whether the environmental effects are within the scope of the Tahoe PTEIR (CEQA Guidelines Section 15168[c][4]; Figure 2-15, Box J). For a later activity that is within the scope of the Tahoe PTEIR, the checklist would demonstrate that the project site and activities were evaluated in the Tahoe PTEIR, no new or substantially more severe significant impacts would occur, and all applicable mitigation measures identified in the Tahoe PTEIR have been incorporated into the project. Under these circumstances where a later project activity is consistent with the program and covered by the Tahoe PTEIR, the approving agency would make a finding that the later activity is “within the scope” of the Tahoe PTEIR. If a later activity is found to be within the scope of the Tahoe PTEIR, CEQA does not require public review of the checklist or preparation of another environmental document. In this case, the project proponent would approve the project relying on this PTEIR and the checklist documenting that it is within the scope, and prepare a Notice of Determination to file with the State Clearinghouse (for state agencies) or the applicable county clerk (for local agencies) (Figure 2-15, Box M; State CEQA Guidelines Sections 15075, 15094).

If during the preparation of the checklist, a later activity is determined to have new significant effects that were not examined in the Tahoe PTEIR or a previously identified impact is substantially more severe, the project proponent agency can consider several options (Figure 2-15, Box L). The project proponent could prepare an initial study leading to either a negative declaration or an EIR (State CEQA Guidelines Section 15168[c][1]). The analysis in the negative declaration or EIR could be limited to only those project elements or environmental impacts that were not evaluated in the Tahoe PTEIR (CEQA Guidelines Section 15168(d)(3) and 15152(d)). The project proponent could also revise the project by removing or modifying project elements to make the project fit within the scope of the Tahoe PTEIR, after which the project proponent would prepare and file a Notice of Determination.

A final option would be to revise this PTEIR to expand the scope of the PTEIR to include those elements of the later activity that are not within the scope of the Tahoe PTEIR. This could be accomplished by preparing a supplemental PTEIR or an addendum to this PTEIR (State CEQA Guidelines Sections 15162-15164).

2.9 AGENCY ROLES AND RESPONSIBILITIES

2.9.1 Lead Agency

CAL FIRE is the lead agency that will consider certification that the Tahoe PTEIR has met the requirements of CEQA, FPA, and CFPR and, after certification, potential approval of the proposed program. After the Tahoe PTEIR public-review process is complete and a Final PTEIR has been prepared, the Director of CAL FIRE will determine whether to certify the PTEIR (see State CEQA Guidelines Section 15090 and FPA Section 1092.02) and approve the proposed program. CAL FIRE would review and consider approval of PTHPs that are prepared under the Tahoe PTEIR for authorizing later forest management projects.

2.9.2 Responsible and Trustee Agencies

Responsible agencies are public agencies, other than the lead agency, that have discretionary approval authority for funding, permitting, or carrying out later forest management projects that are a part of the proposed program (State CEQA Guidelines Section 15381). Responsible agencies should participate in the lead agency’s CEQA process, review the lead agency’s CEQA document, and use the document when making a decision on project elements.

State, regional, and local agencies with land ownership or land management or wildfire prevention responsibilities in the program area would carry out treatment activities under the Tahoe PTEIR. In this PTEIR, a responsible agency is also referred to as a “project proponent,” which, for the purposes of the PTEIR, is a public agency with land ownership, land management, or wildfire prevention responsibilities in the program area and is seeking to implement fuels treatments consistent with this PTEIR. The Tahoe PTEIR will be available for the responsible agencies to use for

CEQA and FPA compliance when they are seeking to approve treatment projects that are consistent with the proposed program. Responsible agencies and potential project proponents include the following:

- ▶ California Tahoe Conservancy
- ▶ City of South Lake Tahoe
- ▶ South Tahoe Public Utility District
- ▶ El Dorado County
- ▶ Fallen Leaf Fire Department
- ▶ Lake Valley Fire Protection District
- ▶ Meeks Bay Fire Protection District
- ▶ North Tahoe Fire Protection District
- ▶ North Tahoe Public Utility District
- ▶ Placer County
- ▶ Tahoe City Public Utility District

Agencies that may approve or issue permits for implementation of treatment activities under the Tahoe PTEIR and would be responsible agencies pursuant to CEQA include the following:

- ▶ California Department of Fish and Wildlife (CDFW)
- ▶ Lahontan RWQCB
- ▶ California Geologic Survey
- ▶ TRPA
- ▶ EDCAQMD
- ▶ PCAPCD

A trustee agency is a state agency that has jurisdiction by law over natural resources that are held in trust for the people of the State of California (State CEQA Guidelines Section 15386). CDFW is the trustee agency with jurisdiction over fish and wildlife resources potentially affected by the proposed program covered by the Tahoe PTEIR.

2.9.3 Required Permits and Approvals

Later treatment activities may require permits from other state, regional, or local agencies. These agencies may rely wholly or in part on the analysis herein to satisfy information needed to support their permitting requirements, though consistency with the PTEIR does not replace applicable agency-specific permitting requirements. The required permits and approvals for individual treatments would vary depending on the location, treatment methods, affected resources, and other characteristics of individual projects. Potential permits include:

- ▶ Lake and Streambed Alteration Agreement (CDFW)
- ▶ Conditional Waiver of Waste Discharge Requirements (Lahontan RWQCB)
- ▶ Engineering Geologic Review of Operations on landslides or unstable slopes (California Geologic Survey)
- ▶ Burn Permit (EDCAQMD or PCAPCD)
- ▶ Tree Removal Permit and appropriate environmental documentation, if applicable (TRPA)

3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 APPROACH TO THE ENVIRONMENTAL ANALYSIS

This Program Timberland Environmental Impact Report (PTEIR) evaluates and discloses the environmental impacts associated with the proposed program, in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] Section 21000 and subsequent sections of the CCR), the State CEQA Guidelines (California Code of Regulation [CCR], Title 14, Chapter 3, Section 15000 and subsequent sections of the CCR [14 CCR Section 15000 et seq.]), Z'berg-Nejedly Forest Practice Act of 1973 (FPA; PRC Section 4511 et seq.) and the California Forest Practice Rules (CFPR; 14 CCR Section 1092.01). Sections 3.2 through 3.15 of this PTEIR present a discussion of regulatory background, existing environmental conditions, environmental impacts associated with implementation of later treatment activities under the proposed program, mitigation measures to reduce the level of impact, and residual level of significance (i.e., after implementation of mitigation, including impacts that would remain significant and unavoidable after implementation of all feasible mitigation measures). Issues evaluated in these sections consist of the environmental topics identified for review in the Notice of Preparation (NOP) prepared for the project (see Appendix A of this PTEIR). Chapter 5, "Cumulative Impacts," of this PTEIR presents an analysis of the program's impacts considered together with other past, present, and probable future projects producing related impacts, as required by Section 15130 of the State CEQA Guidelines. Chapter 6, "Alternatives," presents a reasonable range of alternatives and evaluates the environmental effects of those alternatives relative to the proposed project, as required by Section 15126.6 of the State CEQA Guidelines. Chapter 7, "Other Sections Required by Statute," includes an analysis of the program's growth-inducing impacts, as required by Section 21100(b)(5) of CEQA.

3.1.1 Scope of the Analysis

As described in Chapter 2, "Program Description," the proposed program would be implemented within the 17,490-acre program area. This PTEIR employs a programmatic approach to evaluation because the specific site-specific characteristics of individual later treatment activities are not known at this time. As such, the level of detail of the environmental impact analysis is also programmatic in that it addresses the full range of potential environmental effects of the planned activities that would implement the proposed program as specifically and comprehensively as possible. Consistent with the adopted guidance for preparation of Program Timberland EIRs (Board and CAL FIRE 2014), the programmatic assessment of each resource identifies standard mitigations which may be applied when a particular resource is encountered, and environmental impact conclusions are broadly and comprehensively applied to types of treatments and treatment activities that would occur. Where site specific information is available, such as the known locations of cultural resources or sensitive species, that information is incorporated into the analysis to minimize the amount of analysis that is required to determine whether each later activity is within the scope of this PTEIR.

As described above, this approach is consistent with the adopted guidance for preparation of Program Timberland EIRs (Board and CAL FIRE 2014) and State CEQA Guidelines provisions for a Program EIR, as described in Section 15168.

3.1.2 Impact Analysis Approach

This section explains the approach for conducting environmental impact analyses and determining the significance of environmental effects resulting from implementation of the proposed program. In doing so, it describes how the Standard Project Requirements (SPRs) are considered in the impact analysis and when it is appropriate to identify mitigation measures for impacts resulting from treatment activities.

Refer to the Section 1.7, "Standard Terminology," in Chapter 1 for definitions of these terms used in the impact analyses.

ROLE OF STANDARD PROJECT REQUIREMENTS AND CALIFORNIA FOREST PRACTICE RULES

Section 2.5 of Chapter 2, "Program Description," introduces the SPRs for the Tahoe PTEIR, which are listed in Appendix B. The SPRs will be incorporated by the project proponents into all later treatment activities seeking to qualify for coverage under the Tahoe PTEIR. SPRs would be implemented for all treatments to the extent they are applicable, analogous to standard operating procedures, best management practices, or resource protection measures. Where an SPR does not apply to all treatment activities, the applicable treatment activities and treatment types are identified within each SPR. SPRs are intended to avoid and minimize environmental impacts and, in some cases, promote compliance with applicable laws and regulations. For example, a prescribed burn may cause smoke in the vicinity of a public roadway, raising a potential traffic safety effect. Because SPR TRAN-1, Implement Traffic Control during Treatments, requires preparation of a Traffic Management Plan for prescribed burns, including temporary signage, traffic controls along public roadways, and flag personnel for traffic management, its implementation would avoid or minimize significant impacts to public safety.

The CFPR include operational standards that apply to all timber operations for commercial purposes as defined by the FPA in PRC Section 4527(a). A PTEIR may propose alternate practices (14 CCR Section 897[d]) if it demonstrates that those alternate standards would provide equal or better protection of the affected resources. However, CAL FIRE and the TFFT have elected to not propose alternate standards because they are unnecessary for achieving the objectives of the program. Therefore, the existing operational standards of the CFPRs apply to later activities implemented under the PTEIR. These CFPR operational standards are listed in Appendix B. This PTEIR combines the SPRs and the applicable CFPRs into one consistent set of requirements for all later activities implemented under this PTEIR (Appendix B).

The environmental analysis in this PTEIR assumes that each later activity would implement the required SPRs and CFPRs, as required. The environmental analysis identifies residual impacts, or the environmental effects that would occur from treatment activities after implementation of SPRs and CFPRs. These residual impacts are analyzed against the identified threshold of significance accounting for the SPR's and CFPR's environmental protective effects.

LAKE TAHOE WEST MODELING

This PTEIR incorporates modeling and analysis prepared for other forest planning initiatives, where applicable. The Lake Tahoe West (LTW) Restoration Partnership includes scientists, land managers, multiple federal and State agencies, and organizations representing business, recreation, and conservation. Through its science team, the LTW partnership has modeled several forest management scenarios for the Lake Tahoe Basin, which includes the PTEIR program area, with the LANDIS-II model. The LANDIS-II forest landscape model simulates future forests across the entire Lake Tahoe Basin for the next 100 years. The model simulates change as a function of growth and succession, as they are influenced by range of disturbances (e.g., fire, insects), forest management, and land use changes. Climate and climate change affect processes throughout the model. Outputs from the LANDIS-II model have been incorporated into related finer-scale modeling that predicts the effects of representative individual fires, and the combined effects on wildlife habitat, air quality, and water quality and quantity. The Tahoe PTEIR incorporates models and model results from the LTW partnership, as described in applicable resources sections.

3.1.3 Analysis Contents

Sections 3.2 through 3.15 of this PTEIR present a discussion of regulatory background, existing conditions, environmental impacts associated with implementation of vegetation treatments, SPRs, mitigation measures to reduce the level of impact, and residual level of significance (i.e., after application of mitigation, including impacts that would remain significant and unavoidable after application of all feasible mitigation measures). The environmental resource topics evaluated in Chapter 3 are consistent with those identified in the Notice of Preparation (NOP) prepared for this PTEIR (see Appendix C) and consider relevant comments provided on by agencies, organizations, and the public during NOP review.

Sections 3.2 through 3.15 of this PTEIR each include the following components.

Introduction: Each section includes a brief introduction that describes the topics evaluated within the section, any related topics that are not evaluated in detail because they would not be affected by the proposed program, and a summary of any relevant comments provided during the scoping period.

Regulatory Setting: This subsection presents information on the laws, regulations, plans, and policies that relate to the environmental resource being discussed. Regulations originating from the federal, State, and local levels are each discussed as appropriate.

Environmental Setting: This subsection presents the existing environmental conditions in the program area and in the surrounding area as appropriate, in accordance with State CEQA Guidelines Section 15125. The discussions of the environmental setting focus on information relevant to the issue under evaluation. The extent of the environmental setting area evaluated differs among resources, depending on the locations where impacts would be expected.

Environmental Impacts and Mitigation Measures: This subsection presents thresholds of significance and discusses potentially significant effects of implementing the proposed program on the existing environment, including the environment beyond the project boundaries, in accordance with State CEQA Guidelines Section 15126.2. The methodology for impact analysis is described, including technical studies or modeling upon which the analyses rely. The thresholds of significance are defined. Project impacts and mitigation measures are numbered sequentially in each subsection (Impact 3.2-1, Impact 3.2-2, Impact 3.2-3, etc.). A summary impact statement precedes a more detailed discussion of the environmental impact. The discussion includes the analysis, rationale, and substantial evidence upon which conclusions are drawn. The determination of level of significance of the impact is defined in bold text. Significance determinations are made taking into account the influence of applicable SPRs. A "less-than-significant" impact is one that would not result in a substantial adverse change in the physical environment. A "potentially significant" impact or "significant" impact is one that would result in a substantial adverse change in the physical environment; both are treated the same under CEQA in terms of procedural requirements and the need to identify feasible mitigation. Mitigation measures are identified, as feasible, to avoid, minimize, rectify, reduce, or compensate for significant or potentially significant impacts, in accordance with the State CEQA Guidelines Section 15126.4. Unless otherwise noted, the mitigation measures presented are recommended in the PTEIR for consideration by the State to adopt as conditions of approval.

Where an existing law, regulation, or permit specifies mandatory and prescriptive actions about how to fulfill the regulatory requirement as part of the project definition, leaving little discretion in its implementation, and would avoid an impact or maintain it at a less-than-significant level, the environmental protection afforded by the regulation is considered before determining impact significance. Where existing laws or regulations specify a mandatory permit process for future projects, performance standards without prescriptive actions to accomplish them, or other requirements that allow substantial discretion in how they are accomplished, or have a substantial compensatory component, the level of significance is determined before applying the influence of the regulatory requirements. In this circumstance, the impact would be potentially significant or significant, and the regulatory requirements would be included as a mitigation measure.

This subsection also describes whether mitigation measures would reduce project impacts to less-than-significant levels. Significant-and-unavoidable impacts are identified as appropriate in accordance with State CEQA Guidelines Section 15126.2(c). Significant and-unavoidable impacts are also summarized in Chapter 6, "Other CEQA Sections."

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3.2 WILDFIRE

This section provides a description of the existing and historic wildfire regime and an assessment of the effects of the proposed program on exposure of communities to wildfire risks and on the reasonably foreseeable severity of future wildfires in the program area. In order for there to be a significant effect on community exposure to wildfire risks, the proposed program would need to exacerbate (i.e., worsen) wildfire risk. However, the proposed program consists of a long-term, vegetation management program for the primary purpose of forest fuel reduction that would reduce the risk of catastrophic wildfires that could damage Lake Tahoe Basin forests, watersheds, habitats, and communities. This section also provides background and context on wildfire concepts, such as wildfire behavior and the wildfire environment for the Tahoe Basin.

Fuel breaks and related fuel reduction activities are proposed as a treatment activity under the proposed program; therefore, the associated potential temporary and long-term impacts to the environment are evaluated throughout Chapter 3 of this PTEIR. No other infrastructure facilities (such as roads, emergency water sources, power lines, or other utilities) are proposed under the Tahoe PTEIR. The proposed program would not include any new housing or other land use changes where the public would congregate; there would be no new project occupants that could be exposed to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire as a result of the Tahoe PTEIR treatment activities. Therefore, these issues are not discussed further. The risk of exposing existing sensitive receptors to smoke from prescribed burning is addressed in Section 3.5, "Air Quality." The potential for treatment activities to expose people or structures to downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes is addressed in Section 3.9, "Geology, Soils, and Land Capability" and the potential for treatment activities to alter potential emergency evacuation routes or impair an adopted emergency plan is discussed in Section 3.15, "Transportation."

No comments received on the notice of preparation were related to wildfire risks.

3.2.1 Regulatory Setting

FEDERAL

Healthy Forests Restoration Act of 2003

The Healthy Forests Restoration Act of 2003 (HFRA, also known as the Healthy Forests Initiative), establishes procedures for forest and rangeland restoration projects on USFS and Bureau of Land Management lands. It generally focuses on lands near communities in the WUI, in high risk municipal watersheds, habitat for threatened and endangered species, and where insects or disease are destroying the forest and increasing the threat of catastrophic wildfire. HFRA allows communities to designate WUIs and authorizes fuel reduction projects on federal land. In addition, federal agencies must consider recommendations and give funding priority to communities at risk that have developed Community Wildfire Protection Plan (CWPPs).

Interagency Prescribed Fire Planning and Implementation Procedures Guide

The *Interagency Prescribed Fire Planning and Implementation Procedures Guide* (NWCG 2017) establishes national interagency standards for the planning and implementation of prescribed burning. A discussion of these guidelines is provided below under the "Planning a Prescribed Burn," section.

REGIONAL

Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy for the Lake Tahoe Region

The purpose of the *Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy* (Fuel Reduction Strategy) is to increase community protection from wildfire, identify potential fuel reduction treatments, and facilitate

communication and cooperation among those responsible for project implementation. In 2007, the Region's original Fuel Reduction Strategy combined all existing fire plans that had been developed within the Tahoe Basin, including the 2004 CWPP for the California Portion of the Lake Tahoe Basin. Sixteen local, state, and federal agencies collaboratively plan and implement fuels reduction treatments to protect Lake Tahoe's California and Nevada communities and environment. The Fuels Strategy was updated in August 2014 and its conservation objectives identify fire threat mitigation as a high priority. The Fuel Reduction Strategy facilitates the strategic decisions that must be made by land management, fire, and regulatory agencies over the next 10 years to reduce the probability of a catastrophic fire in the Basin.

A critical component of the Multi-Jurisdictional Strategy, as amended in 2017, requires that "accumulations of vegetative hazardous fuels surrounding the Community Defensible Space should be reduced in the general forest," which acknowledges the important relationship between the Wildland Urban Interface (WUI) and surrounding landscape (TFFT 2017). The inclusion of the general forest in fuel reduction treatment planning and long-term management demonstrates the shift from individual project planning to planning and implementing fuel treatments at a landscape-scale to more effectively restore forest health and reduce the risk posed to communities by large and damaging wildfires.

Lake Tahoe Community Wildfire Protection Plan

The Lake Tahoe CWPP (TFFT 2015) provides strategies that can be implemented by fire agencies, land managers, policy makers, community leaders, residents, and visitors to be better prepared for wildfires and help to protect lives and property. The CWPP covers the wildland-urban interface for all Lake Tahoe Basin fire protection districts and departments. The goals of the CWPP are to:

- ▶ create fire-adapted communities,
- ▶ restore and maintain fire-resilient landscapes, and
- ▶ provide effective and efficient wildfire response.

Tahoe Regional Planning Agency

Article V(c)(3) of the Tahoe Regional Planning Agency (TRPA) Compact (Public Law 96-551) requires the development and implementation of a conservation plan for the preservation, development, utilization and management of scenic and other natural resources within the Tahoe Basin. TRPA's Regional Plan for the Lake Tahoe Region addresses land use and environmental protection. Two components of the Regional Plan address policies and regulations pertaining to wildfire: Goals and Policies and Code of Ordinances. TRPA has not established environmental threshold carrying capacities related to wildfire.

Tahoe Regional Plan

TRPA implements its mandate through the Regional Plan, which includes the Goals and Policies, Code of Ordinances, and other related plans and documents. The Regional Plan includes a Land Use element identifying goals and policies for addressing the Lake Tahoe Region's natural hazards (TRPA 2012).

Regional Plan policies related to wildfire are located in the Natural Hazards Subelement of the Land Use Element and in the Conservation Element. Relevant policies are included below.

- ▶ **Policy NH-1.3:** Inform residents and visitors of the wildfire hazard associated with occupancy in the region. encourage use of fire resistant materials and fire preventative techniques when constructing structures, especially in the highest fire hazard areas. Manage forest fuels to be consistent with state laws and other goals and policies of this plan.
- ▶ **Policy VEG-6.1:** Promote hazardous fuels reduction in order to reduce the intensity of naturally occurring wildfire and prevent catastrophic wildfire.
- ▶ **Policy VEG-6.2:** Promote creation of defensible space using forest management practices that are consistent with state defensible space codes and community wildfire protection plans.

Code of Ordinances

The TRPA Code of Ordinances includes regulations for timber harvest activities (primarily in Section 61.1 [Tree Removal] and Section 61.2 [Prescribed Burning]), which are relevant to fire fuel management for wildfire risks. TRPA or a local fire district or state agency that has been issued delegated permitting authority by TRPA must approve the removal of all live trees 14 inches in diameter at breast height or greater. Additionally, all forest management activities must be consistent with TRPA's Code. Chapter 61, Section 61.3.6 of the TRPA Code provides the following guidance:

Vegetation Management to Prevent the Spread of Wildfire: Within areas of significant fire hazards, as determined by local, state, or federal fire agencies, flammable or other combustible vegetation shall be removed, thinned, or manipulated in accordance with local and state law. Revegetation with approved species or other means of erosion control may be required where vegetative ground cover has been eliminated or where erosion problems may occur.

STATE

Board of Forestry and Fire Protection

The California Board of Forestry and Fire Protection (Board) is a Governor-appointed, policy-making body. It is responsible for developing the general forest policy of the state, determining the guidance policies of California Department of Forestry and Fire Protection (CAL FIRE), and representing the state's interest in federal forestland in California. Together, the Board and CAL FIRE work to carry out the California Legislature's mandate to protect and enhance the state's unique forest and wildland resources.

The Board is charged with developing policy to protect all wildland forest resources in California that are not under federal jurisdiction. These resources include major commercial and non-commercial stands of timber, areas reserved for parks and recreation, woodlands, brush-range watersheds, and all private and state lands that contribute to California's forest resource wealth. In addition, the Board is responsible for identifying Very High Fire Hazard Severity Zones (FHSZ) in the State Responsibility Area (SRA) and Local Responsibility Area (LRA). Local agencies are required to designate, by ordinance, Very High FHSZ and to require landowners to reduce fire hazards adjacent to occupied buildings within these zones (Government Code Sections 51179 and 51182). The intent of identifying areas with very high fire hazards is to allow CAL FIRE and local agencies to develop and implement measures that would reduce the loss of life and property from uncontrolled wildfires (Government Code Section 51176).

The Board has developed the California Vegetation Treatment Program (CalVTP), which is a statewide vegetation treatment program. The CalVTP defines vegetation treatment activities and associated environmental protections that would occur for projects within the State Responsibility Area (SRA) to reduce wildfire risks as one component of the range of actions being implemented by the state to respond to California's wildfire crisis. The CalVTP is an important part of the state's approach to addressing the wildfire crisis with an increase in the pace and scale of vegetation treatment to reduce wildfire risk. A portion of the program area for the Tahoe PTEIR, generally lands owned by the Conservancy, is within the SRA.

2018 Strategic Fire Plan for California

The *2018 Strategic Fire Plan for California* lays out central goals for reducing and preventing the impacts of fire in the state (Board and CAL FIRE 2018). The goals are meant to establish, through local, state, federal, and private partnerships, a natural environment that is more resilient and human-made assets that are more resistant to the occurrence and effects of wildland fire. The goals of the *2018 Strategic Fire Plan* include the following:

- ▶ improve the availability and use of consistent, shared information on hazard and risk assessment;
- ▶ promote the role of local planning processes, including general plans, new development, and existing developments, and recognize individual landowner/homeowner responsibilities;
- ▶ foster a shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as CWPPs;

- ▶ increase awareness and actions to improve fire resistance of human-made assets at risk and fire resilience of wildland environments through natural resource management;
- ▶ integrate implementation of fire and vegetative fuels management practices consistent with the priorities of landowners or managers;
- ▶ determine and seek the needed level of resources for fire prevention, natural resource management, fire suppression, and related services; and
- ▶ implement needed assessments and actions for post-fire protection and recovery.

CAL FIRE

CAL FIRE is dedicated to the fire protection and stewardship of more than 31 million acres of the state's wildlands. In addition, CAL FIRE provides emergency services in 36 of the state's 58 counties via contracts with local governments. Public Resources Code (PRC) Section 4291 gives CAL FIRE the authority to enforce 100 feet of defensible space around all buildings and structures on non-federal SRA lands, or non-federal forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material. PRC Sections 4790 through 4799.04 provide the regulatory authority for CAL FIRE to administer the California Forest Improvement Program. PRC Sections 4113 and 4125 give CAL FIRE the responsibility for preventing and extinguishing wildland fires in the SRA. The PRC, beginning with Section 4427, includes fire safety statutes that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment with internal combustion engines; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided on site for various types of work in fire-prone areas.

CAL FIRE currently implements vegetation treatments under PRC Sections 4475 through 4495. PRC Sections 4461 through 4471 and 4491 through 4494 authorize CAL FIRE to implement its existing Chaparral Management Program, now known, in part, as the Vegetation Management Program (VMP). In addition, with the 2005 passage of Senate Bill (SB) 1084, the Legislature modified, and in some cases, added language to PRC Sections 4475 through 4480 that:

- ▶ broadened CAL FIRE's range of vegetation treatment practices beyond those described for the existing CMP and VMP,
- ▶ added a definition of "hazardous fuel reduction," and
- ▶ made other changes to the major statutory provisions guiding CAL FIRE's vegetation treatment authorities.

In addition to the *2018 Strategic Fire Plan for California*, individual CAL FIRE Units develop Fire Plans, which are major strategic documents that establish a set of tools for each CAL FIRE Unit to achieve in its local area. Updated yearly, Unit Fire Plans identify wildfire protection areas, initial attack success, assets and infrastructure at risk, pre-fire management strategies, and accountability within their Units' geographical boundaries. The Unit Fire Plan identifies strategic areas for pre-fire planning and fuel treatment as defined by the people who live and work locally. The plans include contributions from local collaborators and stakeholders and are aligned with other plans for the area, such as CWPPs.

Executive Order B-52-18

On May 10, 2018, in response to the changing environmental conditions and the increased risk to California's citizens, former Governor Brown issued Executive Order (EO) B-52-18 to support the state's resilience to wildfire and other climate impacts, to address extensive tree mortality, increase forests' capacity for carbon capture, and to improve forest and forest fire management. The EO requires the California Natural Resources Agency, in coordination with the Board, CAL FIRE, and other agencies, to increase the pace and scale of fire fuel treatments on state and private lands. EO B-52-18 commits \$96 million in additional state funds to for these efforts and calls for doubling the land actively managed through vegetation thinning, prescribed burning, and restoration from 250,000 to 500,000 acres per year statewide.

Senate Bill 1260

On February 15, 2018, former Governor Brown signed SB 1260 that helps protect California communities from catastrophic wildfire by improving forest management practices to reduce the risk of wildfires in light of the changing climate. It recognizes that prescribed burning is an important tool to help mitigate and prevent the impacts of the wildfire and includes provisions that encourage more frequent use of prescribed fire in managing California's forest lands.

Senate Bill 901

Senate Bill 901 boosts government fire protection efforts by \$1 billion over the next 5 years. CAL FIRE will oversee those funds, generally divided into two categories: \$165 million per year for fire prevention grants to landowners and for community prevention efforts, and \$35 million to continue CAL FIRE's prescribed burning, research, and monitoring. Landowners will have new permission to help reduce overgrowth by cutting down small and mid-sized trees.

LOCAL

Placer County General Plan

The Health and Safety Element of the Placer County General Plan includes a number of goals and policies intended to minimize injury to people and damage to property from exposure to wildland fire hazards. The General Plan requires development in fire hazard areas to be meet requirements for defensible space and be designed to minimize risk from fire hazards (Policies 8.C.1 and 8.C.2).

Placer County Code Chapter 9, Article 9.32 identifies specific fire hazard regulations that apply to properties within the county, including addressing hazardous vegetation abatement on unimproved parcels and the potential impact that hazardous vegetation on an unimproved parcel could have on an adjacent improved parcel. These regulations define the standards for building setbacks, maintenance of defensible space, storage of explosives and hydrocarbon liquids, and overall fire protection. The Placer County Fire Code has adopted provisions that are included in the California Building Code and Uniform Fire Code, in addition to requirements from PRC 4290, which include road standards for fire equipment access.

El Dorado County General Plan

The Public Health, Safety, and Noise Element of the El Dorado County General Plan includes a goal (Goal 6.2) and several objectives (Objectives 6.2.1 – 6.2.4) related to minimizing fire hazards and risks in both wildland and developed areas. The El Dorado County General Plan also includes several policies related to defensible space requirements and implementation of an area-wide fuel management program (Policies 6.2.1.1, 6.2.1.2, 6.2.4.1, and 6.2.4.2).

El Dorado County Code Title 8, Chapter 8.09 provides for the removal of hazardous vegetation and combustible materials situated in the unincorporated areas of the county so as to reduce the potential for fire and to promote the safety and welfare of the community. This chapter defines maintenance of defensible space, clearances for unimproved parcels, and ingress and egress requirements.

City of South Lake Tahoe General Plan

The Health and Safety Element of the 2011 City of South Lake Tahoe General Plan includes a goal (Goal HS-2) to minimize fire hazards and provide fire protection services that maintain a safe and healthy community. The General Plan also includes policies related to defensible space requirements, improving forest health through forest fuel reduction programs, and continue participation in fire hazardous fuel reduction programs (Policies HS-2.3, HS-2.6, and HS-2.8).

3.2.2 Environmental Setting

WILDFIRE BEHAVIOR AND CONTROLLING FACTORS

Wildfire behavior is a product of several variables, primarily weather, vegetation, topography, and human influences, which intermix to produce local and regional fire regimes that affect how, when, and where fires burn. The fire regime in any area is defined by several factors, including fire frequency, intensity, severity, and area burned. Each of these are important for an understanding of how the variables that affect fire behavior produce fire risks. Fire frequency refers to the number of fires that occur in a given area over a given period of time; fire intensity refers to the speed at which fire travels and the heat that it produces; fire severity involves the extent to which ecosystems and existing conditions are affected or changed by a fire; and area burned is the size of the area directly affected by wildfire.

Human Influence on Wildfire

Human influence on wildfire is broad and can be substantial. It includes direct influences, such as the ignition and suppression of fires, and indirect influence through climate change and alterations in land use patterns that support modified vegetative regimes and increased development in the WUI (refer to “Climate Change and Wildfire” below for more discussion on the indirect effect of climate change on wildfire).

Anthropogenic influence more directly controls fire frequency (i.e., number of ignitions) than size of a burn because humans are responsible for most of the ignitions. A study of wildfires across the U.S. for the 20-year period between 1992 and 2012 showed that 82 percent of wildfires during that period were started by human causes (Balch et al. 2017), while in California specifically, humans account for starting approximately 95 percent of wildfires (Syphard et al. 2007, Syphard and Keeley 2015). Human-induced wildfire ignitions can change fire regime characteristics in two ways: (1) changing the distribution and density of ignitions, and (2) changing the seasonality of burning activity (Balch et al. 2017).

Human ignitions include a multitude of sources, including escapes from debris and brush-clearing fires, electrical equipment malfunctions, campfire escapes, smoking, fire play (e.g., fireworks), vehicles, and arson. Consequently, areas near human development, especially in the WUI or in areas near campgrounds and roads, generate fires at a more frequent rate than very remote or urban areas (Syphard et al. 2007, Mann et al. 2016, Balch et al. 2017). Circumstances in California have made the environment particularly vulnerable to human-caused fires with expansion of the WUI and introduction of more people in areas susceptible to wildfire at all times of the year. A 2018 study indicates that the number of houses in the WUI increased nationwide by 41 percent between 1990 and 2010 (Radeloff et al. 2018). Once started, fire spread and behavior become a function of fuel characteristics, terrain, and weather conditions (Syphard et al. 2007).

Climate Change and Wildfire

Wildfires are a significant threat in California and the Tahoe Basin, particularly in recent years as the landscape responds to climate change and decades of fire suppression. It is estimated that since 1985, more than 50 percent of the increase in the area burned by wildfire in the western U.S. is attributable to anthropogenic climate change (Abatzoglou and Williams 2016). As climate change persists, it will produce increasing temperatures and drier conditions that will generate abundant dry fuels. All wildfires (those initiated by natural and human sources) tend to be larger under drier atmospheric conditions and when fed by drier fuel sources (Balch et al. 2017).

Additionally, climate change has led to exacerbation of wildfire conditions during a longer period of the year as the spring season has warmed—driving an earlier spring snowmelt, and as winter precipitation has overall decreased (Westerling et al. 2006). Further, wildfire activity is closely related to temperature and drought conditions, and in recent decades, increasing drought frequency and warming temperatures have led to an increase in wildfire activity (Westerling et al. 2006, Schoennagel et al. 2017). In particular, the western U.S., including California, has seen increases in wildfire activity in terms of area burned, number of large fires, and fire season length (Westerling et al. 2006, Abatzoglou and Williams 2016). These conditions have resulted in the largest, most destructive, and deadliest wildfires on record in California history, several of which occurred in 2018 (Table 3.2-1).

Table 3.2-1 Largest Wildfires in California Through 2018

Fire Name (cause)	Acres	Date	County
Mendocino Complex (under investigation)	459,123	July 2018	Colusa County, Lake County, Mendocino County and Glenn County
Thomas (powerlines)	281,893	December 2017	Ventura and Santa Barbara
Cedar (human related)	273,246	October 2003	San Diego
Rush (lightning)	271,911 CA/43,666 NV	August 2012	Lassen
Rim (human related)	257,314	August 2013	Tuolumne
Zaca (human related)	240,207	July 2007	Santa Barbara
Carr (human related)	229,651	July 2018	Shasta County, Trinity County
Matilija (undetermined)	220,000	September 1932	Ventura
Witch (powerlines)	197,990	October 2007	San Diego
Klamath Theater Complex (lightning)	192,038	June 2008	Siskiyou

Source: CAL FIRE 2019

In addition to the size and destructiveness of the largest fires, the total number and total acreage of wildfires are also important. While the highly destructive fires attract the most attention in press coverage and public awareness, from the perspective of wildfire risk reduction, it is also critical to understand and address the more frequent and more widespread smaller fires. Total burned acreage in California can be highly variable, from fewer than 150,000 acres in 2010 to more than 1.6 million acres in 2018 (CAL FIRE 2018a, 2018b). Four in the last 12 years have exceed 1.0 million acres (2007, 2008, 2017, and 2018) (CAL FIRE 2018a, 2018b, 2018c).

Climate change will continue to produce conditions that facilitate a longer fire season, which, when coupled with human-caused changes in the seasonality of ignition sources, will produce more, longer, and bigger fires during more times of the year. According to California's Fourth Climate Change Assessment, *Statewide Summary Report* (2018), if GHG emissions continue to rise, the frequency of extreme wildfires burning over 25,000 acres could increase by 50 percent by 2100 and the average area burned statewide could increase by 77 percent by the end of the century (Bedsworth et al. 2018).

WILDFIRE RISK REDUCTION

Historically, humans have intervened deliberately and dramatically in the fire regime through fire suppression and, more recently, actions that affect fuel connectivity. Over many decades, implementation of the practice of limiting fire spread, combined with forest regrowth after extensive logging in the late 19th century and climate change influences, such as warming temperatures and earlier spring snowmelt, have led to a buildup of forest fuels and an increase in the occurrence and threat of large, severe fires (Westerling et al. 2006; Westerling 2016). More extreme fire conditions can be expected in areas where the time between fires has been extended, unless fuels have been reduced by other means. Human development and suppression can postpone wildfires, but not exclude them, except in unusual circumstances (DOI and USDA 2014). With the expansion of the WUI and the threat that large, severe, intense wildfires pose, fire suppression remains one of the primary management techniques for more than 95 percent of wildfires in the U.S. (Schoennagel et al. 2017). Contemporary fire management practices include fuel management activities that are intended to reduce the intensity and severity of wildfires. Reduced intensity also means that suppression efforts are more likely to be effective and can be conducted more safely in areas where wildfires are unwanted or threaten communities (DOI and USDA 2014). Modern wildfire management practices may also encompass actions targeted at reducing human wildfire ignition through education programs.

Currently, interest is robust among researchers regarding fuel treatment effectiveness across the western U.S. Investigations, including model-based examinations, and associated publications addressing the effectiveness of fuel treatments and fire behavior. The Lake Tahoe West (LTW) Restoration Partnership, which includes scientists, land managers, multiple federal and state agencies, and organizations representing business, recreation, and conservation, has modeled several forest management scenarios in the PTEIR program area with the LANDIS II model. This model

depicts vegetation growth and the effects of various treatment regimes, fire, and beetle infestations in the Lake Tahoe Basin (Scheller et al. 2019). Outputs from the LANDIS II model are then incorporated into related finer-scale modeling that predicts the effects of representative individual fires, and the combined effects on wildlife habitat, air quality, and water quality and quantity. However, some important data gaps remain in documenting fuel treatment effectiveness. In part, this is because the uncertainty of wildfire timing and location does not lend itself to a controlled experimental setting within which researchers could predict and measure pre-fire and post-fire conditions, and the available datasets and records of past fire and fuel treatments are not complete and comprehensive (Syphard et al. 2011, Barnett et al. 2016). Although more research to document certain aspects of fuel treatment effectiveness in the scientific literature is needed and ongoing as wildfires continue to increase in frequency, size, severity, and duration, there is consensus on the correlation between certain fuel treatments and wildfire risk; these are discussed in more detail in the subsections that follow.

VEGETATION (FUEL) MANAGEMENT

Vegetation treatment is an important approach to wildfire management because it can reduce the intensity and severity of many wildfire conditions (but not all, such as extreme wind conditions) slowing fire movement and creating favorable conditions for firefighting to protect targeted, high-value resources (Carey and Schuman 2003, Prichard et al. 2010). The State is also pursuing other important strategies to reduce wildfire risks, such as building code improvements to harden structures, actions to reduce ignition potential related to electric utilities, and land use decisions. A suite of strategies is needed for the most effective approaches to wildfire risk reduction.

Fuel reduction has proven successful where it is targeted at protecting specific resources in limited geographic areas, such as in areas of extreme fire danger or in the WUI (Loudermilk et al. 2014). Areas that are treated often exhibit different fire progression characteristics and reduced fire severity from areas that are not treated (Lydersen et al. 2017, Johnson and Kennedy 2019). Reducing fuels through mechanical treatments and prescribed fire have been found to be effective at reducing fire frequency, fire severity, and annual area burned when applied at the landscape scale over an extended period of time (Kim et al. 2013, Martinson and Omi 2013, Prichard and Kennedy 2014, Tubbesing et al. 2019). These effects have also been found to be most effective during extreme weather conditions (i.e., hotter and drier). At these times, there is also a higher likelihood that fires will intersect with treated areas, which contributes to higher effectiveness of those treatments at reducing wildfire behavior and effects (Cassell 2018). Another study found simulated fuel treatments in the Lake Tahoe Basin returned the forest to more historic and fire resilient conditions, reduced wildfire risk and severity, controlled wildfire carbon emissions, and in the long run, resulted in a net carbon gain (Loudermilk et al. 2014). In another study, mechanical treatments followed by prescribed burning produced the strongest results, with more resilient forest structures, lower surface fuel loads, and a reduced rate of accumulation of surface fuels (Schwilk et al. 2009).

It has also been found that fuel treatments are most effective when wildfires are driven by typical weather situations where prevailing seasonal conditions of temperature, soil/fuel, and moisture contents are present. In circumstances where extreme weather conditions exist, such as in cases of extremely low humidity and very high winds, fuel treatments are less effective (Brown et al. 2008), particularly when persistently high winds can blow hot embers over long distances. While evidence has not yet definitively concluded that forest fuel treatments lead to a reduction in the overall size of a fire (USFS 2009, Schoennagel et al. 2017), such treatments can aid in protecting public safety and homes and other structures by reducing wildfire intensity and severity in treated areas under normal fire conditions and increasing firefighting effectiveness (Kalies and Yocom Kent 2016). Where treatments have occurred, the pattern of wildfire progression may be limited in some areas to low-intensity underbrush and surface burning, which can create safe conditions for firefighters to successfully suppress fires in areas near homes or other structures, or around areas of high resource value. Fuel treatments also promote faster forest recovery post-fire by causing less damage to soils and leaving some live vegetation within burn areas (USFS 2009), increasing seedling regeneration (Tubbesing et al. 2019), protecting resources such as soils, wildlife, riparian function, and wetlands (Kim et al. 2013), and reducing drought related tree mortality (Restaino et al. 2019).

One published literature review found that certain treatments, such as hand or mechanical thinning followed by prescribed fire, or prescribed fire alone, are very effective at reducing wildfire severity, and that related ecological impacts are often neutral to positive (Winford et al. 2015). Another published literature review indicates that fuel

treatments reduce fire severity, crown and bole scorch, and tree mortality compared to untreated areas. This finding is most applicable to the combination of thinning (manual and mechanical treatments) and prescribed burn treatments. Increased treatment size and intensity (e.g., number of trees removed) can increase the effectiveness of the treatments. Firefighting effectiveness was also reportedly increased by treatments, due to increased visibility in treated areas, decreased heat and smoke of wildfire, increased penetration of retardant to surface fuels, safe access to the fire, and the ability to quickly suppress spot fires in treated areas (Kalies and Yocom Kent 2016).

WILDLAND FIRE HAZARDS IN TAHOE REGION

Historic Fire Regime

The Tahoe Region is considered a “fire environment,” because of the climate, steep topography, and high level of available fuel. Historically, the natural fire regime in the Lake Tahoe Basin included frequent, low-intensity fires occurring at intervals of approximately 5 to 18 years. Regular, low-intensity burns would typically have thinned forest stands and removed hazardous ladder fuels (i.e., shrubs and small trees of intermediate height that allow a ground fire to climb into the forest canopy or crown) (TFFT 2015).

Fire return interval is dependent on several factors including elevation, slope, soils, vegetation types, and human activity. Historic fire return intervals vary from 5 to 128 years throughout the Lake Tahoe Basin. Historic fire return intervals were the shortest in lower elevations that were traditionally inhabited by Native American tribes. These areas are where many communities are currently situated (TFFT 2015).

Before European settlement, low-intensity fires burned approximately every 5 to 18 years in lower elevation pine and mixed conifer forests of the Lake Tahoe Basin. As a result, these forests had large, widely spaced conifer trees with a poorly developed shrub understory (few individuals and low growth forms). Between 1875 and 1895, large-scale timber harvesting removed most of the large, widely spaced trees around Lake Tahoe (TFFT 2015).

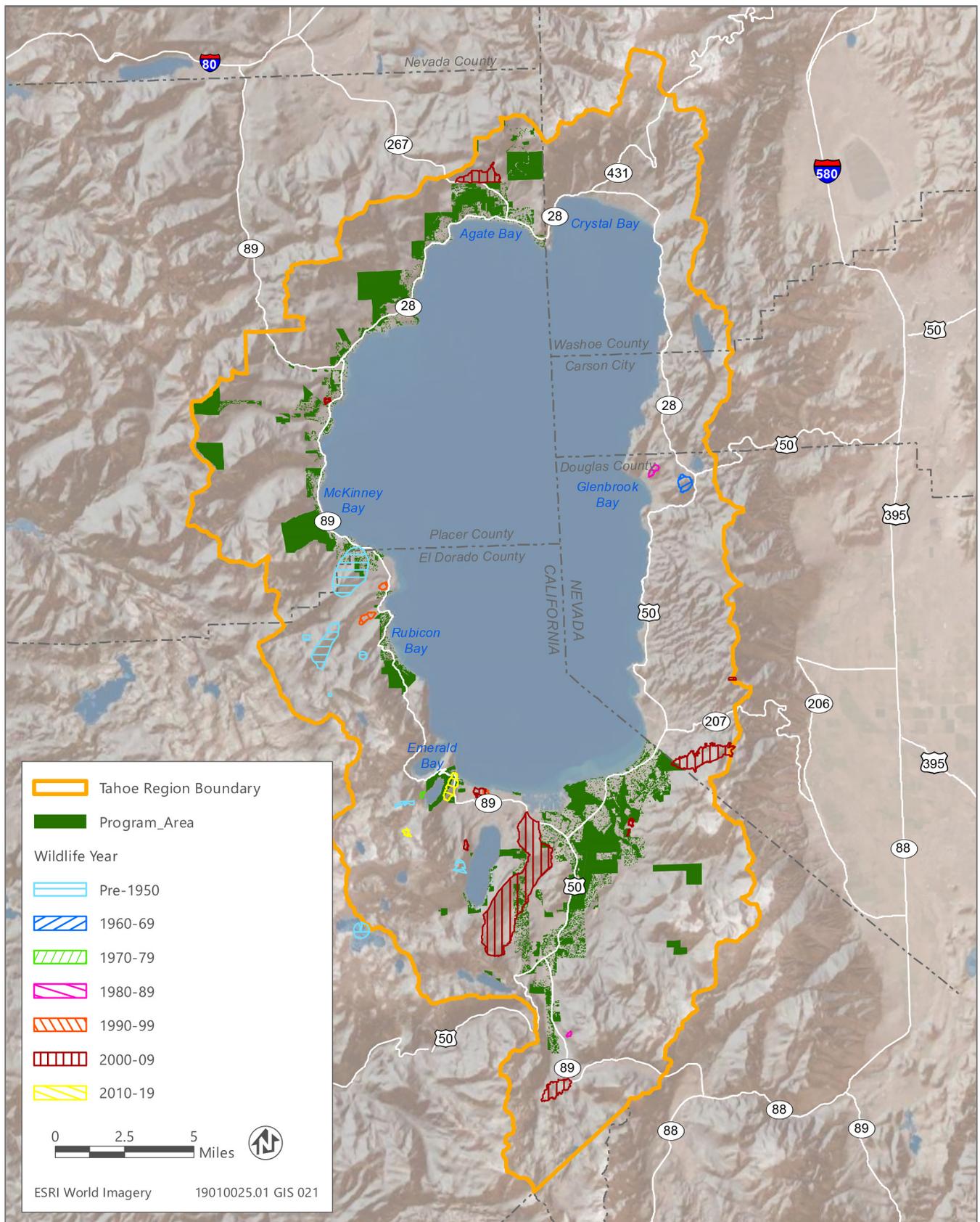
Although the forest stands successfully regenerated, a historic focus on fire suppression and a reduced focus on forest management on public lands in the Tahoe Basin has resulted in denser forests and increased fuel hazards. Recent estimates indicate that lower elevation forests in the Lake Tahoe Basin have four times the density of trees and higher elevation forests have twice the density of trees when compared to forest conditions before 1870. High rates of mortality, particularly in white fir trees, have increased the number of standing dead trees and downed logs. Smaller mid-story trees create fuel ladders that allow fires to readily move into dense crowns. The lack of frequent low intensity fires has resulted in accumulations of dead fuels, increased understory shrubs, and dense young trees. As a result, flame lengths and rates of fire spread have increased. Hazardous fuel conditions coupled with increased development in the WUI have resulted in an increased likelihood of ignition and high-intensity wildfire (TFFT 2015). Climate change is another factor that is affecting forested ecosystems of the Lake Tahoe Basin and associated disturbance regimes. The increasing temperature trend has resulted in an increase in the length of wildfire season in the Western U.S. (Westerling et al. 2006), and increasing area burning at uncharacteristically high severities (Miller et al 2012).

The number of acres burned by wildfires in the Lake Tahoe Basin has also increased in each decade since 1973, including a ten-fold increase during the last decade (CAL FIRE 2019). Table 3.2-2 includes historic wildfires within the Basin that overlap with the program area. Historic wildfires are also shown in Figure 3.2-1.

Table 3.2-2 Historic Wildfires in Program Area

Fire Name	Year	Total Acres	Acres with the Program Area
—	1918	1,013	159
Gondola	2002	643	21
Pioneer 2	2002	24	6
Angora	2007	3,070	228
Washoe	2007	20	6
Emerald	2016	175	88

Source: CAL FIRE 2019



Source: Data downloaded from CAL FIRE in 2019

Figure 3.2-1 Historic Wildfire within the Program Area

The Angora fire, which was the largest fire ever recorded in the Basin, burned 3,070 acres (228 acres within the program area) and destroyed or damaged more than 254 homes in 2007.

Fire Hazard Severity Zones

CAL FIRE has mapped FHSZs for the entire state, including the Tahoe Region. FHSZ delineations are based on an evaluation of fuels, fire history, terrain, housing density, and occurrence of severe fire weather. They are intended to identify areas where urban conflagrations could result in catastrophic losses. FHSZs are categorized as: Moderate, High, and Very High. The program area contains Moderate, High, and Very High FHSZ (Figure 3.2-2), which are defined as follows (CAL FIRE 2007):

- ▶ Moderate: Wildland areas supporting areas of typically low fire frequency and relatively modest fire behavior or developed/urbanized areas with a very high density of non-burnable surfaces including roadways, irrigated lawn/parks, and low total vegetation cover (greater than 30 percent) that is highly fragmented and low in flammability (e.g., irrigated, manicured, managed vegetation).
- ▶ High: Wildland areas that support medium to high hazard fire behavior and roughly average burn probabilities or developed/urban areas typically with moderate vegetation cover and more limited non-burnable cover. Vegetation cover typically ranges from 30 to 50 percent and is only partially fragmented.
- ▶ Very High: Wildland areas that support high to extreme fire behavior or developed/urban areas with high vegetation density (greater than 70 percent cover) and associated high fuel continuity.

PRESCRIBED BURN PLANNING AND IMPLEMENTATION

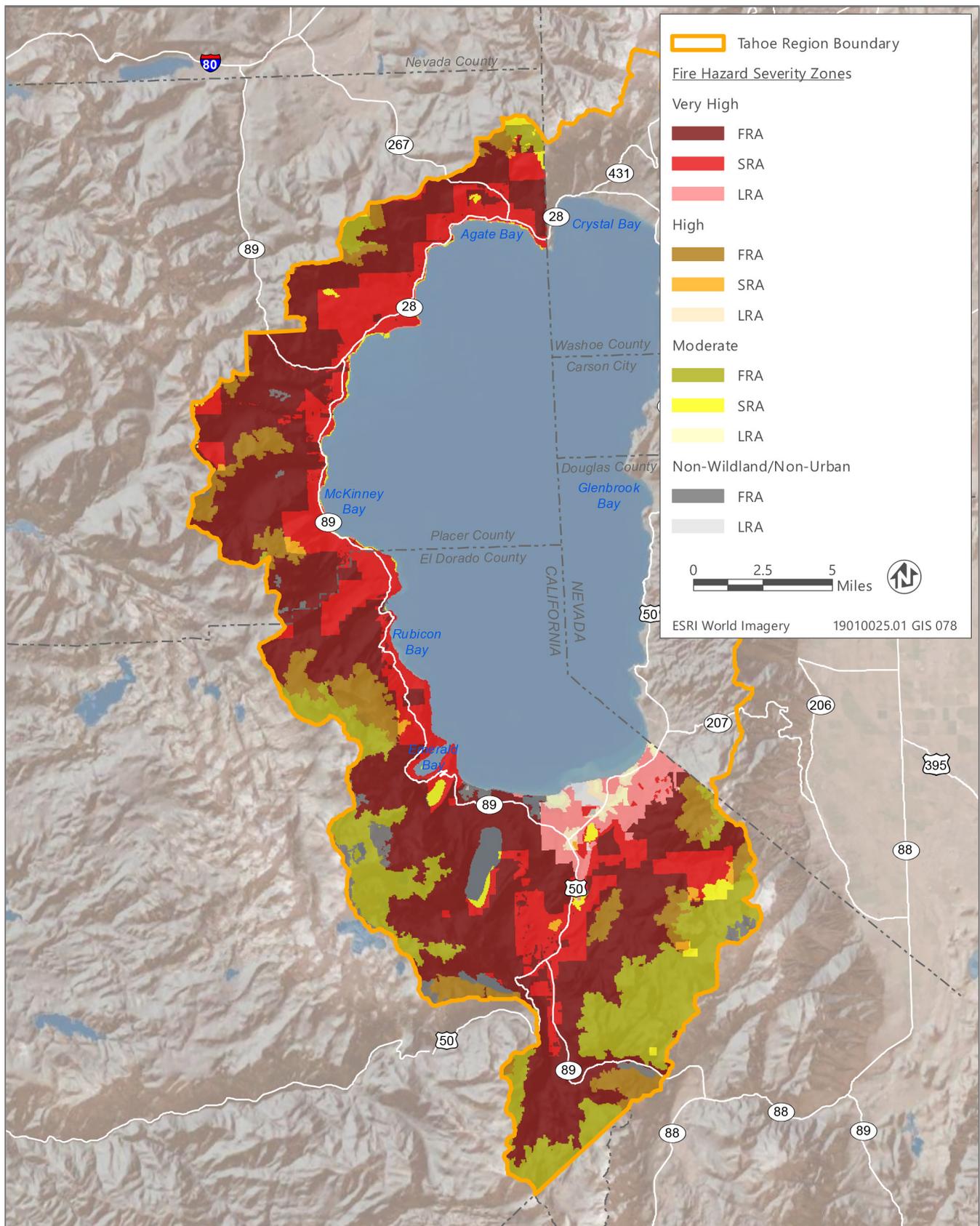
Prescribed burning is an existing tool for fire fuel management that would be a treatment activity covered under the PTEIR. Implementing a prescribed burn requires extensive planning, including the preparation of prescription burn plans, smoke management plans (SMPs), site-specific weather forecasting, public notifications, environmental considerations, and ultimately, favorable meteorological conditions which dictate whether a planned burn can move forward on a given day. All understory burning included in the proposed program would also adhere to procedures described in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide* (NWCG 2017). These planning efforts are required for planning a prescribed burn and are described in more detail below.

Planning a Prescribed Burn

Areas proposed for a prescribed burn are typically identified at the beginning of each season. Pile burning is typically limited to the fall through spring months (October through May) while understory burning typically occurs in the summer through fall (July through October), depending on weather conditions. Before prescribed burning, fire containment lines are typically established by clearing vegetation surrounding an area proposed for burning to help prevent the accidental escape of fire.

Many factors are considered when deciding to use prescribed burning in an area, including, but not limited to:

- ▶ landowner/agency goals for the property,
- ▶ topography,
- ▶ density of fuels,
- ▶ ecological goals,
- ▶ use for fuel break maintenance,
- ▶ strategic locations for protection of communities and/or forests, and
- ▶ training goals for agency staff.



Source: Fire Hazard Severity Zones (adopted in 2007) downloaded from CAL FIRE in 2013

Figure 3.2-2 Fire Hazard Severity Zones within the Federal, State, and Local Responsibility Areas

Interagency Prescribed Fire Planning and Implementation Procedures Guide

The *Interagency Prescribed Fire Planning and Implementation Procedures Guide* (NWCG 2017) establishes national interagency standards for the planning and implementation of prescribed burning. These standards:

- ▶ Describe what is minimally acceptable for prescribed burn planning and implementation.
- ▶ Provide consistent interagency guidance, common terms and definitions, and standardized procedures.
- ▶ Make clear that firefighter and public safety is the first priority.
- ▶ Ensure that risk management is incorporated into all prescribed burn planning and implementation.
- ▶ Support safe, carefully planned, and cost-efficient prescribed burn operations.
- ▶ Support use of prescribed burning to reduce wildfire risk to communities, municipal watersheds and other values, and to benefit, protect, maintain, sustain, and enhance natural and cultural resources.
- ▶ Support use of prescribed burning to restore natural ecological processes and functions, and to achieve land-management objectives.

Burn Plan Prescription

Once areas suitable for prescribed burning are selected, prescriptions (e.g., wind direction, humidity, weather conditions) are developed in conjunction with fire behavior modeling to provide specific parameters for burning. The goal is to conduct understory burns which are safer and minimize long-term damage to vegetation.

Specific treatment details are described in a prescription burn plan (see SPR AQ-3), which incorporates input from review agencies such as the California Department of Fish and Wildlife, local air pollution control districts, and regional water quality control boards, if necessary. Contents of a prescription burn plan also include the date, location, and description of the area in detail, prescriptive weather requirements, fire behavior modeling, the ignition plan (including technique, time of day, and mop-up), a contingency plan, the Smoke Management Plan (SMP), public notification plan, a go/no go checklist, and contact information for individuals in charge of the prescribed burn.

Smoke Management Plan

Smoke management planning is an integrated state and local effort. Before obtaining air district permission to burn, the project proponent must complete the following steps:

- ▶ register their burn with the appropriate air district,
- ▶ obtain air district burn permit,
- ▶ submit a SMP to the air district (see SPR AQ-2), and
- ▶ obtain air district approval of the SMP.

The SMP specifies the “smoke prescription,” which is a set of air quality, meteorological, and fuel conditions needed before burn ignition may be allowed. Depending on the size and complexity of the burn, the SMP will contain information such as nearby population centers, acceptable burn ignition conditions, contingency planning, burn monitoring procedures, smoke travel projections (including maps), smoke minimization techniques, and public notification procedures. Once the air district reviews and approves all of the burn requirements, including the burn permit and SMP, the project proponent may begin making the final preparations for the burn. This includes putting into place all of the resources needed to conduct the burn, notifying the public about the planned timing and specifics of the burn, and obtaining final air district authorization to burn. The project proponent may contact the air district up to 96 hours before the desired burn time to obtain California Air Resources Board (CARB) or air district forecasts of meteorology and air quality needed to safely conduct the burn. The project proponent conducting the burn will continue to work with the air district and the CARB until the day of the burn to update the forecast information. Air district authorization to conduct a prescribed burn is provided to the project proponent preparing the prescribed burn no more than 24 hours before the burn.

Prescribed Burn Implementation Procedures

Planning and safety documents, public notification protocols, and best management practices used for implementation of a prescribed burn are discussed below.

Incident Action Plan

As described in SPR AQ-5, for every understory burn, an Incident Action Plan (IAP) would be prepared that includes communications and emergency protocols, standard best management practices, and emergency procedures. Specifically, an IAP includes the burn dates; burn hours; weather limitations; the specific burn prescription; a communications plan; a medical plan; a traffic plan; and special instructions such as minimizing smoke impacts to specific local roadways. An IAP also assigns responsibilities for coordination with the appropriate air district, such as conducting onsite briefings, posting notifications, weather monitoring during burning, and other burn related preparations. Development and implementation of the IAP establishes clear safety protocols and minimizes risk during prescribed burns.

Public Notification

As described in SPR AD-2, 1 to 3 days before implementing a prescribed burn, the project proponent will post a public notice with burn information such as burn location and the range of dates in which the burn will occur. This information is disseminated to potentially affected communities, typically in newspapers and on community bulletin boards. Sometimes press releases that include television and radio coverage are used, as well as social media platforms such as Twitter, to notify the public of upcoming prescribed burns. If planned burns are near public roads, signs are posted at both ends of the roadway segment where prescribed burning will occur.

Executing a Prescribed Burn

As described in Chapter 2, "Program Description," a typical prescribed burn would require 20-25 workers, which would include one burn boss, one hand crew, and one engine company. Equipment onsite would be determined on a case-by-case basis, but typically includes between two to ten engines, two to four crews, onsite water truck for fire suppression, and drip torches. One crew member is typically assigned to report on-site weather at regular intervals to make sure the burn is staying within its prescription. If conditions ever deviate from the burn plan (also called "going out of prescription") (e.g., winds change direction, humidity decreases), burn progress is stopped, and crews transition from active burning activities to patrolling and/or extinguishing. In the event a prescribed burn goes beyond the perimeter of its planned area, the crew on-site works to control the escape. The prescribed burn plan would specify who has the authority to declare a prescribed fire a wildfire. A prescribed fire, or a portion of a prescribed fire, must be declared a wildfire by those identified in the plan with the authority to do so, when either or both of the following criteria are met: prescription parameters are exceeded and holding and contingency actions cannot secure the fire by the end of the next burning period, or the fire has spread outside the burn area or is likely to do so, and the associated contingency actions have failed or are likely to fail and the fire cannot be contained by the end of the next burning period (NWCG 2017). For larger escapes, air resources would be ordered by the Incident Commander if and when needed.

Mopping up occurs after the prescribed burn and includes extinguishing any smoldering material along a fires' edge, ensuring logs and debris cannot roll across the fire line, making sure all burning fuel is burnt out or is spread or buried to avoid sparks traveling, and clearing all sides of the fire containment line of snags, rotten logs, stumps, singed brush, and low hanging limbs of trees. Crews monitor the area until the fire is completely out.

3.2.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The analysis of environmental impacts on wildfire risk focuses on the potential for a substantial increase in short-term or long-term wildfire acreage or severity as a result of implementation of Tahoe PTEIR treatment activities. This includes potential risks associated with prescribed burning, which is a treatment activity under the Tahoe PTEIR.

Analysis of wildfire risks and severity was based on a review of documents pertaining to existing and projected wildfire conditions and modeling outputs from the LANDIS II model. This model depicts vegetation growth and the effects of climate change, disturbances (e.g., insects), and various fuel management scenarios on wildfire (Scheller et al. 2019). Modeling was conducted for four scenarios including Scenario 1 (No Treatment) that is similar to Alternative B, Scenario 2 (Business as Usual) that is similar to the baseline conditions or the No Project Alternative; Scenario 3 (Increased Treatment) that is similar to the proposed program, and Scenario 4 (Increased Prescribed Burning) that is similar to Alternative D.

The results from all four scenarios are presented below to display the trends in wildfire characteristics and degree to which wildfire can be affected by different treatment approaches and intensities. The scenarios are also discussed in Chapter 6, "Alternatives." For the purposes of this analysis, the effects of the proposed program would fall between modeled results for Scenario 2 and Scenario 3. This analysis quantifies wildfire metrics for the next 100 years in 10-year increments, consistent with the LANDIS II modeling results and discusses average number of acres burned and average fire severity. The modeling outputs used in the analysis below are for the WUI within the entire California portion of the Basin. While the modeling results are not limited to the program area for the Tahoe PTEIR, the modeling area encompasses the majority of the program area, reflects conditions within the program area, and serves as a useful proxy for the relative trends in wildfire extent and severity that could be expected in the program area. The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects, based on the thresholds of significance presented in this section. In determining the level of significance, the analysis assumes that later activities under the Tahoe PTEIR would implement the standard project requirements (SPRs) developed for the program. SPRs applicable to the program's potential to effect wildfire are listed below.

- ▶ **SPR AD-2 Public Notifications for Prescribed Burning:** One to three days prior to the commencement of prescribed burning operations, the project proponent or project implementer will: 1) post signs along the closest public roadway to the area describing the activity, and provide contact information for questions or concerns regarding smoke; 2) publish a public interest notification using methods such as: press release, social media or other methods as deemed appropriate to the project proponent describing the activity, timing, and contact information; 3) send the local county supervisor a notification letter describing the activity, its necessity, timing, and measures being taken to protect the environment and prevent prescribed burn escape. This SPR applies only to prescribed burn treatment activities.
- ▶ **SPR AQ-2 Submit Smoke Management Plan:** The project proponent or project implementer will submit a smoke management plan for all prescribed burns greater than 10 acres or estimated to produce more than 1 ton of particulate matter, in accordance with 17 CCR Section 80160(b). Burning will only be conducted in compliance with the burn authorization program of the applicable air district(s) having jurisdiction over the treatment area. This SPR applies to pile and understory burning.
- ▶ **SPR AQ-3 Create Burn Plan:** The project proponent or project implementer will create a burn plan using the CAL FIRE burn plan template for all prescribed burns. The burn plan will include a fire behavior model output of First Order Fire Effects Model and BEHAVE or other fire behavior modeling simulation and that is performed by a qualified fire behavior technical specialist that predicts fire behavior, calculates consumption of fuels, tree mortality, predicted emissions, greenhouse gas emissions, and soil heating. The project implementer will minimize soil burn severity from understory burning to reduce the potential for runoff and soil erosion. The burn plan will be created with input from a qualified technician or certified State burn boss. This SPR applies to pile and understory burning.
- ▶ **SPR AQ-5: Prescribed Burn Safety Procedures:** Prescribed burns planned and managed by non-CAL FIRE crews will follow all safety procedures required of a CAL FIRE crew, including the implementation of an approved Incident Action Plan (IAP). The IAP will include the burn dates; burn hours; weather limitations; the specific burn prescription; a communications plan; a medical plan; a traffic plan; and special instructions such as minimizing smoke impacts to specific local roadways. The IAP will also assign responsibilities for coordination with the appropriate air district, such as conducting onsite briefings, posting notifications, weather monitoring during burning, and other burn related preparations. This SPR applies pile and understory burning.

- ▶ **SPR HAZ-2 Require Spark Arrestors:** The project implementer will be required to use mechanized hand tools that have federal- or state-approved spark arrestors. This SPR applies only to manual treatment activities.
- ▶ **SPR HAZ-3 Require Fire Extinguishers:** The project proponent will require tree cutting crews to carry one fire extinguisher per chainsaw. Each vehicle would be equipped with one long-handled shovel and one axe or Pulaski consistent with PRC Section 4428. This SPR applies only to manual treatment activities.
- ▶ **SPR HAZ-4 Prohibit Smoking in Vegetated Areas:** The project implementer will require that smoking is only permitted in designated smoking areas barren or cleared to mineral soil at least 3 feet in diameter (PRC Section 4423.4).
- ▶ **SPR HAZ-5 Emergency Fire Hazard Precautions:** The project implementer will adjust daily treatment activities related to mechanical equipment use as necessary to respond to current climate and fuel conditions in order to reduce the risk of wildfire ignition. Daily treatment activities will adhere to the Project Activity Level developed and communicated by the U.S. Forest Service. This danger-rating climatology-based system considers the effects of weather conditions for the last 30-45 days and overall seasonality. The following PALs may vary by day and provide guidance about precautions to follow when planning to conduct treatments using any kind of mechanical equipment:
 - A = Woodcutting allowed. Approved spark arrestor required on chainsaws. Shovel and/or working fire extinguisher required, patrol area after cutting.
 - B = Woodcutting allowed. Approved spark arrestor required on chainsaws. Shovel and/or working fire extinguisher required, patrol area after cutting.
 - C = Woodcutting allowed. Approved spark arrestor required on chainsaws. Shovel and/or working fire extinguisher required, patrol area after cutting.
 - D = Woodcutting allowed until 1 p.m. Approved Spark arrestor required on chainsaws. Shovel and/or working fire extinguisher required, patrol area after cutting.
 - EV or E = No woodcutting allowed.

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, an impact related to wildfire is considered significant if implementation of later activities under the Tahoe PTEIR would:

- ▶ substantially exacerbate short-term wildfire risks related to treatment activities; or
- ▶ exacerbate long-term wildfire risks related to increasing the total acres or severity of wildfires.

IMPACTS AND MITIGATION MEASURES

Impact 3.2-1: Potential to Substantially Exacerbate Short-term Wildfire Risks Related to Treatment Activities

Vegetation treatment activities under the proposed program could result in temporary risks associated with from prescribed burning escaping containment, as well as from the use of vehicles and heavy machinery in the program area, because these situations can increase the risk of an accidental ignition. However, several SPRs would be implemented to reduce the risk of uncontrolled spread of fire from treatment activities. Machine-powered hand tools would have federal- or state-approved spark arrestors (SPR HAZ-2); vegetation treatment crews would carry one fire extinguisher per chainsaw and one long-handle shovel and one axe or pulaski (SPR HAZ-3); and smoking would only be permitted in designated smoking areas (SPR HAZ-4). Safety guidance based on current climate and fuel conditions will guide daily operation of mechanical equipment to reduce risk of wildfire ignition (SPR HAZ-5). In addition, given the extensive preparation and planning before a prescribed burn (e.g., preparation of a SMP and Burn Plan), adhering to the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, active monitoring and maintenance during a prescribed burn, and implementation of stringent safety protocols, treatment activities would not substantially exacerbate fire risk that could result in the escape of a prescribed burn from containment. This impact would be **less than significant**.

Vegetation treatment activities could result in temporary risks associated with uncontrolled fire from prescribed burning, as well as from the use of vehicles and heavy machinery in the program area as each can increase the risk of an accidental wildfire ignition. As discussed in the "Methodology," section above, several SPRs would be implemented to reduce the risk of uncontrolled spread of fire from treatment activities. Machine-powered hand tools would have federal- or state-approved spark arrestors (SPR HAZ-2), which trap or destroy hot exhaust particles that could ignite surrounding vegetation. Vegetation treatment crews would carry one fire extinguisher per chainsaw and one long-handle shovel and one axe or pulaski (SPR HAZ-3), to quickly respond to an ignition should one occur. Additionally, smoking would only be permitted in designated smoking areas with barren or cleared mineral soil to at least 3 feet in diameter (SPR HAZ-4), which would help to minimize the risk of accidental fire ignition. Safety guidance based on current climate and fuel conditions will also guide daily operation of mechanical equipment to reduce risk of wildfire ignition (SPR HAZ-5). Therefore, it is unlikely that the presence and use of vehicles and equipment for treatment activities would substantially exacerbate fire risk resulting in the uncontrolled spread of wildfire.

As described in Chapter 2, "Program Description," the proposed program would also involve pile burning and understory burn techniques. Pile burning is typically limited to the fall through spring months (October through May) while understory burning typically occurs in the summer through fall (July through October), depending on weather conditions. Understory burning is used to reduce fuels over a larger area or restore fire resiliency in target fire-adapted plant communities. Understory burning would be conducted under specific conditions related to fuels, weather, and other variables, and would typically occur on larger-acreage parcels of public land.

As discussed in Section 3.2.2 under "Prescribed Burn Planning and Implementation," implementing a prescribed burn requires extensive planning, including the preparation of a prescription burn plan (SPR AQ-3), SMP (SPR AQ-2), site-specific weather forecasting, public notification (SPR AD-2), safety considerations (SPR AQ-5), and ultimately favorable weather conditions so a burn can occur on a given day. Prescribed burns would also adhere to the standards for planning and implementation of prescribed burning in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide* described above. Before implementing a prescribed burn, fire containment lines would be established by clearing vegetation surrounding the designated burn area to help prevent the accidental escape of fire. During a prescribed burn, fire engines, water truck(s), and safety equipment deemed necessary would be located on-site. A crew member would be assigned to report weather throughout the burn operation to verify that the burn is staying within prescription. If conditions deviate from the burn plan (also called "going out of prescription"), the burn would be rescheduled, and crews would transition from active burning activities to patrolling and extinguishing. In the event a prescribed burn goes beyond the perimeter of its planned area, hand crews, fire engines, and water trucks would be on-site to control the escape. In the event of a large escape (which is rare),

helicopters and air tankers would be on standby to assist with regaining control and other firefighting resources can be mobilized. Therefore, given the extensive planning and preparation required before conducting a prescribed burn through implementation of SPRs and other requirements described above, active monitoring and maintenance during a burn, and implementation of safety protocols, implementing prescribed burns would not substantially exacerbate fire risk or result in the uncontrolled spread of wildfire. This impact would be **less than significant**.

Mitigation Measures

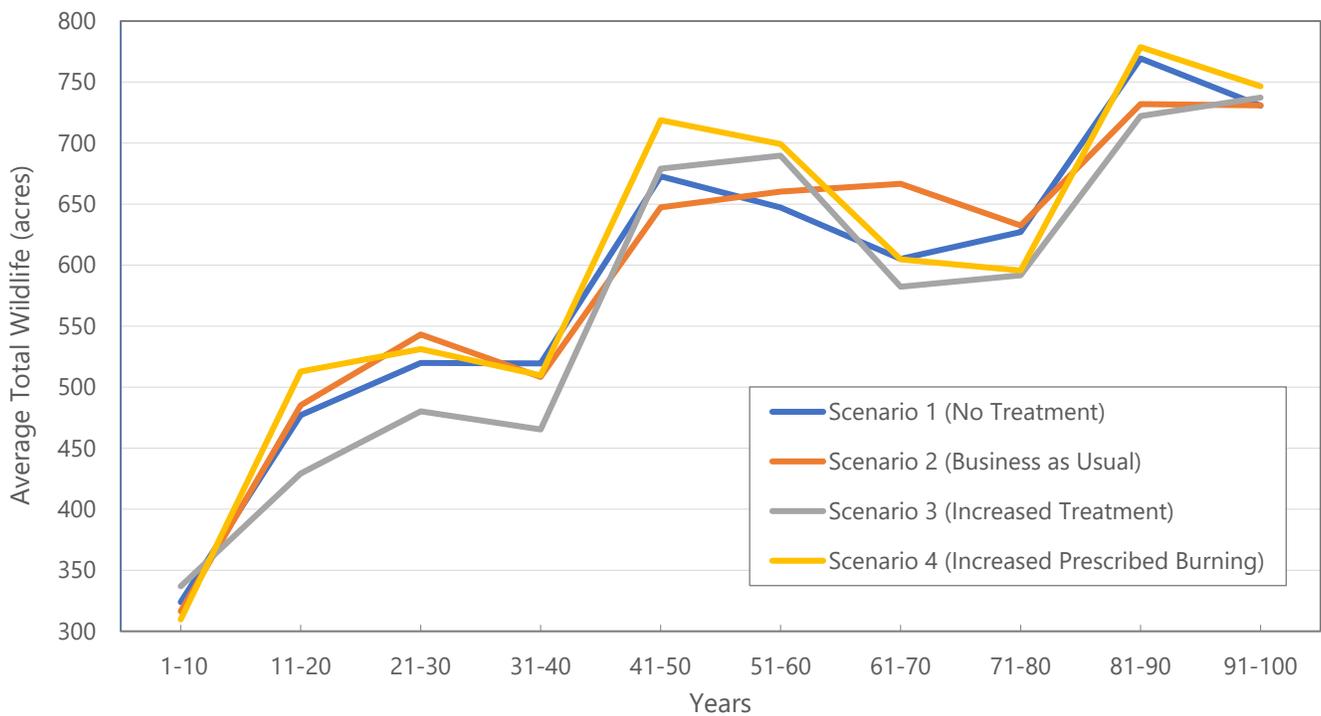
No mitigation is required for this impact.

Impact 3.2-2: Potential to Exacerbate Long-term Wildfire Risks

One of the primary purposes of implementing the proposed program is to reduce wildfire risk in the long term. The proposed program would include vegetation treatment activities to reduce the risk of wildfire including mechanical thinning, manual thinning, and prescribed understory burning. Implementation of the proposed program would not increase the total acres of wildfire over the long term and would not exacerbate fire risk. In addition, the proposed program is expected to have a beneficial effect related to reducing high-severity wildfires in the program area in the long term. This impact would be **less than significant**.

The proposed program consists of a long-term, vegetation management program for the primary purpose of reducing the risk of wildfire through mechanical thinning, manual thinning, and prescribed understory burning. Treatment activities would consist of strategic removal of vegetation to prevent or slow the spread of wildfire between structures and wildlands and vice versa. Treatment activities would help passively interrupt the path of a fire or slow its progress and to support fire suppression. Aspen, meadow, and wet-area restoration would focus on restoring ecosystem conditions and resiliency by managing encroachment by other vegetation and excessive shading by conifers.

As discussed above in the "Methodology," section, the LANDIS II modeled total acres of wildfire and wildfire severity for a 100-year period for four vegetation management scenarios ranging from no vegetation treatments to intensive vegetation treatments. While there is inherent uncertainty in the modeling outputs, they are useful for comparing various vegetation treatment scenarios and observing general long-term trends projected to occur with under each of the scenarios. The total acres of wildfire projected within the WUI on the California side of the Tahoe Basin under each of the treatment scenarios are shown in 10-year increments in Figure 3.2-3 and Table 3.2-3.



Source: Lake Tahoe West Science Team 2019

Figure 3.2-3 Average Total Acres of Wildfire in the WUI in the California Portion of the Lake Tahoe Basin Projected by the LANDIS II Model

Projected outcomes from the proposed program would fall between the modeling results under Scenario 2 (Business as Usual) and Scenario 3 (Increased Treatment). The modeling results include an assumption that some retreatments would occur during the modeling period; however, the modeling assumed that retreatments would occur much less frequently than is proposed under the PTEIR. Therefore, it is expected that the treatments under the proposed program could result in a great reduction in fire risks compared to the modeled scenarios. Projected total wildfire acreages in the WUI on the California side of the Tahoe Basin with implementation of the proposed program are expected to range from 340 and 316 acres of wildfire in Years 1-10, and between 730 and 740 acres of wildfire by Years 91-100. While both scenarios show variability in projected wildfire acres from decade to decade, there is a general increase in total acres of wildfire over the 100-year span under both scenarios. Modeling outputs indicate that the total acres of wildfire under Scenario 3 would be approximately 6.5 percent higher compared to Scenario 2 in Years 1-10 but would be approximately 0.9 percent lower in the long term. While the modeling outputs show an increase in total acres of wildfire under Scenario 3 over the 100-year span, the percent increase in total acres under Scenario 3 decreases over time compared to Scenario 2. This indicates that the total acreage of wildfire is expected to continue to be variable but increasing vegetation treatments under Scenario 3 and the proposed program, are projected to decrease the rate at which the total area burned by wildfires increases. Therefore, compared to Scenario 2, the proposed program is not expected to result in an increase in the total acres of wildfire projected to occur in the long term.

In addition to total acres of wildfire projected to occur, Table 3.2-3 includes the percentages of low-, medium-, and high-severity wildfire that is projected to occur over the 100-year period for each scenario. A comparison of acres projected to burn at high severity within the WUI in the California portion of the Tahoe Basin for all four scenarios are shown in Figure 3.2-4 and the percentages of low-, medium-, and high-severity wildfire projected for each scenario are shown in Figure 3.2-5. The modeling outputs presented below only include wildfire and do not include acres of prescribed burning.

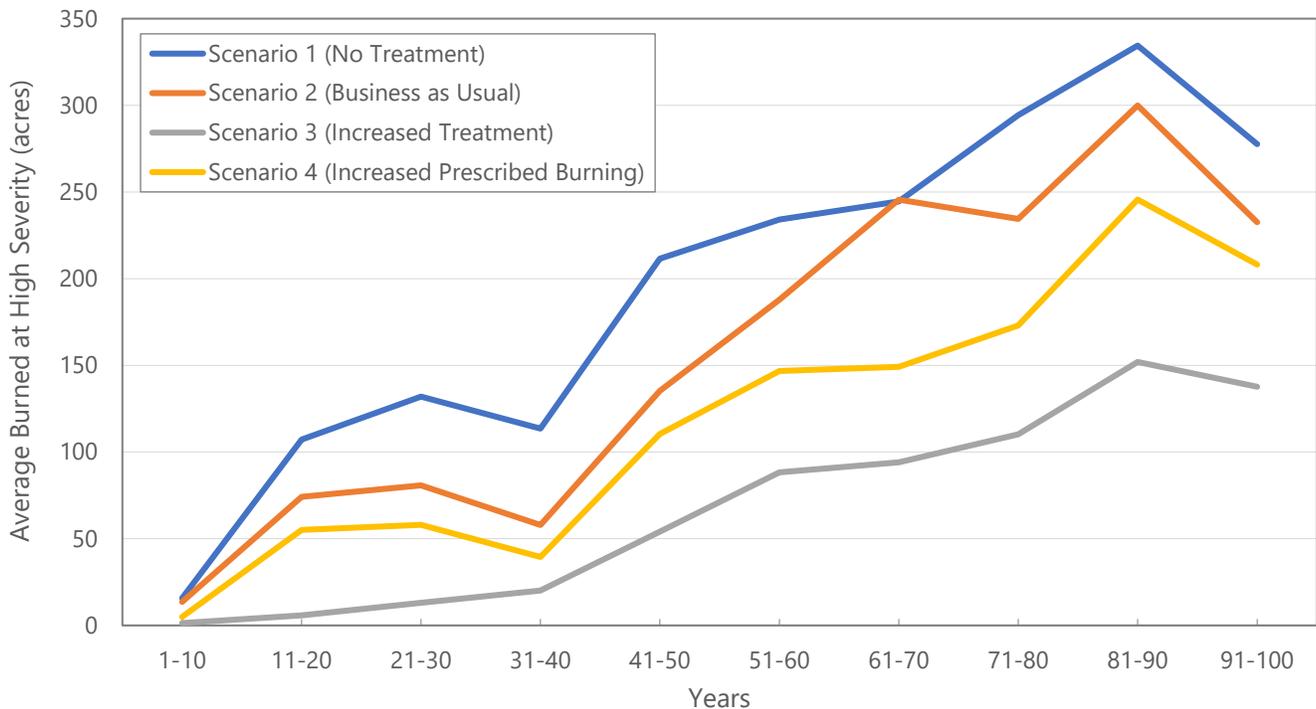
Table 3.2-3 Future Estimated Wildfire Acres and Severity per Decade in the WUI on the California Side of the Tahoe Basin for LANDIS II Modeling Scenarios

Years	Total Acres	% Low ¹	% Medium ¹	% High ¹
Scenario 1 – No Treatment				
1-10	323.9	80.0	15.1	4.9
11-20	477.0	41.0	36.7	22.5
21-30	519.9	25.5	49.1	25.4
31-40	519.5	23.9	54.3	21.9
41-50	672.7	20.2	48.4	31.5
51-60	647.2	17.8	46.1	36.2
61-70	605.0	14.45	45.2	40.4
71-80	627.2	10.5	42.6	46.9
81-90	769.4	9.8	46.7	43.5
91-100	730.6	9.8	52.2	38.0
Scenario 2 – Business as Usual (Baseline)				
1-10	316.4	75.1	20.6	4.3
11-20	485.2	42.0	42.7	15.3
21-30	543.2	23.8	61.3	14.9
31-40	508.4	17.8	70.8	11.4
41-50	647.3	13.3	65.8	20.9
51-60	660.2	11.2	60.4	28.5
61-70	666.6	9.2	53.9	36.8
71-80	632.5	7.9	55.0	37.1
81-90	731.9	6.0	53.0	41.0
91-100	730.9	6.8	61.3	31.8
Scenario 3 - Increased Treatment (change in severity compared to baseline)²				
1-10	336.8	86.8 (11.7)	12.8 (-7.8)	0.4 (-3.9)
11-20	429.3	54.9 (12.9)	43.8 (1.1)	1.4 (-13.9)
21-30	480.2	26.0 (2.2)	71.3 (10)	2.7 (-12.2)
31-40	465.3	19.0 (1.2)	76.7 (5.9)	4.3 (-7.1)
41-50	679.1	12.9 (-0.4)	79.1 (13.3)	8.0 (-12.9)
51-60	689.7	10.5 (-0.7)	76.7 (16.3)	12.8 (-15.7)
61-70	582.3	9.2 (0)	74.7 (20.8)	16.2 (-20.6)
71-80	591.6	7.2 (-0.7)	74.2 (19.2)	18.6 (-18.5)
81-90	722.2	6.5 (0.5)	72.4 (19.4)	21.0 (-20.0)
91-100	737.3	6.1 (-0.7)	75.2 (13.9)	18.7 (-13.1)
Scenario 4 – Increased Prescribed Burning (change in fire severity compared to baseline)²				
1-10	309.7	85.2 (10.1)	13.3 (-7.3)	1.6 (-2.7)
11-20	512.8	52.4 (10.4)	36.9 (-5.8)	10.7 (-4.6)
21-30	531.2	34.8 (11)	54.3 (-7.0)	10.9 (-4.0)
31-40	509.6	30.3 (12.5)	62.0 (-8.8)	7.8 (-3.6)
41-50	718.8	24.3 (11.0)	60.4 (-5.7)	15.4 (-5.5)
51-60	699.2	19.9 (8.7)	59.1 (-1.3)	21.0 (-7.5)
61-70	604.7	17.7 (8.5)	57.7 (3.8)	24.7 (-12.1)
71-80	595.6	15.9 (8.0)	55.1 (0.1)	29.0 (-8.1)
81-90	778.6	13.0 (7.0)	55.4 (2.4)	31.5 (-9.5)
91-100	746.6	13.1 (6.3)	59.0 (-2.3)	27.9 (-3.9)

¹ Low, medium, and high wildfire severity are percentages of the total wildfire acres by decade for that scenario.

² Numbers provided in parentheses represent the change in percentage of that wildfire severity compared to Scenario 2 – Business as Usual, which reflects baseline conditions.

Source: Lake Tahoe West Science Team 2019



Source: Lake Tahoe West Science Team 2019

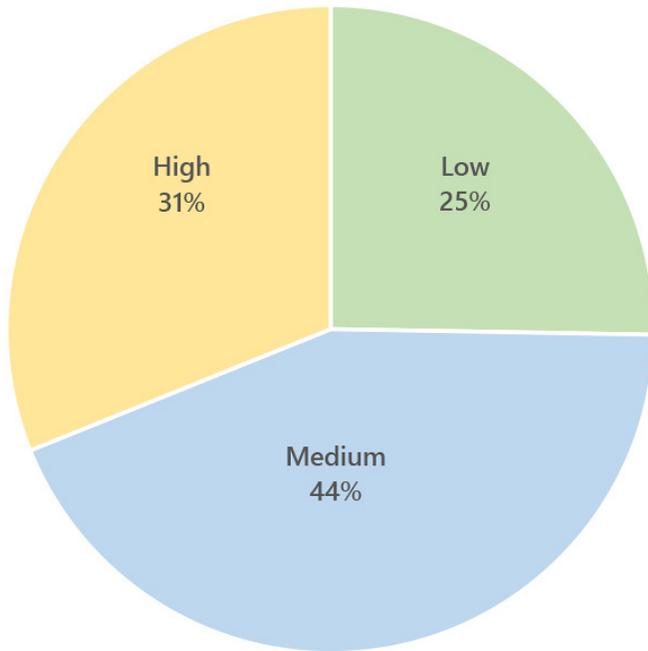
Figure 3.2-4 Average Acres of High-Severity Wildfire in the WUI in the California Portion of the Tahoe Basin Projected by the LANDIS II Model

The model outputs indicate a decrease in the total acres projected to be burned at high severity under Scenario 3 compared to Scenario 2. With continuation of existing treatment activities (Scenario 2), the percentage of high-severity wildfire is expected to increase from 4 percent to almost 32 percent during the 100-year period, while increasing treatments under Scenario 3 indicates the percentage of high-severity wildfire would range from 0.4 percent to 19 percent of the total wildfire during the 100-year period. As with total wildfire acres, the percentage of high-severity wildfire varies by decade; however, increasing vegetation treatments under Scenario 3 and the proposed program is projected to decrease the percentage of high-severity wildfires occurring during all decades compared to Scenario 2. Reducing the percentage of high-severity fires would create safer conditions for firefighters to successfully suppress fires and protect property and resources, promote faster forest recovery post-fire by causing less damage to soils and leaving some live vegetation within burn areas (USFS 2009), increasing seedling regeneration (Tubbesing et al. 2019), and protecting resources such as soils, wildlife, riparian function, and wetlands (Kim et al. 2013).

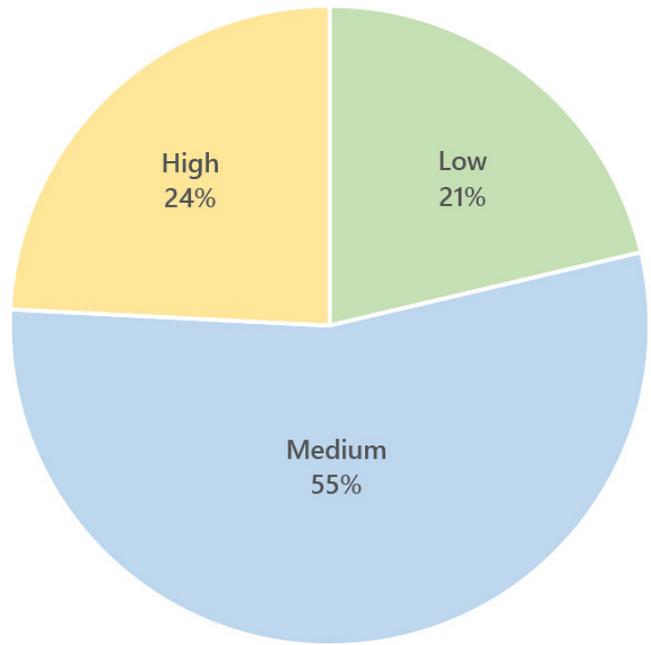
Although the total acres of wildfire are predicted to increase in the long-term despite implementation of treatment activities, because of ongoing climate change, the rate of increase in area burned is expected to be less with implementation of the proposed program compared to baseline conditions. In addition, treatment activities would prevent or slow the spread of wildfire between structures and wildlands and vice versa, help passively interrupt the path of a fire or slow its progress and to support fire suppression by providing responders with a staging area and access to remote locations for fire control actions, and result in a decrease in the percentage of high-severity wildfire, which is more difficult to suppress and results in greater damage. Therefore, the proposed program would not result in a long-term increase in total wildfire acres compared to existing conditions and would result in beneficial effects related to reducing wildfire severity in the long term. This impact would be **less than significant**.

Mitigation Measures

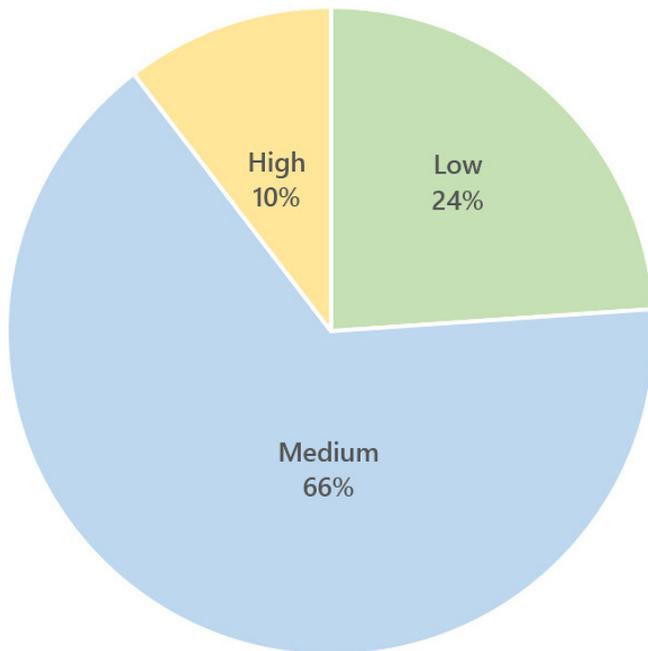
No mitigation is required for this impact.



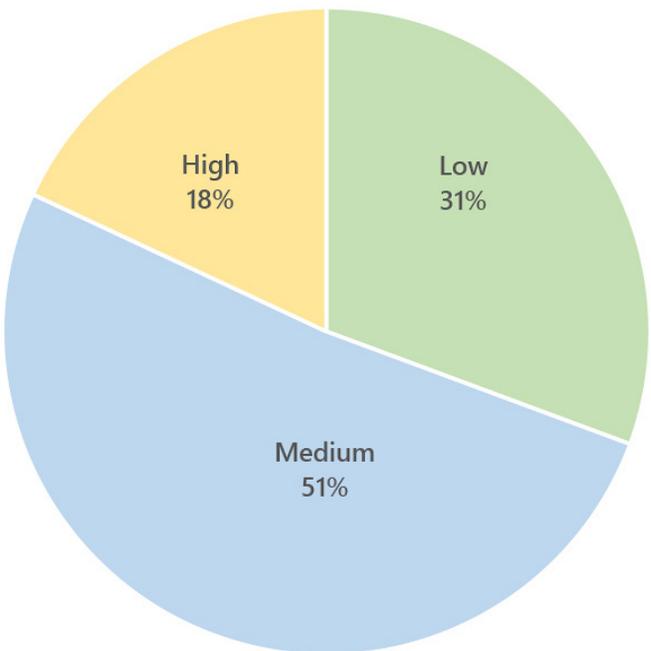
Scenario 1 (No Treatment)



Scenario 2 (Business as Usual)



Scenario 3 (Increased Treatment)



Scenario 4 (Increased Prescribed Burning)

Source: Lake Tahoe West Science Team 2019

Figure 3.2-5 Average Percentage of High, Medium, and Low Wildfire Severity Over 100 Years Under Each Model Scenario

3.3 AESTHETICS

This section provides a description of existing visual conditions, meaning the physical features that make up the visible landscape, within and surrounding the area affected by implementation of the Tahoe PTEIR and an assessment of changes to those conditions that would occur from program implementation. The effects of the proposed program on the visual environment are generally defined in terms of treatment activities' physical characteristics and potential visibility, the extent to which the presence of later treatment activities would change the perceived visual character and quality of the environment, and the expected level of sensitivity that the viewing public may have where treatment activities would alter existing views. The "Methodology" discussion below provides further detail on the approach used in this evaluation.

No comments received on the notice of preparation were related to aesthetics or scenic quality.

The proposed program is limited to fuel reduction activities on forest lands and would not conflict with applicable zoning and other regulations governing scenic quality. Additionally, the program does not include the installation of new lighting fixtures or structures that could cause glare. These issues are not discussed further in this document.

3.3.1 Regulatory Setting

FEDERAL

U.S. Forest Service Visual Management System

The U.S. Forest Service (USFS), Lake Tahoe Basin Management Unit manages lands within and directly adjacent to the program area. The USFS employs the Visual Management System (VMS) to analyze effects of management activities on the scenery of a given area. The VMS had been used since the mid-1970s and in 1995, the USFS developed an updated version of the VMS, introducing the Scenery Management System (SMS). The VMS and SMS are both structured to primarily emphasize "natural appearing" scenery, but SMS recognizes the positive scenic values associated with some human modified (cultural) features and settings that are valued for their scenic influence. The SMS allows for analysis and conservation beyond national forest lands into adjacent communities and other jurisdictions. The SMS provides a systematic approach for determining the relative value and importance of scenery in National Forest lands. In addition to the TRPA scenic management system, described below, the USFS may apply the VMS and SMS in the planning and review of future projects on National Forest lands.

Tahoe Regional Planning Agency

Tahoe Regional Plan

TRPA's mission is to lead the cooperative effort to preserve, restore, and enhance the unique natural and human environment of the Lake Tahoe Region, while improving local communities, and people's interactions with our irreplaceable environment. It achieves this mission through the Lake Tahoe Regional Plan, which was updated by TRPA in 2012. The Regional Plan includes Resolution 82-11, the Environmental Threshold Carrying Capacities (threshold standards), Goals and Policies, Code of Ordinances, area plans, plan area statements (PASs), the Scenic Quality Improvement Program (SQIP), Environmental Improvement Program (EIP), and other guidance documents.

The Goals and Policies of the Regional Plan establish an overall framework for development and environmental conservation in the Lake Tahoe region. The goals and policies present the overall approach to meeting TRPA's environmental threshold carrying capacities (discussed below), and establish guiding policy for each resource element. The Conservation Element (Chapter 4) of the Goals and Policies document considers 10 subelements, including a Scenic subelement. Relevant Goals and Policies are included below.

GOAL SR-1: Maintain and restore the scenic qualities of the natural appearing landscape.

- ▶ **Policy SR-1.3:** The factors or conditions that contribute to scenic degradation, as specified in the Scenic Quality Improvement Program (SQIP), need to be recognized and appropriately considered in restoration programs, plan development, and during project review to improve scenic quality.

GOAL SR-2: Improve the accessibility of Lake Tahoe for public viewing.

- ▶ **Policy SR-2.1:** Enhance the opportunities to view Lake Tahoe by designing view corridors from highways.

Thresholds

TRPA adopted threshold standards in August 1982 for the purpose of maintaining and improving the various resources of the Tahoe Basin. Scenic quality is an exceptional attribute of the Tahoe Basin, and specific threshold carrying capacities were developed to protect and improve the scenic resources of the area. TRPA threshold standards require maintenance of threshold rating values for roadway and shoreline travel routes, individually mapped scenic resources, recreation area scenic resources, and compatibility with the natural environment. The following describes the scenic resources threshold indicators that are relevant to the project.

Travel Route Ratings

Long-term, cumulative changes to views of the landscape from State and federal highways in the region and from the surface of Lake Tahoe are tracked by the TRPA travel route ratings. Roadways have been divided into 53 segments called "travel units" based on their landscape characteristics. Lake Tahoe's shoreline is divided into 33 separate travel units. The following visual conditions are given numerical ratings to determine the threshold score for travel units: human-made features along roadways and shoreline; physical distractions to driving along roadways; roadway characteristics; views of the lake from roadways; general landscape views from roadways and the lake; and the variety of scenery viewed from roadways and the lake.

Scenic Quality Ratings

The purpose of the TRPA scenic quality threshold is to maintain or enhance views of individual, existing scenic resources that are visible by the public from roadway or shoreline travel routes. The scenic resources in the region include certain views of the natural landscape and distinctive natural features that were identified, mapped, described, and evaluated as part of the 1982 Scenic Resource Evaluation. Scenic resources include such things as foreground, middle-ground, and background views of the natural landscape from roadways; certain views to Lake Tahoe from roadways; certain views of Lake Tahoe and natural landscape from roadway entry points into the region; unique landscape features, such as ridgelines, prominent mountain peaks, and rock formations that add interest and variety, as seen from roadways or from on Lake Tahoe.

Public Recreation Areas and Bike Trails Scenic Quality Ratings

The TRPA public recreation area scenic quality threshold applies to specific public recreation areas, including beaches, campgrounds, ski areas, and segments of Class I and Class II bicycle trails. Public recreation areas with views of scenic resources are valuable because they are major public gathering places, hold high scenic values, and are places where people are static (compared to people on the travel routes) and, therefore, have more time to focus their attention on the views and scenic resources. Scenic resources seen from public recreation areas include: views of the lake and the surrounding natural landscape from within the recreation area; views of distinctive natural features that are within the recreation area; and views of human-made features in or adjacent to the recreation area that influence the viewing experience. TRPA-listed public recreation areas in the program area include El Dorado Beach and Campground, Granlibakken Ski Resort, and Ski Homewood/Tahoe Ski Bowl (TRPA 2015). Portions of the TRPA-listed bikeway segments that are within the program area include Al Tahoe Boulevard, City of SLT Recreation Area, City of SLT to Tallac Creek, Sunnyside to Timberland, Tahoe City to Dollar Point, Tahoe City to River Ranch, Tahoe Pines to Tahoma, Tahoe Tavern, Tahoe Valley Route, Tahoe Valley to SLT City Limits, and Timberland to Tahoe Pines.

Scenic Quality Improvement Plan

The SQIP was adopted to provide a program for implementing physical improvements to the built environment in the Tahoe Basin. The SQIP is intended to contribute to the attainment of the scenic resources thresholds. It identifies specific scenic improvement opportunities within each travel unit that is not in attainment of threshold standards.

Environmental Improvement Program

The EIP, adopted in 1998 and updated in 2010, incorporates elements of the SQIP. The EIP includes a list of specific projects throughout the Basin that are needed to attain and maintain the thresholds (TRPA 2010). One of the program elements addresses improving the scenic quality of roadways. Currently, the Tahoe Vista Utility Undergrounding Project, Liberty Utilities – Apache Ave Undergrounding, and Liberty Utilities - Pioneer Trail Undergrounding- Elks Club to So. Pines 3500' are the only scenic improvement projects on the five-year EIP project list in the program area.

STATE

California Scenic Highway Program

California's Scenic Highway Program was created by the California Legislature in 1963 and is managed by the California Department of Transportation. The goal of this program is to preserve and protect scenic highway corridors from changes that would affect the aesthetic value of the land adjacent to highways. A highway may be designated "scenic" depending on how much of the natural landscape travelers can see, the scenic quality of the landscape, and the extent to which development intrudes on travelers' enjoyment of the view (Caltrans 2017).

The program includes a list of highways designated as, or eligible to become, official scenic highways, and includes a process for the designation of official State and County Scenic Highways. State Route (SR) 89 and SR 28 within the Placer County portion of the Tahoe region are classified as "eligible" routes under the Scenic Highway Program. Within the El Dorado County portion of the Tahoe region, SR 89 is officially designated as a State Scenic Highway. The U.S. Highway 50 (U.S. 50) from the Nevada state line to the "Wye" intersection with SR 89 is designated as eligible, and U.S. 50 from the "Wye" intersection through Echo Summit is officially designated as a State Scenic Highway. All roadways that are eligible or officially designated under the program are also within TRPA-designated scenic roadway travel units.

LOCAL

Placer County

The Placer County Tahoe Basin Area Plan (PCTBAP) serves as Placer County's overall land use and conservation plan for the portion of Placer County within the program area. It includes a Scenic Resources section that provides guidance on scenic quality standards. The following policies from the Scenic Resources section of the PCTBAP are most relevant to the proposed program:

- ▶ **SR-P-1:** Continue to participate in the Lake Tahoe Environmental Improvement Program (EIP) and coordinate with other agencies to identify and secure funding for projects that improve scenic quality.
- ▶ **SR-P-4:** Protect and enhance existing scenic views and vistas.
- ▶ **SR-P-7:** Prioritize scenic improvement efforts at the gateways to Lake Tahoe in Tahoe City and Kings Beach.

El Dorado County

The El Dorado County General Plan includes a Visual Resources and Community Design section, which addresses scenic resources. The following policies from the Visual Resources and Community Design section of the General Plan are most relevant to the proposed program:

- ▶ **Policy 2.3.1.1:** The County shall continue to enforce the tree protection provisions in the Grading Erosion and Sediment Control Ordinance and utilize the hillside road standards.

- ▶ **Policy 2.3.2.1:** Disturbance of slopes thirty (30) percent or greater shall be discouraged to minimize the visual impacts of grading and vegetation removal.

City of South Lake Tahoe

The City of South Lake Tahoe's General Plan includes a Scenic Resources section within the Natural and Cultural Resources Element. This section includes several policies addressing scenic resources, though the policies are focused on the built environment or city infrastructure and are not relevant to the proposed program.

3.3.2 Environmental Setting

In the Lake Tahoe Basin, human activity has had a notable influence on the landscape. Beginning with the Comstock era around 1859, demand for timber resulted in extensive logging within the area with large portions appearing virtually deforested by 1890 (USGS 2005). Urban development began in the early 1900s with small vacation resorts and a few communities. After World War II, demand for recreation, tourism, and permanent housing fueled large increases in development. Commercial development increased to become the second largest developed land use next to residential by 2002. Even so, concentrated development in the region is largely confined to private lands, which make up 10 percent of the land region-wide, compared to 90 percent in public ownership (TRPA 2012).

VISUAL CHARACTER OF THE PROGRAM AREA

The program area contains a mix of environments, including urban centers, connected and isolated residential neighborhoods, small commercial nodes that serve the residential neighborhoods, recreation areas, and semi-natural transition areas between natural and rural landscapes. These elements are described by three general visual environments: urban areas, rural, and the rural transition environment between the urban and rural areas (TRPA 1989:vii).

- ▶ **Urban Areas:** Urban areas are dominated by commercial uses, public service activities, and residential uses (human-made development). Urban areas within the program area include South Lake Tahoe, Meyers, Tahoe City, Kings Beach, and North Stateline.
- ▶ **Rural Transition Areas:** Rural transition areas are a combination of human-made development and natural landscape features. Within the program area, rural transitional areas include most other areas along SR 28 and SR 89, including Tahoe Vista, Carnelian Bay, Sunnyside, Homewood, and other residential areas such as Cascade properties, and Alpine peaks throughout the program area.
- ▶ **Rural Areas:** Rural areas are dominated by natural elements and processes. Rural areas are within and adjacent to many portions of the program area and include backcountry areas and higher elevation areas outside of residential neighborhoods.

NATURAL FEATURES

The dominant natural features of the program area are the expansive alpine lake (Lake Tahoe) ringed by rugged mountain peaks with thickly forested slopes.

Lake Tahoe

Lake Tahoe is a lake with remarkable color, clarity, size, and depth. The lake's water clarity allows a viewer to see approximately 70 feet deep, though the clarity has declined from greater than 100 feet since readings began in the late 1960s (TRPA 2012). Lake Tahoe is the second deepest lake in the United States and the tenth deepest in the world, with a maximum depth measured at 1,645 feet. The color of Lake Tahoe's water is highly variable, influenced by depth. Water color ranges from clear, light green at the shallow lake edges (especially noteworthy in areas near Tahoe City), to dark blue in the deeper areas. The lake is approximately 22 miles long and 12 miles wide, with 72 miles of shoreline and a surface area of 191 square miles (USGS 2018). The expansiveness of the lake allows for long-distance views throughout the area.

Shoreline Character Types

Each portion of the Lake Tahoe shoreline is classified as one of four shoreline character types, based on the level of human development that is visible. The visual character types along the shoreline are shown Figure 3.3-1 and include the following:

- ▶ **Visually Dominated Shoreline.** This character type includes all marinas and other areas with large prominent buildings, high boat density and buoy fields, equipment, and commercial activity. There is usually considerable visual clutter associated with these uses.
- ▶ **Visually Modified Shoreline.** This character type includes areas with visually-prominent homes and other structures along the shoreline, but with considerable vegetation intact. This character type can include limited areas with high intensity clusters of shoreline structures. Most of the developed portions of the shoreline fall into this category.
- ▶ **Visually Sensitive Shoreline.** These are highly scenic or vulnerable landscapes exhibiting the influence of man-made modifications within an otherwise natural setting. Visually Sensitive areas include long expansive sandy beaches where shoreline structures are highly visible and difficult to screen from view.
- ▶ **Natural Dominated Shoreline.** These areas consist of either naturally appearing landscapes (e.g., Emerald Bay, Upper Truckee Marsh), or historical/traditional locations that include culturally modified landscapes in highly scenic locations (e.g., Vikingsholm).

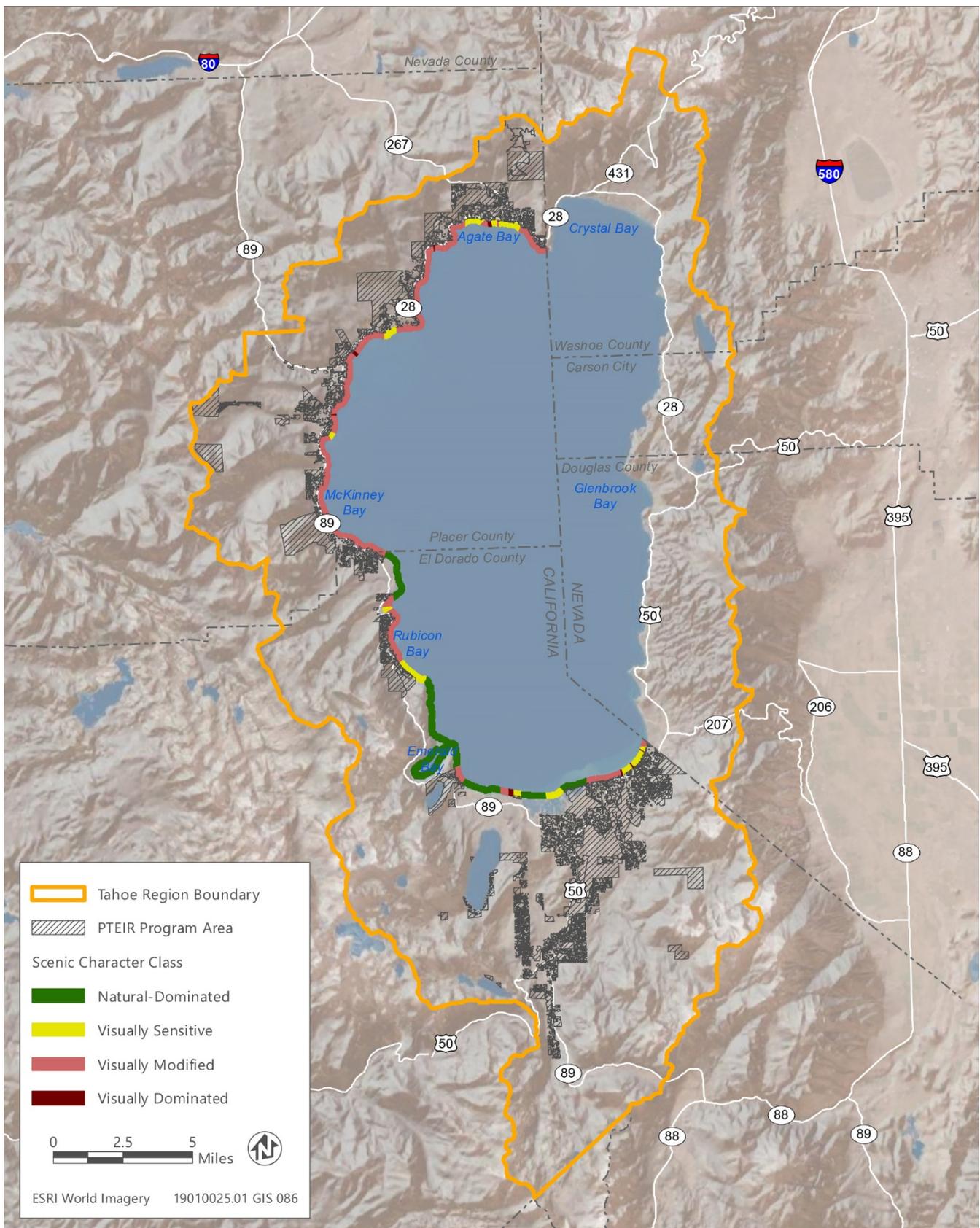
Mountains

Distinctive mountain ridges and peaks surround the flat plane of Lake Tahoe and create an enclosed landscape. The program area is ringed by several high mountains rising to elevations of over 9,000 and 10,000 feet in some areas. The mountains are thickly forested, predominately by evergreen species, and many have rocky summits that maintain patches of snow for much of the year.

SCENIC THRESHOLD STATUS

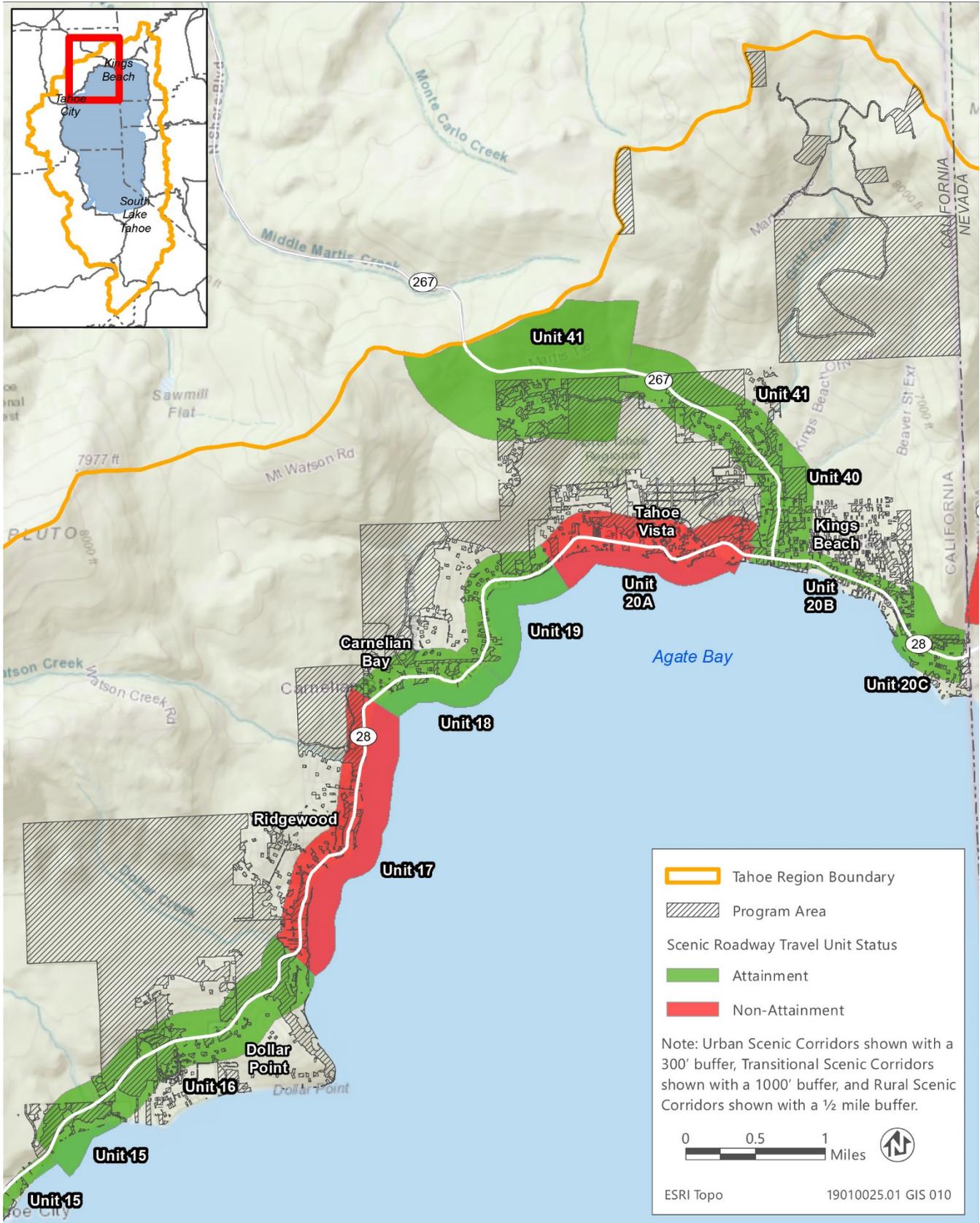
Roadway Travel Route Ratings

There are 32 roadway travel units within the program area. The adopted numerical threshold standard for roadway travel units is 15.5. To be in attainment, the current rating assigned to any roadway travel unit must be at least 15.5, and must be at least equal to the rating that was originally assigned in 1982. Fourteen roadway travel units (44 percent) are currently not in attainment of the adopted threshold standard. As of 2015, three of the roadway travel units were rated lower than their original rating and 13 were rated higher than their original rating. Table 3.3-1 shows the original and current scores, and Figures 3.3-2 through 3.3-6 depict the location and current status of roadway travel units in the program area. The improvement in ratings for roadway travel units in the program area was largely the result of private redevelopment projects, streetscape and roadway improvements, and utility undergrounding. Scores that declined within the program area were the result of new development that blocked lake views (TRPA 2016).



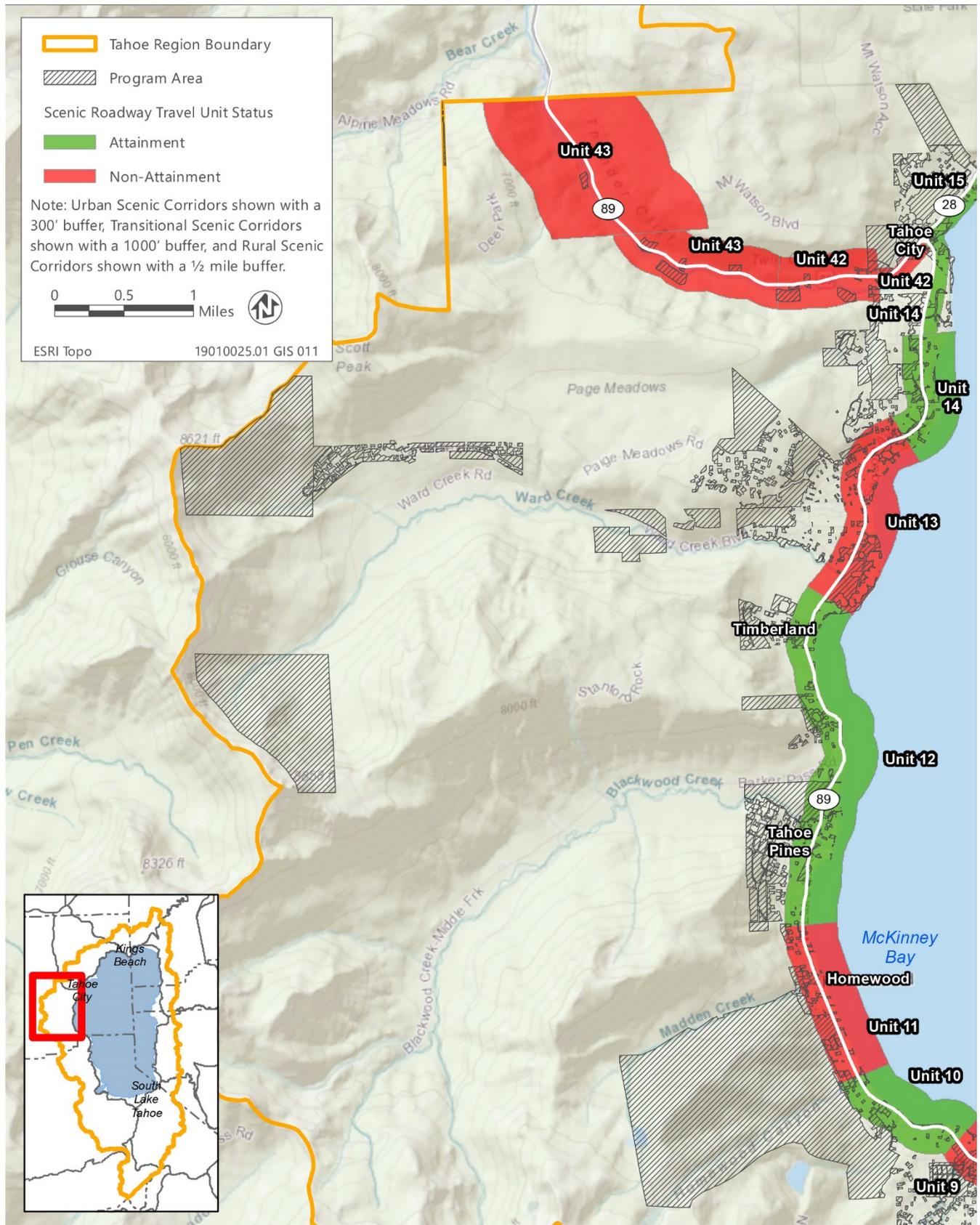
Source: Data received from TRPA in 2018

Figure 3.3-1 Scenic Character Types



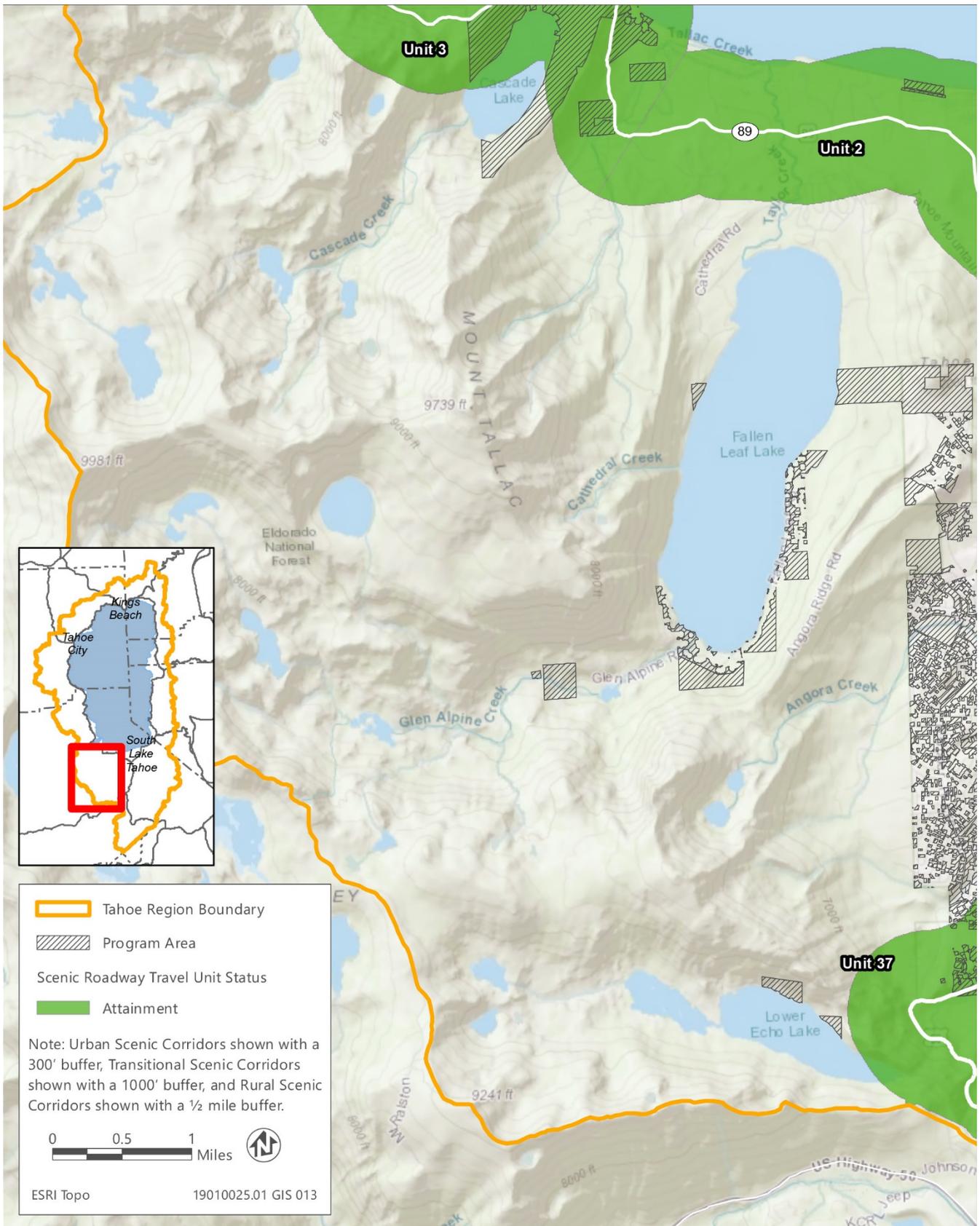
Source: Data received from California Tahoe Conservancy in 2019 and TRPA in 2015

Figure 3.3-2 Scenic Roadway Travel Unit Status: Kings Beach to Dollar Point



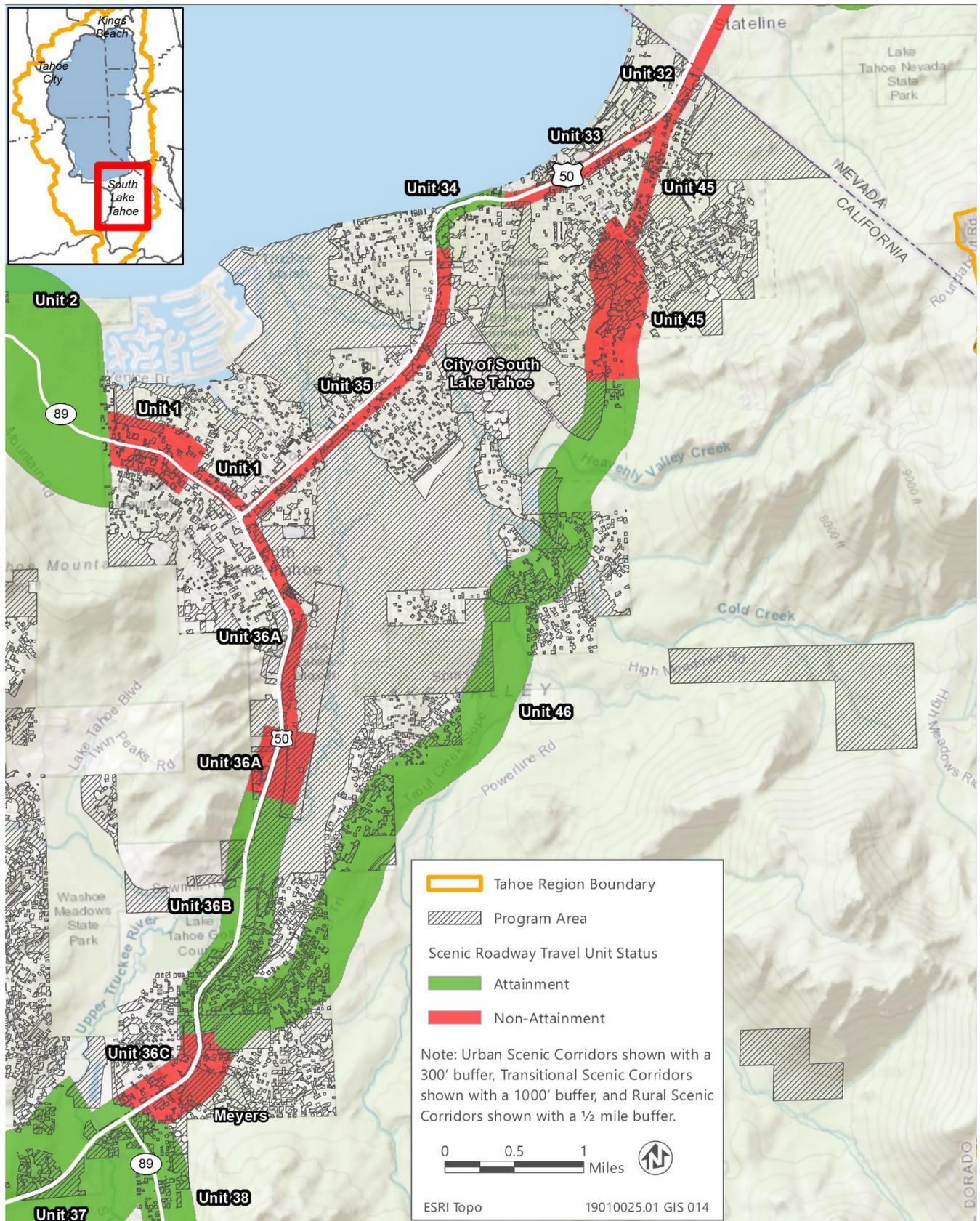
Source: Data received from California Tahoe Conservancy in 2019 and TRPA in 2015

Figure 3.3-3 Scenic Roadway Travel Unit Status: Tahoe City to Homewood



Source: Data received from California Tahoe Conservancy in 2019 and TRPA in 2015

Figure 3.3-5 Scenic Roadway Travel Unit Status: Cascade Lake to North Upper Truckee



Source: Data received from California Tahoe Conservancy in 2019 and TRPA in 2015

Figure 3.3-6 Scenic Roadway Travel Unit Status: South Lake Tahoe

Table 3.3-1 Status of the TRPA-Designated Scenic Roadway Travel Units within the Program Area

Travel Unit Name	Unit Number	1982 Score	2015 Score	Status
Tahoe Valley	1	11	12	Non-attainment
Camp Richardson	2	20	20	Attainment
Emerald Bay	3	26	26.5	Attainment
Bliss State Park	4	21	21	Attainment
Rubicon Bay	5	17	18	Attainment
Lonely Gulch	6	17	18	Non-attainment
Meeks Bay	7	13	14	Non-attainment
Sugar Pine Point	8	23	23	Attainment
Tahoma	9	13	14	Non-attainment
Quail Creek	10	14	15.5	Attainment
Homewood	11	13	12.5	Non-attainment
Tahoe Pines	12	17	17.5	Attainment
Sunnyside	13	14	14	Non-attainment
Tahoe Tavern	14	13	15.5	Attainment
Tahoe City	15	12	16.5	Attainment
Lake Forest	16	13	16.5	Attainment
Cedar Flat	17	17	16	Non-attainment
Carnelian Bay	18	14	16	Attainment
Flick Point	19	14	16	Attainment
Casino Area	32	13	14.5	Non-attainment
The Strip	33	6	14.5	Non-attainment
El Dorado Beach	34	16	18	Attainment
Al Tahoe	35	7	8.5	Non-attainment
Echo Summit	37	26	26	Non-attainment
Upper Truckee River	38	18	18	Attainment
Brockway Cutoff	40	15	15.5	Attainment
Brockway Summit	41	21	21	Attainment
Outlet	42	10	13.5	Non-attainment
Lower Truckee River	43	20	19	Non-attainment
Tahoe Vista	20A ¹	10	13.5	Non-attainment
Kings Beach	20B ¹	10	16	Attainment
Brockway	20C ¹	10	16	Attainment

¹ Unit 20 was divided into units 20A, 20B, and 20C in 1996 to reflect differences in visual character in these areas.

Source: TRPA 2016

Shoreline Travel Route Ratings

There are 19 individual shoreline travel units within the program area. The adopted numerical threshold standard for shoreline travel units is 7.5. To be in attainment, the current rating assigned to any shoreline travel unit must be at least 7.5, and must be at least equal to the rating that was originally assigned in 1982. Seven (37 percent) of these are currently not in attainment of the adopted threshold standard. As of 2015, four of the roadway travel units were rated lower than their original rating and three were rated higher than their original rating. Table 3.3-2 shows the original and current scores, and Figures 3.3-7 through 3.3-11 depict the location and current status of shoreline travel units in the program area. Overall, the shoreline travel unit ratings declined from 1982 through 2001 as the result of new shoreline

development that degraded natural views. Since TRPA adopted revised ordinances governing the design of structures along the shoreline in 2002, the shoreline travel unit ratings in the program area have generally improved as older shoreline development is replaced with newer development that complies with the new standards (TRPA 2016).

Table 3.3-2 Status of the TRPA-Designated Scenic Shoreline Travel Units within the Program Area

Travel Unit Name	Unit Number	1982 Score	2015 Score ¹	Status
Tahoe Keys	1	9	9	Attainment
Pope Beach	2	8	8	Attainment
Jameson Beach	3	8	8	Attainment
Rubicon Bay	9	6	7	Non-attainment
Meeks Bay	10	9	9	Attainment
McKinney Bay	12	9	9.5	Attainment
Eagle Rock	13	11	11	Attainment
Ward Creek	14	10	9.5	Non-attainment
Tahoe City	15	5	5.5	Non-attainment
Lake Forest	16	5	4	Non-attainment
Dollar Point	17	10	10	Attainment
Cedar Flat	18	8	7.5	Non-attainment
Carnelian Bay	19	5	6.5	Non-attainment
Flick Point	20	8	8	Attainment
Agate Bay	21	8	8	Attainment
Brockway	22	10	9	Non-attainment
Bijou	31	9	9.5	Attainment
Al Tahoe	32	9	11	Attainment
Truckee Marsh	33	14	14	Attainment

¹ The 2015 score and status are based on scenic threshold monitoring data collected by TRPA and partner organizations in 2015.

Source: TRPA 2016

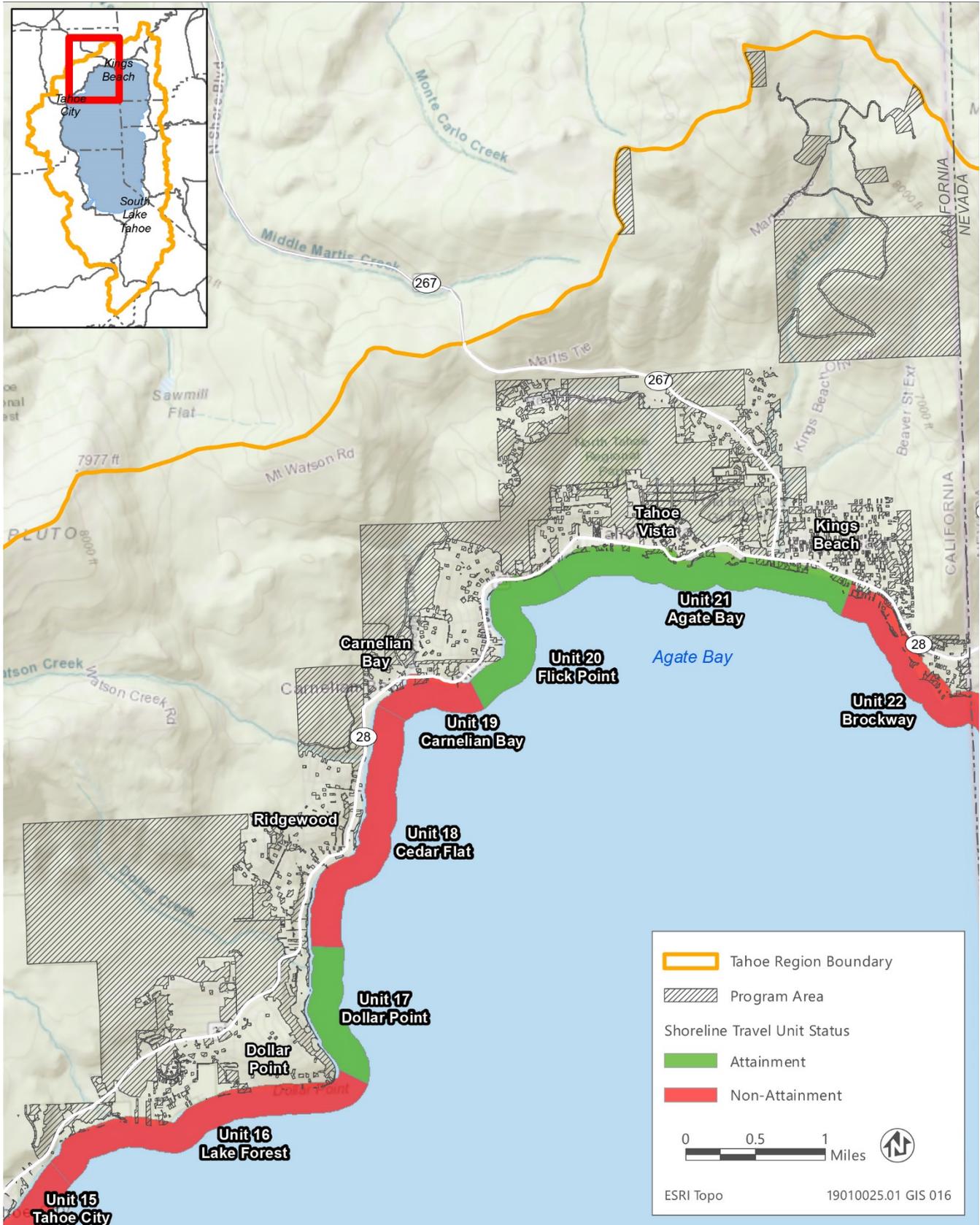
Scenic Quality Ratings

The threshold standard for Scenic Quality is not numerical but is a non-degradation standard. This means that a scenic resource is considered in attainment if its scenic quality rating remains equal to or higher than the rating it was originally assigned. There are 67 roadway scenic resources that are viewed from main roads within the program area. Of these, three had ratings in 2015 that were below the original 1982 rating and therefore considered in non-attainment. On the other hand, there were 13 roadway scenic resources with ratings higher than their original rating. This represents improvement in the quality of these scenic resources. These changes in roadway scenic quality ratings were driven by the same factors, described above, that affected changes in the roadway travel unit ratings.

The program area includes a total of 99 shoreline scenic resources that are visible from the lake. As of 2015, five had ratings that were below the original and are in non-attainment and the remaining 94 had ratings equal to or higher than their original rating, indicating no degradation or improvement in scenic quality.

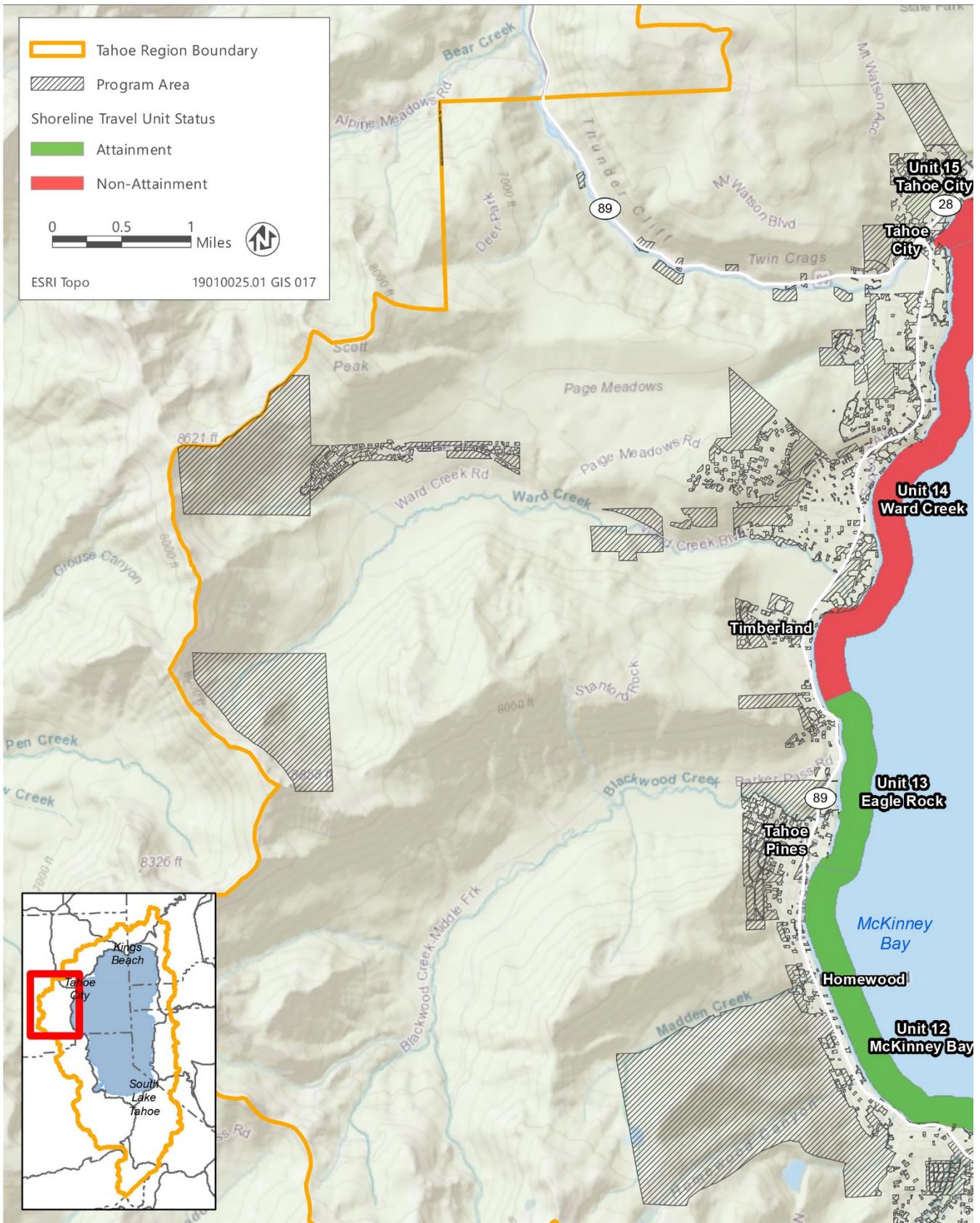
Public Recreation Areas and Bike Trails

The threshold standard for Public Recreation Areas and Bike Trails Scenic Quality is a non-degradation standard, similar to the roadway and shoreline scenic resource standards described above. There are 97 scenic resources that are viewed from public recreation areas and bike trails within the program area. As of 2015, all of these scenic resources were in attainment of the standard, and three had ratings higher than their original rating, indicating improvement in their scenic quality.



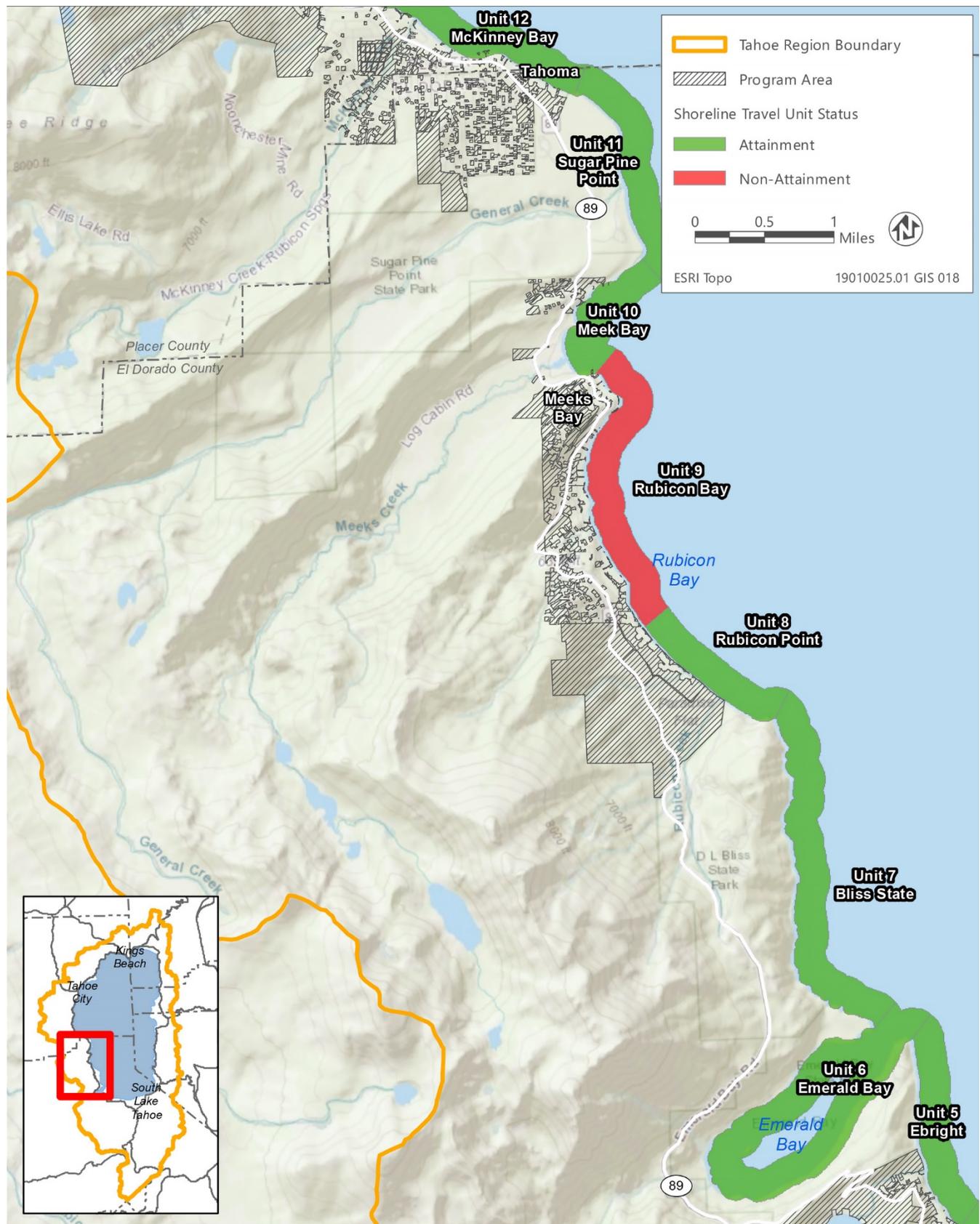
Source: Data received from California Tahoe Conservancy in 2019 and TRPA in 2015

Figure 3.3-7 Shoreline Travel Unit Status: Kings Beach to Dollar Point



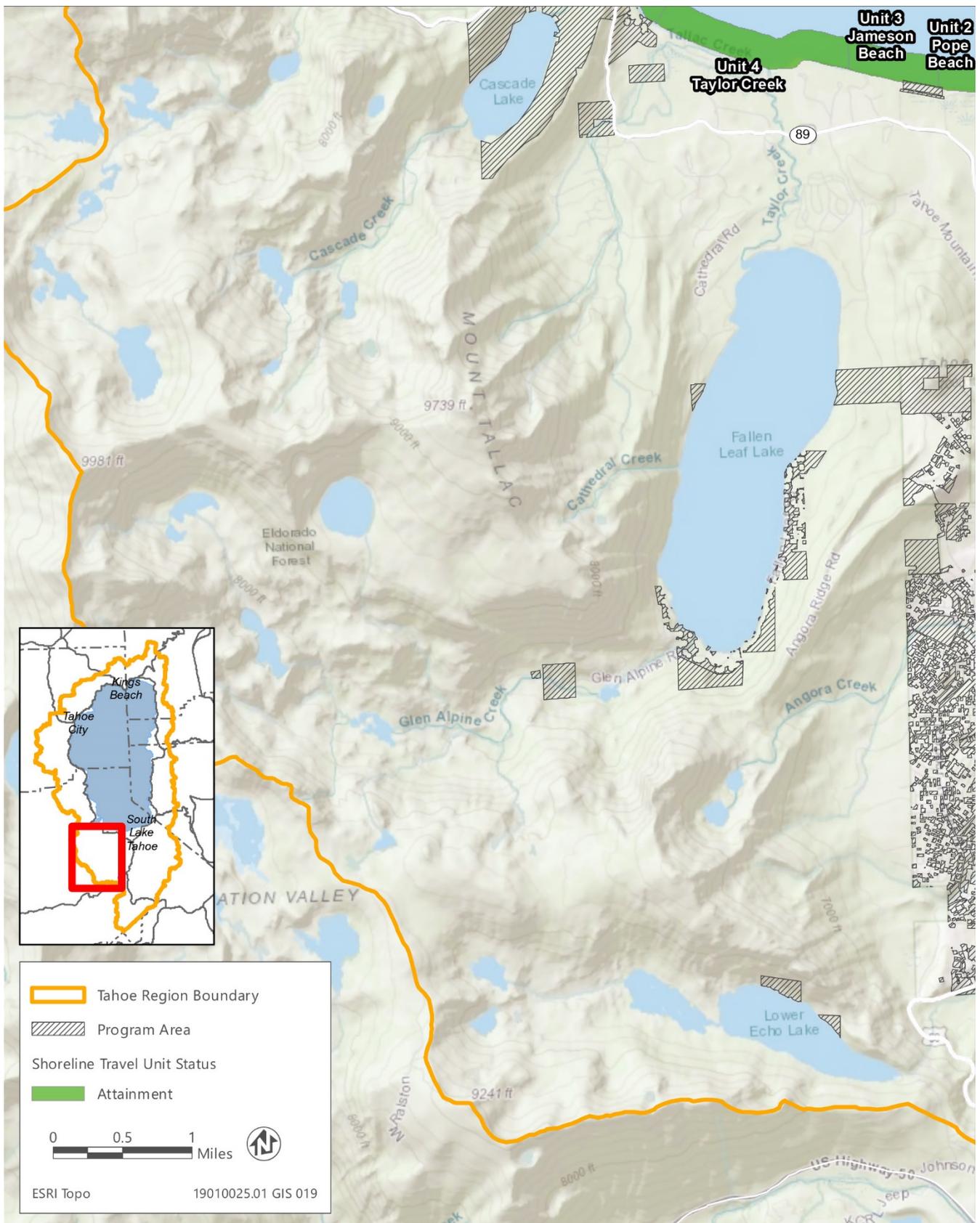
Source: Data received from California Tahoe Conservancy in 2019 and TRPA in 2015

Figure 3.3-8 Shoreline Travel Unit Status: Tahoe City to Homewood



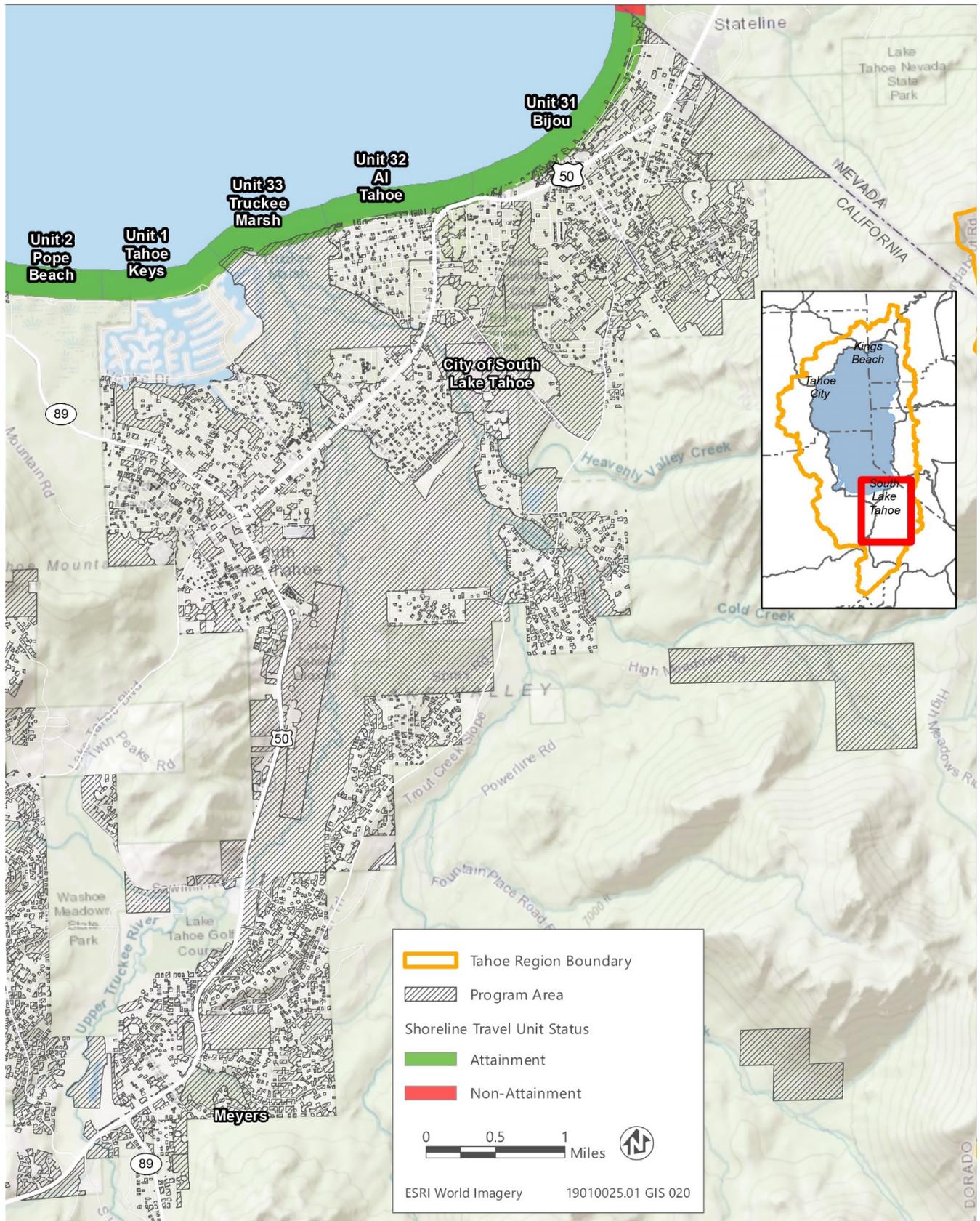
Source: Data received from California Tahoe Conservancy in 2019 and TRPA in 2015

Figure 3.3-9 Shoreline Travel Unit Status: Tahoma to Emerald Bay



Source: Data received from California Tahoe Conservancy in 2019 and TRPA in 2015

Figure 3.3-10 Shoreline Travel Unit Status: Cascade Lake to North Upper Truckee



Source: Data received from California Tahoe Conservancy in 2019 and TRPA in 2015

Figure 3.3-11 Shoreline Travel Unit Status: South Lake Tahoe

3.3.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The analysis broadly evaluates the potential for any later treatment activity implemented through the Tahoe PTEIR to effect scenic resources. The analysis considers existing scenic monitoring data and character types of scenic areas such as shorelines and recreation sites to identify project activities or locations that have the greatest potential for scenic degradation under the proposed program. Significance determinations also assume the implementation of project SPRs relevant to scenic resources (also included in Appendix B), including:

- ▶ **SPR AES-1 Vegetation Thinning and Edge Feathering:** The project implementer will thin and feather adjacent vegetation to break up or screen linear edges of the clearing and mimic forms of natural clearings as reasonable or appropriate for vegetation conditions. In general, thinning and feathering in irregular patches of varying densities, as well as a gradation of tall to short vegetation at the clearing edge, will achieve a natural transitional appearance. The contrast of a distinct clearing edge will be faded into this transitional band. This SPR only applies to mechanical and manual treatment activities.
- ▶ **SPR AES-2 Avoid Staging within Viewsheds:** The project implementer will store all treatment-related materials, including vehicles, treatment activity debris, and equipment, outside of the viewshed of public trails, parks, recreation areas, and roadways to the extent feasible. The project implementer will also locate materials staging and storage areas where they will minimize or avoid visual impacts.
- ▶ **SPR AES-3 Maintain Vegetation Screening:** The project implementer will evaluate existing vegetative screening before project implementation, consider the potential effects of vegetation removal both positive (e.g., new lake views) and negative (e.g., new views of development). Select vegetation for removal to enhance desirable views of natural features and preserve sufficient strategically located vegetation within, at the edge of, or adjacent to treatment areas to screen undesirable views from public trails, parks, recreation areas, and roadways as reasonable or appropriate for vegetation conditions while still meeting project objectives.

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, an impact on aesthetics, light, and glare is considered significant if implementation of later projects under the Tahoe PTEIR would:

- ▶ have a substantial adverse effect on a scenic vista;
- ▶ substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway; and
- ▶ substantially degrade the existing visual character or quality of public views of the site and its surroundings.

IMPACTS AND MITIGATION MEASURES

Impact 3.3-1: Have a Substantial Adverse Effect on Scenic Views from Recreation Areas

Recreation sites containing scenic vistas are scattered throughout the program area and include trails, beaches, campgrounds, and parks. There would be short-term aesthetic impacts during implementation of later treatment activities because forestry equipment, materials, and smoke could be visible from scenic vistas at recreation sites. However, these visible signs of forestry activities would be temporary and distributed throughout the program area and limited by compliance with SPR AES-2. Implementation of the proposed program would ultimately result in the presence of fewer trees within the program area. This would increase viewing distances in treated areas, bringing greater visibility to distant objects or structures. Recreation sites with filtered views toward peaks and Lake Tahoe or toward existing development could experience increased visibility of distant features, however views would remain consistent with the surrounding environments and would appear similar to existing conditions. Therefore, the proposed program would result in a **less-than-significant** impact on scenic views from recreation sites.

A scenic vista is generally considered to be a location from which the public can experience unique and exemplary high-quality views—typically from elevated vantage points that offer panoramic views of great breadth and depth. The visual character of the program area is that of developed areas and the adjacent undeveloped dense forested lands, portions of which are visible from some elevated vistas in the surrounding area. Recreation sites containing scenic vistas are scattered throughout the program area and include trails, bike paths, beaches, campgrounds, and parks.

There would be short-term aesthetic impacts during implementation of later treatment activities because forestry equipment and crews, and smoke from understory burning and pile burning could be visible from scenic vistas at recreation sites. However, these visible signs of treatment activities would be temporary and distributed throughout each treatment site. These short-term aesthetic impacts would be further limited through implementation of SPR AES-2, which states that “The project implementer will store all treatment-related materials, including vehicles, treatment activity debris, and equipment, outside of the viewshed of public trails, parks, recreation areas, and roadways to the extent feasible. The project implementer will also locate materials staging and storage areas where they will minimize or avoid visual impacts.” (Appendix B).

Mechanical treatment involving the use of heavy equipment would most often occur on large acreage CWPP Projects. On these projects, heavy equipment would be visible in some areas during project work. Additionally, landings and skid trails would create disturbance that may be visible from adjacent areas. Manual treatment could also occur on CWPP Projects. Given the density and expansiveness of the forest, the presence of small equipment and the few vehicles used during manual treatments would not substantially alter the view from a scenic vista because equipment would be partially or totally screened by the existing mature trees. Treatment on small acre parcels in community fuel reduction areas (roughly one third of the program area) would consist mainly of manual treatments.

Projects implemented through the proposed program would reduce fuel loads, but would not remove or replace forested areas with another landscape type. Figures 3.3-12 through 3.3-14 provide examples of forest environments before and after mechanical treatment (Figure 3.3-12), manual treatment (Figure 3.3-13), and manual treatment with piles for future burning (Figure 3.3-14). Treatment activities would also comply with SPR AES-3, which states that “The project implementer will evaluate vegetative screening before project implementation, consider the effects of vegetation removal both potential positive (e.g., new lake or ridgeline views) and negative (e.g., new views of development). Select vegetation for removal to enhance desirable views of natural features and preserve sufficient strategically located vegetation within, at the edge of, or adjacent to treatment areas to screen undesirable views from public trails, parks, recreation areas, and roadways as reasonable or appropriate for vegetation conditions while still meeting project objectives.” (Appendix B). In some cases, such as along major roadways and evacuation routes, it will be necessary to remove vegetation that provides screening of buildings near the roadway to meet program objectives. However, implementation of SPR AES-3 would ensure that the visual effects of vegetation removal are considered in project design, that projects enhance views where feasible by opening up view corridors to natural features, and that strategically placed vegetation is retained to screen undesirable views wherever feasible while still meeting the public safety and wildfire risk reduction goals of the project. While, the amount of vegetation screening that is reasonable or

appropriate for individual treatment sites could vary depending on site conditions, and treatment objectives this SPR would ensure that vegetative screening of views from recreation sites and roadways would be considered and included as appropriate for treatment sites adjacent to public recreation areas and roadways.

Over the long term, views of treatment areas from viewpoints within recreation areas would remain as forested evergreen slopes. Thinning of overly dense stands could result in more views of the lake and surrounding mountains from within each treatment site, which would have a beneficial effect. At recreation sites in rural transition areas, fuel reduction treatments could result in changes to close-range viewing locations from nearby trails and recreation sites by thinning dense vegetation and opening up views further into the forest. These impacts would be typical of natural forested landscapes and would not constitute an adverse change. Recreation sites with views toward the margin of urban or rural transition environments (which may currently be limited by unhealthy and overly dense forests) would continue to include structures typical of the environment. Although the existing development may become more visible, views would remain consistent with the surrounding visual environment including views that include a mix of natural vegetation and human-made structures. At the proposed thinning intensities, a residual basal area of 70 to 120 square feet would be maintained at most treatment sites. These residual tree densities combined with implementation of SPR AES-3 would ensure that forest vegetation remains a major component of views from recreation sites on the margin of urban or transitional areas.

Implementation of the proposed program would ultimately result in the presence of fewer trees within the program area. This would increase viewing distances in treated areas, bringing greater visibility to distant objects or structures. Recreation sites with filtered views toward peaks and Lake Tahoe or toward existing development could experience improved visibility; however, views would remain consistent with the surrounding environments and would appear similar to existing conditions. As the natural progression of forest succession occurs, visible evidence of disturbance from treatment activities would be reduced. Furthermore, later treatment activities would result in improved forest health and protection of scenic values by reducing the risk of catastrophic wildfire that could drastically alter vegetation and views. Therefore, implementation of the proposed program would result in a **less-than-significant** impact on scenic vistas viewed from recreation sites.

Mitigation Measures

No mitigation is required for this impact.



Source: California Tahoe Conservancy 2019
Mechanical Removal Pre-treatment



Source: California Tahoe Conservancy 2019
Mechanical Removal Post-treatment

Figure 3.3-12 Representative Photographs



Source: California Tahoe Conservancy 2019

Manual Removal Pre-treatment



Source: California Tahoe Conservancy 2019

Manual Removal Post-treatment

Figure 3.3-13 Representative Photographs



Source: California Tahoe Conservancy 2019

Manual Removal and Hand Piling Pre-treatment



Source: California Tahoe Conservancy 2019

Manual Removal and Hand Piling Post-treatment

Figure 3.3-14 Representative Photographs

Impact 3.3-2: Have a Substantial Adverse Effect on Scenic Views from Lake Tahoe

Implementation of the proposed program would result in the presence of fewer trees and less dense forests within the program area. This would increase viewing distances in treated areas, bringing greater visibility to distant objects or structures. Later treatment activities located near the most visually sensitive portions of the shoreline could potentially remove vegetation that screens structures or other human-made features that would otherwise be visible from Lake Tahoe, resulting in the degradation of the quality of scenic views from Lake Tahoe. This would be a **potentially significant** impact.

With implementation of Mitigation Measure 3.3-2, treatment activities would retain screening of existing structures and infrastructure in Visually Sensitive and Natural Dominated Shorelines to the extent feasible, which would reduce this impact to a **less-than-significant** level.

As described under Impact 3.3-1, later treatment activities implemented through the proposed program would result in short-term aesthetic impacts during treatment activities, which would be limited by implementation of SPR AES-2. When viewed from Lake Tahoe, some activities, equipment, or smoke associated with treatment sites located near the shore or forest margin could be visible for short durations during treatment activities. For the same reasons described in Impact 3.3-1, these short-term impacts would not be significant.

As shown on Figure 3.3-3 and Table 3.3-2, seven of the TRPA designated shoreline travel units within the program area are not in attainment of scenic quality standards. These standards reflect the combined scenic quality views and features throughout the travel unit that are visible from the lake. The majority of the shoreline within the program area is classified as Visually Modified Shoreline. This character type includes areas with visually-prominent homes and other structures along the shoreline, but with considerable vegetation intact. Some highly scenic or vulnerable areas of the program area shoreline are classified as Visually Sensitive Shoreline and several areas south of McKinney Bay are Natural Dominated Shoreline consisting of naturally appearing landscapes (Figure 3.3-1). These areas have a greater risk of scenic degradation from treatment activities.

As discussed under Impact 3.3-1, implementation of the proposed program would ultimately result in the presence of fewer trees within the program area. This would increase viewing distances in treated areas, bringing greater visibility to distant objects or structures. Approximately 293 acres (1.7 percent) of the program area is within 300 feet of Lake Tahoe (at high water). Treatment activities located within 300 feet of the shore in Visually Sensitive Shoreline and Natural Dominated Shoreline areas could potentially remove vegetation that screens human-made structures that would otherwise be visible from Lake Tahoe. This could result in the degradation of the quality of scenic views from Lake Tahoe, resulting in a **potentially significant** impact.

Mitigation Measures

Mitigation 3.3-2: Retain Screening of Existing Structures and Infrastructure in Visually Sensitive and Natural Dominated Shorelines

Later treatment activities implemented through the proposed program shall consult with a landscape architect, TRPA Scenic Specialist, or other qualified scenic resources specialist to identify site-specific vegetative screening recommendations that related to maintaining visual screening of existing structures or infrastructure (e.g., utility lines, roadways, retaining walls) within 300 feet of the shoreline that could be visible from Lake Tahoe. The project proponent shall maintain trees, understory vegetation, and/or patches of dense vegetation that completely or partially screen the structures or infrastructure from view from Lake Tahoe to the extent feasible while meeting program objectives. The project proponent shall flag or otherwise mark screening vegetation for retention before initiating treatments in the vicinity of structures or infrastructure within 300 feet of the Lake Tahoe shoreline in Visually Sensitive or Natural Dominated shorelines.

Significance after Mitigation

Mitigation Measure 3.3-2 would require a site-specific consultation with a qualified scenic resources specialist in the design of treatment activities that could substantially affect scenic quality in Visually Sensitive and Natural Dominated shorelines. Implementation of this mitigation measure would control visible disturbance from later treatment activities

near the shoreline of Lake Tahoe in the portions of the shoreline that are most susceptible to scenic degradation, maintain a natural appearance within treated areas, and maintain visual screening of existing structures. Therefore, with the implementation of Mitigation Measure 3.3-2, the potential for adverse effects to scenic views from Lake Tahoe would be reduced to a **less-than-significant** level.

Impact 3.3-3: Have a Substantial Adverse Effect on Views from Scenic Roadways

Implementation of the proposed program would result in the presence of fewer trees and less dense vegetation within the program area. This would increase viewing distances in treated areas, bringing greater visibility to distant objects or structures. Later treatment activities located near scenic roadways in rural areas could potentially remove vegetation that screens development resulting in greater visibility of structures and the degradation of the scenic quality. This would be a **potentially significant** impact.

Implementation of Mitigation Measure 3.3-3 would require the retention of vegetative screening of existing structures along the most visually sensitive roadway segments. This would reduce the impact to a **less than significant** level.

As described under Impact 3.3-1, treatment activities implemented through the proposed program would result in short-term aesthetic impacts during treatment activities. When viewed from scenic roadways, some activities and equipment on treatment sites or smoke from prescribed burning located near the roadway or forest margin could be visible, but the visibility of equipment and materials would be limited due to compliance with SPR AES-2. For the reasons described under Impact 3.3-1, these short-term effects would not be significant.

As shown on Figure 3.3-2 and Table 3.3-1, fourteen of the TRPA regulated roadway travel units within the program area are not in attainment of scenic quality standards. These standards reflect the combined visual quality throughout the travel unit based on an assessment of the variety and scenic quality of views of the lake, landscapes, and man-made features along the roadway.

Scenic roadway travel units traverse urban, rural, and transitional areas throughout the program area (see Figures 3.3-2 through 3.3-6). Urban areas are developed areas where the quality of the built environment is a primary factor in the visual quality of the area. In urban areas, treatment activities are unlikely to degrade the quality of views from scenic roadway units because the character of these areas is already dominated by human-made features. In rural transition areas, the natural environment takes a more prominent role in determining the scenic character of the area, however the visual appearance remains a balance between human-made development and natural landscape features. However, in rural areas (which should be dominated by natural elements and processes) development should not be visually evident from the travel route. The quality of views from scenic roadways in rural areas could be affected by later treatment activities if screening vegetation is removed in a way that increases the visual prominence of existing development. Implementation of SPR AES-3 would partially offset this impact by ensuring that the visual effects of vegetation removal are considered in project design, that projects enhance views where feasible by opening up view corridors to natural features, and that strategically placed vegetation is retained to screen undesirable views wherever feasible while still meeting the public safety and wildfire risk reduction goals of the project. However, scenic roadway travel units in rural areas are particularly susceptible to scenic degradation from the removal of vegetative screening because increased views of nearby development could alter the rural visual character of the roadway travel unit particularly when such an activity would occur along extended sections of a roadway.

As discussed under Impact 3.3-1, implementation of the proposed program would ultimately result in the presence of fewer trees and less dense vegetation within the program area. This would increase viewing distances in treated areas, bringing greater visibility to distant objects or structures. Treatment activities located near scenic roadways in rural areas could potentially remove vegetation that screens development and protects views from rural scenic roadway units resulting in a more urban visual character that could result in the degradation of the scenic quality. This would be a **potentially significant** impact.

Mitigation Measures

Mitigation 3.3-3: Retain Screening of Existing Structures in Rural Roadway Corridors

Later treatment activities that propose to remove vegetation within 300 feet of a TRPA-designated rural roadway travel unit, and which would affect 500 linear feet or more of the roadway travel unit shall consult with a landscape architect, TRPA Scenic Specialist, or other qualified scenic resources specialist to identify site-specific vegetative screening recommendations. The recommendations shall identify opportunities to maintain strategically placed visual screening of existing structures within 300 feet of the rural scenic roadway unit, while still meeting program objectives related to public safety and wildfire risk reduction. The project proponent shall incorporate feasible recommendations from the consultation to maintain selected trees, understory vegetation, patches of dense vegetation that completely or partially screen the structures from view from scenic roadways, and/or other site specific measures to the extent feasible while meeting project public safety and wildfire risk reduction objectives. Recommendations shall consider prioritizing retention of less flammable vegetation, breaking up continuous patches of vegetation that pose a wildfire risk while retaining strategically placed patches of vegetation to screen development, and the potential for replanting less flammable vegetation for screening in targeted areas where flammable vegetation must be removed. The project proponent shall flag or otherwise mark screening vegetation for retention before initiating treatments in the vicinity of structures in rural roadway corridors areas that are within 300 feet of scenic roadways.

Significance after Mitigation

Mitigation Measure 3.3-3 would require a site-specific consultation with a qualified scenic resources specialist in the design of treatment activities that could substantially affect rural roadway scenic travel units, which are the roadway units that could be adversely affected by the removal of existing vegetative screening. The mitigation measure requires all feasible site-specific measures to retain or provide visual screening while still meeting the public safety and wildfire risk reduction objectives of the project. Therefore, with implementation of Mitigation Measure 3.3-3, the potential for adverse effects to views from scenic roadways would be reduced to a **less-than-significant** level.

Impact 3.3-4: Substantially Degrade the Existing Visual Character or Quality of Public Views of the Site and its Surroundings

The visual character of the program area is that of urban and residential developed areas and adjacent undeveloped densely forested lands. The presence of equipment and crews or project related ground disturbance could create short-term impacts to visual character and quality, however these visible signs of project activities would be temporary and distributed throughout the program area. Ultimately, later treatment activities implemented through the proposed program would reduce fuel loads in treatment sites and would increase viewing distances. However, the changes in vegetation density would be typical of natural forested landscapes and would not constitute an adverse change. For these reasons, implementation of the proposed program would result in a **less-than-significant** impact on the visual character or quality of public view of treatment sites and surrounding areas.

The visual character of the program area is that of urban and residential developed areas and adjacent undeveloped densely forested lands. Viewer groups in the areas consist of residents, recreationist, and roadway travelers.

As previously described, there would be short-term impacts to visual character and quality because of equipment, materials, and smoke, which could be visible by any of the viewer groups. However, these visible signs of treatment activities would be temporary and distributed throughout the program area, and would be reduced by implementation of SPR AES-2.

Later treatment activities could include understory burning or pile burning. Although burning would temporarily alter the appearance of the forest environment, naturally occurring fires occur on a cyclical basis in forests in the program area. For this reason, the appearance of blackened trunks, or burned woody debris from prescribed burning would be consistent with the natural forest environment. Treatment sites where piles have been made for pile burning (as shown in Figure 3.3-4) to dispose of woody debris would retain evidence of disturbance for a longer period compared to other treatments because of the need for piles to dry thoroughly before burning. Additionally, each treatment site may retain some evidence of ground disturbance following the conclusion of treatment activities,

though ground disturbance would be limited by compliance with SPRs and California Forest Practice Rules (CFPRs) that require restoration of ground disturbance. In all cases, disturbance from treatment activities would be a temporary effect that would dissipate with natural forest succession and the growth of understory vegetation.

Ultimately, treatment activities implemented through the proposed program would reduce fuel loads in treatment areas and would increase viewing distances and the variety of vegetation and features visible within the site in a manner consistent with the character of the site and its surroundings. The changes in vegetation density would be typical of natural forested landscapes and would thus not constitute a substantial adverse change. Therefore, implementation of the proposed program would result in a **less-than-significant** impact on the visual character or quality of public view of individual treatment sites.

Mitigation Measures

No mitigation is required for this impact.

3.4 AGRICULTURE AND FORESTRY RESOURCES

This section evaluates the potential effects on agriculture and forestry resources from the proposed program. The existing forestry resource characteristics are described and the relationship between the proposed program and existing plans and policies are addressed. The potential loss of forestry resources is also addressed.

No comments received on the notice of preparation were related to agricultural or forestry resources.

The program area does not contain any agricultural land or any lands classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) (DOC 2017, 2018). There is one portion of the program area in the south shore that is in Non-Renewal for Williamson Act (El Dorado County 2018). Implementation of the proposed program involves forest management treatment activities that would not result in any changes to existing land uses. For these reasons, the proposed program would not convert Farmland to non-agricultural uses and would not conflict with zoning for agricultural use or a Williamson Act contract. These issues are not evaluated further.

The later treatment activities under the Tahoe PTEIR are allowed within all zoning districts in the program area, and the Tahoe PTEIR would not result in the rezoning of any lands. The proposed program involves the treatment of forested lands to reduce forest fuel loads, but these treatments would maintain the landscape as forest and not convert forest lands to a non-forest use. Treatment activities would maintain the current use of the land and would not require rezoning of forest land or timberland to another use. In addition, implementation of treatment activities would not involve development that would conflict with existing zoning for forest land or timberland. Therefore, implementation of the Tahoe PTEIR would not conflict with existing zoning for forest land or timberland. This issue is not evaluated further.

Issues related to wildfire hazards and fuel reduction are discussed in Section 3.2, "Wildfire."

3.4.1 Regulatory Setting

FEDERAL

No federal plans, policies, regulations, or laws related to population, employment, and housing are applicable to the project.

Tahoe Regional Planning Agency

Lake Tahoe Regional Plan

Land use regulation by TRPA is guided by its Regional Plan and implementing ordinances. The Regional Plan is intended to establish a balance, or equilibrium, between the natural environment and the built environment; and attain and maintain TRPA's environmental threshold carrying capacities. The Goals and Policies of the Regional Plan establish an overall framework for development and environmental conservation in the Lake Tahoe region. The goals and policies present the overall approach to meeting TRPA's environmental threshold carrying capacities and establish guiding policy for each resource element.

The Conservation Element of the Tahoe Regional Plan includes the following policies that are applicable to the proposed program (TRPA 2012):

- ▶ **Policy VEG-1.1:** Forest management practices shall be allowed when consistent with acceptable strategies for the maintenance and enhancement of forest health and diversity, prevention of wildfire, protection of water quality, and enhancement of wildlife habitats.
- ▶ **Policy VEG-1.2:** Opportunities to improve the age structure of the pine and fir plant communities shall be encouraged when consistent with other environmental considerations.
- ▶ **Policy VEG-1.3:** Forest pattern shall be manipulated whenever appropriate as guided by the size and distribution of forest openings.

Land Use Classification System

Land in the Lake Tahoe Region is assigned to one of eight classifications: Wilderness, Backcountry, Conservation, Recreation, Resort Recreation, Residential, Mixed-Use, and Tourist. The classifications summarize major land uses that exist in the Region and are further supplemented by the plan area statements (PASs), community plans, master plans, and area plans. Land uses adjacent to the program area include Backcountry, Conservation, Mixed-Use, Recreation, Resort Recreation, Residential, Tourist, and Wilderness.

Backcountry areas are designated and defined by the U.S. Forest Service as part of their Resource Management Plans. On these lands, natural ecological processes are primarily free from human influences but provide opportunities for recreation, including hiking, camping, wildlife viewing, cross-country skiing, and other developed or mechanized activities not allowed in wilderness areas (e.g., mountain biking, snowmobiling). Backcountry areas contribute to ecosystem and species diversity and sustainability, serve as habitat for fauna and flora, and offer wildlife corridors.

Conservation areas are non-urban areas with value as primitive or natural areas, with strong environmental limitations on use, and with a potential for dispersed recreation or low intensity resource management. Conservation areas include: public land already set aside for this purpose; high-hazard lands, SEZs, and other fragile areas without substantial existing improvements; isolated areas that do not contain the necessary infrastructure for development; areas capable of sustaining only passive recreation or non-intensive agriculture; and areas suitable for low-to-moderate resource management.

Mixed-Use areas are urban areas that concentrate higher intensity land uses and have been designated to provide a mix of commercial, public services, light industrial, office, and residential uses to the region or have the potential to provide future commercial, public service, light industrial, office, and residential uses.

Recreation areas are non-urban areas with good potential for developed outdoor recreation, park use, or concentrated recreation. Recreation areas include (1) areas of existing private and public recreation use, (2) designated local, State, and federal recreation areas, (3) areas without overriding environmental constraints on resource management or recreational purposes, and (4) areas with unique recreational resources which may service public needs, such as beaches and ski areas.

Residential areas are urban areas that have a potential to provide housing for the residents of the Region. These lands include: areas now developed for residential purposes; areas of moderate-to-good land capability; areas within urban boundaries and serviced by utilities; and areas of centralized location in close proximity to commercial services and public facilities.

Resort Recreation areas are the Edgewood and Heavenly parcels.

Tourist areas are urban areas that have the potential to provide intensive tourist accommodations and services or intensive recreation. This land use classification also includes areas recognized by the Bi-State Compact as suitable for gaming.

Wilderness areas are defined by the U.S. Congress as part of the National Wilderness Preservation System. These lands offer outstanding opportunities for solitude and primitive, unconfined recreation experiences, and they contain ecological, geological, and other features of scientific, educational, scenic and historic value. These lands are managed to prevent the degradation of wilderness character. Permanent improvements and mechanized uses are prohibited. Wilderness District lands within the program area includes a very small portion of the Desolation Wilderness Area.

Plan Area Statements

Plan Area Statements (PASs) provide a detailed guide for planning within discrete areas of the region. Each PAS is assigned a single land use classification and one of three management strategies: development with mitigation, redirection of development, or maximum regulation. Additionally, PASs provide planning considerations, special policies, maximum densities for residential and tourist accommodation uses, community noise equivalent levels, allowable and special uses, and the amount of additional recreation capacity permissible.

Area Plans

With adoption of the 2012 Regional Plan, local public agencies are encouraged to adopt Area Plans to supersede the older plans for specific geographic areas. Area Plans allow local agencies the opportunity to refine policies and plans for future development within specific geographic areas and identify allowable uses consistent with the Regional Plan. Within the program area, fuels treatment activities are allowable uses within the Meyers Area Plan, Tourist Core Area Plan, Tahoe Valley Area Plan, and most areas within the Placer County Tahoe Basin Area Plan (City of South Lake Tahoe and TRPA 2013, 2015; El Dorado County and TRPA 2018; Placer County and TRPA 2017a). The Placer County Tahoe Basin Area Plan does not allow fuels treatments in only a few areas, the Kings Beach Industrial, 64 Acre Tract, North Tahoe High School, and Tahoe City Golf Course subdistricts. Prescribed fire is generally only allowed by the Placer County Tahoe Basin Area Plan in the undeveloped portions of Placer County, such as within the Blackwood, Burton Creek, Lower Ward Valley, Martis Peak, McKinney Lake, Watson Creek, Lower Truckee, and North Star subdistricts.

The Conservation Element of the Meyers Area Plan includes the following policy applicable to the proposed program (El Dorado County and TRPA 2018):

- ▶ **Policy 2.1:** Live mature Sierra juniper trees within the Plan Area which are not a risk to public health and safety shall be preserved.

The Conservation Element of the Placer County Tahoe Basin Area Plan includes the following policy applicable to the proposed program (Placer County and TRPA 2017b):

- ▶ **Policy VEG-P-2:** Support forest enhancement projects being completed by land management agencies and fire districts, including selective cutting and controlled burning projects that improve forest health and reduce the risk of catastrophic wildfire.

Code of Ordinances

Chapter 61, "Vegetation and Forest Health," of the TRPA Code of Ordinances (Code) includes regulations for forest management activities and projects, which identify old growth tree protections; management objectives; cutting practices; logging roads, skid trails, and landings; removal methods; restocking; water quality protection, vegetation protection, residual stocking levels, reforestation, slash disposal, fire protection, and other appropriate considerations.

Projects, such as those that could occur under the proposed program, that meet the requirements of Section 61.1.8 for substantial tree removal (activities on projects of 3 acres or more and proposing the removal of more than 100 live trees 14 inches diameter at breast height or larger) must meet minimum stocking standards. The minimum stocking standards are included in Section 61.1.6.H, which states that a stand of timber is adequately stocked or meets minimum acceptable stocking when it has thrifty trees well distributed over the growing area (rocky areas, brush fields, meadows, and bodies of water excepted) in which the residual stocking meets the requirements of the appropriate state or federal forestry agency, and desired species composition is maintained. Substantial tree removal on private parcels requires review and approval by TRPA in accordance with Section 61.1.8.A, which includes preparation of a harvest plan and completion of the appropriate level of environmental review (e.g., initial environmental checklist, environmental assessment, or environmental impact statement). TRPA requirements for substantial tree removal on public parcels are described under Code Section 61.1.8.B and are similar to the requirements for substantial tree removal on private lands but also include coordination with TRPA at the initial planning stages.

STATE

California Public Resources Code

"Forest land" is defined in Public Resources Code (PRC) Section 12220(g) as:

- ▶ land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.

“Timberland” is defined in PRC Section 4526 as:

- ▶ land, other than land owned by the federal government and land designated by the State Board of Forestry and Fire Protection (Board) as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees.

“Timberland Production Zone” is defined in Government Code Section 51104(g) as:

- ▶ an area which has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h). With respect to the general plans of cities and counties, “timberland preserve zone” means “timberland production zone.”

Z’Berg-Nejedly Forest Practice Act of 1973

The Z’Berg-Nejedly Forest Practice Act of 1973 (FPA; California Public Resources Code Section 4511-4517) established the Board, whose mandate is to protect and enhance the state’s unique forest and wildland resources. This mandate is carried out through enforcement of the California Forest Practice Rules (FPR; Title 14, CCR, Chapters 4, 4.5 and 10). The California Department of Forestry and Fire Protection enforces the laws that regulate logging on non-federal lands in California. Additional rules enacted by the Board are also enforced to protect forest and wildland resources.

The Forest Practice Act (FPA) is intended to achieve “maximum sustained production of high-quality timber products...while giving consideration to values relating to recreation, watershed, wildlife, range and forage, fisheries, regional economic vitality, employment and aesthetic enjoyment” (PRC Section 4513[b]). The regulations created by the FPA define factors such as the: size and location of harvest areas, include measures to prevent unreasonable damage to residual trees, and address the protection of riparian areas, water courses and lakes, wildlife, and habitat areas.

California Timberland Productivity Act of 1982

The California Timberland Productivity Act of 1982 (California Government Code - Section 51100-51104) identifies the benefits of the State’s timberlands and acknowledges the threat of timberland loss via land use conversions. The law identifies policies intended to preserve timberland, including maintaining an optimum amount of timberland, discouraging premature conversion, discouraging expansion of urban land uses into timberlands, and encouraging investments in timberland. The law establishes Timberland Production Zones (TPZ) on all qualifying timberland, which is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses. The law also provides that timber operations conducted in a manner consistent with FPR shall not be or become restricted or prohibited because of any land use in or around the locality of those operations.

Timberland Productivity Act (TPA) represents the Legislature’s declared intent “to fully realize the productive potential of the forest resources and timberlands of the state.” The TPA imposes mandatory restrictions on parcels zoned as timberland production. Such parcels “shall be zoned so as to restrict their use to growing and harvesting timber and to compatible uses.” (Gov. Code, Section 51115.) In exchange, property owners are required to pay property taxes on the land based solely on its value for timber harvest, and not for its development potential. Government Code Section 51104(g) defines “timberland production zone” as an area which has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses. Compatible uses are defined under Government Code Section 51104(h) and include management for watershed; management for habitat or hunting and fishing; access roads and staging areas for timber harvesting; gas, electric, water, or communication transmission facilities; grazing; or a residence or other structure necessary for timber management.

California Forest Practice Rules

The California Forest Practice Rules (CFPRs) define the timber harvest activities that are regulated under Title 14, California Code of Regulations (CCR), Chapters 4, 4.5, and 10, and under the FPA, Division 4, Chapter 8, PRC. CAL FIRE is the enforcing agency responsible for ensuring that logging and other forest harvesting activities are conducted in a manner that preserves and protects fish, wildlife, forests, and streams. The purpose of the CFPRs is to implement the provisions of the FPA in a manner consistent with other laws, including but not limited to, the Timberland Productivity Act of 1982, the California Environmental Quality Act (CEQA) of 1970, the Porter Cologne Water Quality Act, and the California Endangered Species Act. The provisions of the CFPRs shall be followed by Registered Professional Foresters

(RPFs) in preparing Timber Harvest Plans (THPs), and by the Director in reviewing such plans to achieve the policies described in PRC Sections 4512, 4513, 21000, 21001, and 21002, and Government Code Sections 51101, 51102 and 51115.1. A THP or Program THP (PTHP) would be prepared for a later treatment activity that meets the definition of timber operations for commercial purposes in PRC Section 4527(a) (i.e., projects that involve the sale, barter, exchange, or trade of forest materials). Section 2.8.1, "Timber Operations for Commercial Purposes," further discusses the later treatment activity review process under the Tahoe PTEIR, including the requirements for THPs and potential exemptions from the FPA and CFPRs and where CEQA categorical and statutory exemptions from CEQA could apply.

It is the Board's intent that no THP shall be approved that fails to adopt feasible mitigation measures or alternatives from the range of measures set out or provided for in the CFPRs, which would substantially lessen or avoid significant adverse impacts which the activity may have on the environment. As described in 14 CCR 896(a), the THP process substitutes for the EIR process under CEQA because the timber harvesting regulatory program has been certified pursuant to PRC Section 21080.5. In recognition of that certification and PRC Section 4582.75, the CFPRs are intended to provide the exclusive criteria for reviewing THPs. If the Director believes that there are significant adverse environmental impacts not covered in the CFPRs, matters should be referred to the Board as otherwise specified in the CFPRs.

One of the goals of the FPA is achieving maximum sustained production (MSP) of high-quality timber products. Per 14 CCR 953.11(c), for timber harvest documents, MSP is achieved by complying with the stocking requirements of the individual treatment or prescription. In this instance, the Tahoe PTEIR silvicultural prescription is considered a special prescription by the CFPRs (14 CCR 953.4(c)) because it meets the definition of a fuelbreak prescription and is not required to demonstrate MSP (14 CCR 953[d]). However, all later treatment activities are required to meet the minimum stocking standards as required by 14 CCR 953.4(c) and set forth in 14 CCR 952.7, "Resource Conservation Standards for Minimum Stocking," immediately following timber operations. The Resource Conservation Standards establish minimum acceptable stocking levels after timber operations have been completed, based on Site Class. The growth rate of trees is largely determined by what is referred to as "site," or the measure of productivity based on how trees respond to the soil and climate of the immediate area. Site classification correlates to this production, with Site Class I being of highest production, and Site Class V being lowest.

The Resource Conservation Standards are designed to ensure that a cover of trees of commercial species, sufficient to adequately utilize the available growing space, is maintained or established after timber operations. The area of timber operations must meet one of two conditions after the completion of operations. Under the first alternative, the area must contain an average point count of at least 300 trees per acre on Site Class I, II, and III lands, or at least 150 trees per acre on Site IV and V lands. In this point count, a tree counts for one to six points, depending on diameter, with larger trees worth more points. Under the second alternative, a minimum average basal area of 85 square feet per acre (sq. ft./ac.) on Site I and 50 sq. ft./ac. on Sites II and lower is required. Basal area refers to the cross-sectional area of a tree at breast height, and is a common method used to quantify stand density.

LOCAL

El Dorado County General Plan

The Agriculture and Forestry Element of the El Dorado County General Plan contains goals that support the conservation of forest land and sustainable and efficient forest production (Goals 8.3 and 8.4; El Dorado County 2019). The following policies in the El Dorado County General Plan are applicable to the proposed program:

- ▶ **Policy 7.4.4.1:** The Natural Resource land use designation shall be used to protect important forest resources from uses incompatible with timber harvesting.
- ▶ **Policy 8.3.1.1:** Lands suitable for timber production which are designated Natural Resource (NR) on the General Plan land use map and zoned Timber Production Zone (TPZ) or Forest Resource (FR) are to be maintained for the purposes of protecting and encouraging the production of timber and associated activities.
- ▶ **Policy 8.3.3.1:** Forest lands are reserved for multiple use purposes directly related to timber production, mineral resource extraction, wildlife, grazing, and recreation.

- ▶ **Policy 8.3.3.2:** The Natural Resource land use designation shall be applied for the purposes of conserving and protecting important forest lands and maintaining viable forest based communities. In determining whether particular lands constitute important forest lands, the Board of Supervisors shall consider the advice of the Agricultural Commission.

Placer County General Plan

The Agricultural and Forestry Resources section of the Placer County General Plan includes a goal that supports conservation of the county's forest resources (Goal 7.E; Placer County 2013). The following policies that are applicable to the proposed program:

- ▶ **Policy 7.E.1:** The County shall encourage the sustained productive use of forest land as a means of providing open space and conserving other natural resources.
- ▶ **Policy 7.E.3:** The County shall work closely and coordinate with agencies involved in the regulation of timber harvest operations to ensure that County conservation goals are achieved.
- ▶ **Policy 7.E.4:** The County shall encourage qualified landowners to enroll in the Timberland Production Zone (TPZ) program.
- ▶ **Policy 7.E.5:** The County shall review all proposed timber harvest plans (THPs) and shall request that the California Department of Forestry and Fire Protection (CDF) amend THPs to address public safety concerns, such as requiring alternate haul routes if use of proposed haul routes would jeopardize public health and safety or result in damage to public or private roads.
- ▶ **Policy 7.E.6:** The County shall encourage and promote the productive use of wood waste generated in the County.

South Lake Tahoe City Code

Chapter 6.50 of the South Lake Tahoe City Code includes a tree preservation ordinance, which controls tree removal and limits the unnecessary destruction of existing trees on private and public property.

3.4.2 Environmental Setting

LAND USES

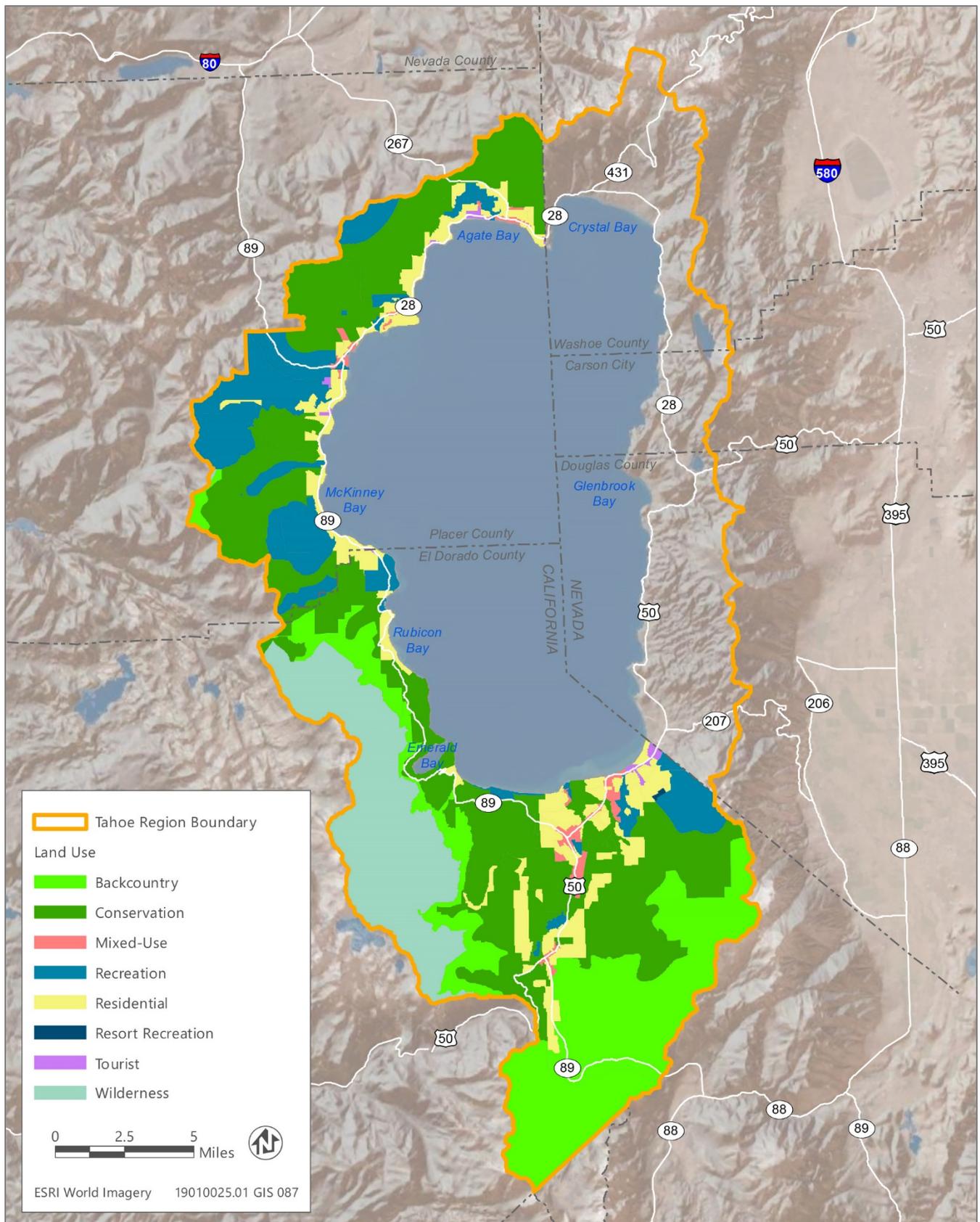
As described above, land in the Tahoe region is assigned to one of eight classifications: Backcountry, Conservation, Mixed-Use, Recreation, Residential, Resort Recreation, Tourist, and Wilderness. The amounts of these uses within the Planned CWPP Projects area and the Community Fuel Reduction Areas are shown in Table 3.4-1. The majority of the land in Community Fuel Reduction Areas is classified as residential, and conservation and recreation lands comprise the majority of the lands in the Planned CWPP Project areas.

Table 3.4-1 Land Uses in the Program Area

Land Use Classification	Planned CWPP Projects (acres)	Community Fuel Reduction Areas (acres)	Total ¹ (acres)
Backcountry	54	0	54
Conservation	7,243	72	7,315
Mixed-Use	104	755	859
Recreation	4,130	50	4,180
Residential	103	4,740	4,843
Resort Recreation	0	45	45
Tourist	2	181	183
Wilderness	4	0	4
Total ¹	11,640	5,843	17,483

¹ The land use data excludes a small portion of the program area due to mapping discrepancies along the shoreline, resulting in the total acres shown here being less than the actual size of the program area.

Source: Compiled by Ascent Environmental in 2019



Source: Data received from TRPA in 2018

Figure 3.4-1 Land Use Designations in and near the Program Area

Forest Characteristics in the Program Area

A description of vegetation types in the program area are provided in Section 3.6, "Biological Resources."

The Landscape Resilience Assessment for Lake Tahoe West provides details on forest characteristics for a portion of the program area and provides information on typical forest characteristics in the vicinity of the program area. It evaluates the current condition of the natural environment of the west side of the Lake Tahoe Basin and the resilience of those environmental characteristics, values and ecosystem services to a variety of disturbances (Gross et al. 2017). The existing conditions of the general forest in the Lake Tahoe West planning area are described in the Landscape Resilience Assessment in comparison to historic and/or contemporary reference conditions to determine which portions of the landscape and which landscape values and services are the least resilient to disturbances. The planning area for Lake Tahoe West includes approximately 59,000 acres of federal, state, local, and private lands, from Emerald Bay to Squaw Valley, and includes a portion of the Tahoe PTEIR program area on the west shore of Lake Tahoe. The program area is located within the Wildland-Urban Interface (WUI), which contains general forest but also contains more development and urban areas than in the Lake Tahoe West planning area.

In the Lake Tahoe West planning area, 24 percent of the forested landscape has a resilient forest density, meaning these areas have the number of trees per acre that are consistent with historic and/or contemporary reference conditions. Forty-nine percent of the planning area is considered less resilient and 27 percent of the landscape is considered least resilient, indicating greater numbers of trees per acre than historic or contemporary reference conditions. Resilient areas are located at higher elevations and in the wilderness, while least resilient areas are typically located in canyons and are intermixed with less resilient areas (Gross et al. 2017). Because the Tahoe PTEIR program area includes more developed and urban areas and at lower elevations than in the Lake Tahoe West planning area, the number of trees per acre and proportion of resilient, less resilient, and least resilient areas may be somewhat different.

Across all vegetation types in the Lake Tahoe West landscape, early development stands are located primarily in higher elevations, while late development stands are scattered throughout the landscape. Mid-development stands are over-represented while late seral stands tend to be under-represented. In the Lake Tahoe West planning area, mid-seral forests are overrepresented in the vast majority (87 percent) of the west shore and late seral stages (i.e., old growth) are underrepresented, while 10 percent of the landscape is characterized as resilient (i.e., seral stages are appropriately represented) (Gross et al. 2017).

In the vicinity of the program area, there is a lack of forest stage diversity and high tree densities that, among other factors, decrease the resilience of the forest to many disturbance types (e.g., fire, drought, insect, and disease) and may impact the quality and quantity of wildlife habitat.

3.4.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The analysis of environmental impacts on forestry resources focuses on the potential for conversion of forest land to non-forest uses, and potential conflicts with policies or regulations intended to protect forest land. Significance determinations account for the influence of relevant SPRs, CFPRs, and TRPA regulations, which are incorporated into treatment design.

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, an impact on agricultural and forestry resources is considered significant if implementation of later projects under the Tahoe PTEIR would:

- ▶ result in the loss of forest land or conversion of forest land to non-forest use; or
- ▶ involve other changes in the existing environment, which, due to their location or nature, could result in conversion of forest land to non-forest use.

IMPACTS AND MITIGATION MEASURES

Impact 3.4-1: Potential to Result in the Loss of Forest Land or Conversion of Forest Land to a Non-Forest Use

The forest management and fuel reduction activities of the proposed program would retain sufficient vegetation within treatment areas. Although, treatment activities would alter forest land through vegetation removal, the area would generally support more than 10 percent of native tree cover thereby maintaining consistency with the definition of forest land as defined by PRC Section 12220(g). Additionally, later treatment activities would be required to obtain tree removal permits from TRPA and comply with the minimum average residual basal area requirements of PRC Section 952.7(b) to maintain postharvest conifer stocking levels and achieve maximum sustained production. Treatment activities under the proposed program would not result in the loss of forest land or conversion of forest land to a non-forest use. This impact would be **less than significant**.

As described under the heading "Land Uses," above, the program area predominately includes general forest area, recreation lands, and residential areas. The proposed program would implement a long-term, vegetation management program for the primary purpose of reducing the risk of wildfire through mechanical thinning, manual thinning, and prescribed understory burning. Treatment activities would consist of strategic removal of vegetation to prevent or slow the spread of wildfire between structures and wildlands and vice versa, which would protect forested areas in the program area by reducing the risk of catastrophic wildfire that could drastically alter the vegetation of the forest. Additionally, the fuel treatment activities under the proposed program would meet the program objectives related to increasing Lake Tahoe Basin forest resilience to effects of climate change, including prolonged drought, pest and disease outbreaks, and increased tree mortality. The fuel treatment activities would also implement all-lands fuel reduction, forest health improvement, and restoration projects that deliver multiple community and ecosystem service benefits.

In addition to shaded fuel break/defensible space, sanitation-salvage, and restoration prescriptions, the proposed program would utilize single-tree, group selection, and tree thinning prescriptions that would hasten the growth of residual trees; reduce inter-tree competition for water, sunlight, and soil nutrients; support stand health and vigor; and support site conditions required for natural regeneration of the stand. As described in Section 2.3.1, "Silvicultural Prescriptions," the prescriptions for later treatment activities would achieve and maintain residual basal areas of 70 to 120 sq. ft./ac., with some treatments potentially resulting in minimum residual basal area of 50 sq. ft./ac., where warranted by site conditions. Prior to implementation of each later treatment activity, a forester would determine the site condition(s) within the treatment site and develop a silvicultural prescription tailored to the project objectives and conditions at the treatment site. As part of the prescription, the forester would ensure that the prescription complies with the Resource Conservation Standards of PRC Section 952.7(b) for meeting minimum average basal area requirements of 85 sq. ft./ac. on Site I lands and 50 square feet on lands of Site II classification and lower immediately following timber operations. Thus, the proposed program would maintain postharvest conifer stocking levels that were specifically developed to maintain maximum sustained production for fuel reduction projects.

Although later treatment activities would alter forest land through vegetation removal, the area would generally support more than 10 percent of native tree cover throughout the program area thereby maintaining consistency with the definition of forest land as defined by PRC Section 12220(g). Additionally, as applicable, later treatment activities would obtain the necessary tree removal permits from TRPA. For the reasons described herein, implementation of the proposed program would not directly result in the loss of forest land or convert forest land to a non-forest use or involve other changes in the existing environment that would conflict with regulations that protect forest land or could result in conversion of forest land to non-forest use. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

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3.5 AIR QUALITY

This section describes existing air quality conditions within the program area and identifies regulations applicable to the types of emissions-generating treatment activities that could occur as part of the program. It presents an analysis of potential air quality impacts associated with implementation of the program and describes feasible mitigation measures to reduce potentially significant impacts to air quality.

One comment was received regarding the notice of preparation related to the potential for increased fugitive dust emissions and the concern that this may increase sediment in Lake Tahoe. The topic of fugitive dust is addressed in Impact 3.5-1.

3.5.1 Regulatory Setting

Air quality in program area is regulated by the U.S. Environmental Protection Agency (EPA), California Air Resources Board (CARB), the Tahoe Regional Planning Agency (TRPA), the Placer County Air Pollution Control District (PCAPCD), and the El Dorado County Air Quality Management District (EDCAQMD). These agencies work to improve air quality through legislation, planning, policy making, education, and a variety of programs. The regulations of the agencies responsible for improving air quality in the program area are discussed below.

FEDERAL

Clean Air Act

The EPA is responsible for implementing national air quality programs. EPA's air quality mandates draw primarily from the federal Clean Air Act (CAA), which was enacted in 1970, and the major amendments made by Congress in 1990. EPA's air quality efforts address both criteria air pollutants (CAPs) and hazardous air pollutants (HAPs). EPA regulations concerning criteria air pollutants and HAPs are presented in greater detail below.

Criteria Air Pollutants

The CAA required EPA to establish national ambient air quality standards (NAAQS) for six common air pollutants found all over the U.S., referred to as criteria air pollutants. EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), respirable particulate matter with aerodynamic diameter of 10 micrometers or less (PM₁₀) and fine particulate matter with aerodynamic diameter of 2.5 micrometers or less (PM_{2.5}), and lead. The NAAQS are shown in Table 3.5-1. The primary standards protect public health and the secondary standards protect public welfare. The CAA also required each state to prepare a State Implementation Plan (SIP) for attaining and maintaining the NAAQS. The federal Clean Air Act Amendments (CAAA) of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. California's SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and whether implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, EPA may prepare a federal implementation plan that imposes additional control measures. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary air pollution sources in the air basin.

Table 3.5-1 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California (CAAQS) ^{1,2}	National (NAAQS) ³ Primary ^{2,4}	National (NAAQS) ³ Secondary ^{2,5}
Ozone	1-hour	0.09 ppm (180 µg/m ³)	—	Same as primary standard
	8-hour	0.070 ppm (137 µg/m ³)	0.070 ppm (137 µg/m ³)	
Carbon monoxide (CO)	1-hour	20 ppm (23 mg/m ³)	35 ppm (40 mg/m ³)	Same as primary standard
	8-hour	6 ppm (7 mg/m ³)	9 ppm (10 mg/m ³)	
Nitrogen dioxide (NO ₂)	Annual arithmetic mean	0.030 ppm (57 µg/m ³)	53 ppb (100 µg/m ³)	Same as primary standard
	1-hour	0.18 ppm (339 µg/m ³)	100 ppb (188 µg/m ³)	—
Sulfur dioxide (SO ₂)	24-hour	0.04 ppm (105 µg/m ³)	—	—
	3-hour	—	—	0.5 ppm (1300 µg/m ³)
	1-hour	0.25 ppm (655 µg/m ³)	75 ppb (196 µg/m ³)	—
Respirable particulate matter (PM ₁₀)	Annual arithmetic mean	20 µg/m ³	—	Same as primary standard
	24-hour	50 µg/m ³	150 µg/m ³	
Fine particulate matter (PM _{2.5})	Annual arithmetic mean	12 µg/m ³	12.0 µg/m ³	15.0 µg/m ³
	24-hour	—	35 µg/m ³	Same as primary standard
Lead ⁶	Calendar quarter	—	1.5 µg/m ³	Same as primary standard
	30-Day average	1.5 µg/m ³	—	—
	Rolling 3-Month Average	—	0.15 µg/m ³	Same as primary standard
Hydrogen sulfide	1-hour	0.03 ppm (42 µg/m ³)	No national standards	
Sulfates	24-hour	25 µg/m ³		
Vinyl chloride ⁷	24-hour	0.01 ppm (26 µg/m ³)		
Visibility-reducing particulate matter ⁶	8-hour	Extinction coefficient of 0.07 per kilometer		

Notes: µg/m³ = micrograms per cubic meter; km = kilometers; ppb = parts per billion; ppm = parts per million.

¹ California standards for ozone, carbon monoxide, SO₂ (1- and 24-hour), NO₂, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

² Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) and pressure of 760 torr. Most measurements of air quality are corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

³ National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. The PM₁₀ 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. The PM_{2.5} 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. Environmental Protection Agency for further clarification and current federal policies.

⁴ National primary standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

⁵ National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

⁶ Specific to the Lake Tahoe Air Basin

⁷ The California Air Resources Board has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Source: CARB 2016

Toxic Air Contaminants and Hazardous Air Pollutants

Toxic air contaminants (TACs), or in federal parlance, hazardous air pollutants (HAPs), are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

A wide range of sources, from industrial plants to motor vehicles, emit TACs. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage; or short-term acute health effects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches.

For evaluation purposes, TACs are separated into carcinogens and non-carcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. This contrasts with criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 3.5-1). Cancer risk from TACs is expressed as excess cancer cases per one million exposed individuals, typically over a lifetime of exposure.

EPA regulates HAPs through its National Emission Standards for Hazardous Air Pollutants. The standards for each particular source category require the maximum degree of emission reduction that the EPA determines to be achievable, which are known as the Maximum Achievable Control Technology standards. These standards are authorized by Section 112 of the CAA and the regulations are published in Title 40 of the Code of Federal Regulations Parts 61 and 63.

Federal Advisory Committee Act

Established through a charter, the purpose of the Federal Advisory Committee Act (FACA) Wildland Fire Issues Group was to provide EPA recommendations for revising its policies for implementing the current NAAQS for PM₁₀ and any new NAAQS for PM_{2.5}, with respect to prescribed burns and their impact. Although the Charter for the FACA for Ozone, Particulate Matter, and Regional Haze has expired, the findings of the Wildland Fire Issues Group pertain to prescribed burns in relation to air quality. Most importantly, the *Interim Air Quality Policy on Wildland and Prescribed Burns* was produced by the group and is the national standard when local guidelines have not been established. The document outlines the following: Smoke Management Programs; who is accountable when a prescribed burn results in exceedances of the NAAQS; and overall objectives for prescribed burns in relation to air quality (EPA 1998). Although local guidelines have been established and are discussed below, the *Interim Air Quality Policy on Wildland and Prescribed Burns* is included to provide context on how prescribed burns are regulated at the federal level.

Prescribed Burn Smoke Management Guide

The National Wildfire Coordinating Group was originally chartered by the U.S. Secretaries of the Interior and Agriculture in 1976. In 2001, NWCG's Fire Use Working Team sponsored the creation of the *Smoke Management Guide for Prescribed and Wildland Fire* (NWCG 2018). The guide outlines why fire is important to the ecosystem, regulations that impact smoke management, best management practices for reducing emissions during prescribed burn, and ways to monitor air quality during prescribed burns. As recommended by the EPA, the NWCG's *Smoke Management Guide for Prescribed and Wildland Fire* was consulted for emissions calculations, as detailed in Appendix D.

Tahoe Regional Planning Agency

Tahoe Regional Plan

TRPA has jurisdiction within the Lake Tahoe Air Basin (LTAB) portion of Placer and El Dorado Counties in regard to air quality. Therefore, the Air Quality Subelement of the Goals and Policies document focuses on achieving the NAAQS and CAAQS, as well as special TRPA-adopted regional and sub-regional visibility standards, and on reducing the deposition of nitrate from NO_x emitted by vehicles. The TRPA Code of Ordinances (Code) and the Regional Transportation Plan

contain specific measures designed to monitor and achieve the air quality objectives of the Regional Plan (TRPA 2012). PCAPCD and EDCAQMD rules and regulations (discussed below) also have certain applications in the LTAB.

Goals and policies of the Regional Plan that are related to air quality are in the Land Use Element. Goals and policies relevant to the proposed program include:

GOAL AQ-1: Attain and maintain air quality in the region at levels that are healthy for humans and the ecosystem, achieve and maintain environmental thresholds and do not interfere with residents' and visitors' visual experience.

It is intended that implementation of the control measures contained in the Air Quality Subelement and other TRPA programs will lead to attainment of the TRPA threshold standards and will also lead to attainment and maintenance of federal and state air quality standards.

- ▶ **Policy AQ-1.1:** Coordinate with other agencies and jurisdictions to reduce emissions, exposures, and health and environmental risks when developing and implementing programs, plans, and projects.

The Regional Plan will facilitate cooperative efforts that efficiently attain and maintain air quality threshold standards, and federal and state air quality standards, while at the same time achieving other threshold standards.

- ▶ **Policy AQ-1.2:** Reduce or limit sources of pollutants that degrade visibility.

Some air pollutants, such as fugitive dust and wood smoke, degrade visibility as well as harm human or ecosystem health. The Regional Plan will control those pollutants to minimize their impact on visibility, as well as their impact on human or ecosystem health.

- ▶ **Policy AQ-1.3:** Encourage the reduction of emissions from motor vehicles and other motorized machinery in the region.

Significant emissions of air pollutants including greenhouse gases (GHGs) and entrained dust are produced by automobiles, motor vehicles and other gas-powered machinery in the Region. The Land Use Subelement and the Transportation Element contain Goals and Policies to reduce the amount of air pollution generated from motor vehicles in the Region. Additionally, TRPA shall pursue other feasible and cost-effective opportunities to reduce emissions from motor vehicles and other gas-powered machinery in the Region.

- ▶ **Policy AQ-1.4:** Encourage the reduction of emissions from gas appliances.

Additional emissions of air pollutants are produced by building appliances. TRPA shall seek feasible and cost-effective opportunities to reduce emissions from gas appliances in the Region.

- ▶ **Policy AQ-1.5:** Encourage the reduction of emissions through building efficiency.

Construction of energy efficient buildings, replacement of energy inefficient buildings, and improvements to the efficiency of existing buildings can significantly reduce air pollutant emissions in the Region. TRPA shall seek feasible opportunities to promote energy efficient buildings in the Region.

- ▶ **Policy AQ-1.6:** Reduce emissions from wood burning stoves in the region and require wood stoves to comply with current EPA emissions standards with a target compliance date of 2020.

Older, less efficient wood burning appliances emit more air pollutants than newer, more efficient appliances. A faster rate of replacement of old inefficient wood burning appliances with newer cleaner burning technology will benefit attainment of the air quality threshold standards.

- ▶ **Policy AQ-1.7:** Promote the reduction of air quality impacts from construction and property maintenance activities in the region.

- ▶ **Policy AQ-1.8:** Promote technologies that reduce the air quality impacts of prescribed burning, or non-burning methods of reducing hazardous forest fuels, where practical.

GOAL AQ-2: Maintain an effective air quality mitigation program for the region.

Administer a program that effectively mitigates significant air quality impacts resulting from new projects or changes in use. Under the mitigation program, impact fees and mitigation measures are among the strategies to address significant impacts.

- ▶ **Policy AQ-2.1:** In addition to other policies and regulations intended to minimize air quality impacts of development, collect and expend air quality mitigation fees to offset air pollution in coordination with the environmental improvement program (EIP) a portion of mitigation funds shall be expended in the local jurisdiction where the funds are generated, and a portion of the funds may be used on the most cost effective and environmentally beneficial projects in the region.

Thresholds

TRPA has adopted threshold standards (thresholds) related to air quality and other resources for the Tahoe Region. TRPA's thresholds address CO, ozone, regional and subregional visibility, respirable (PM₁₀) and fine (PM_{2.5}) particulate matter, and nitrate deposition. TRPA established numerical standards for each of these parameters and developed management standards to assist in attaining the environmental carrying capacity thresholds. Environmental thresholds carrying capacities for air quality are listed below:

Carbon Monoxide

- ▶ **Numerical Standard:**
 - AQ1) Maintain CO concentrations at or below 6 parts per million (ppm) averaged over 8 hours.
- ▶ **Management Standard:**
 - AQ2) Reduce traffic volumes on the U.S. 50 Corridor by 7 percent during the winter from the 1981 base year between 4:00 p.m. and 12:00 midnight, provided that those traffic volumes shall be amended as necessary to meet the respective state standards.

Ozone

- ▶ **Numerical Standards:**
 - AQ3) Maintain ozone concentrations at or below 0.08 ppm averaged over 1 hour.
 - AQ4) Maintain NO_x emissions at or below the 1981 level.

Regional Visibility

- ▶ **Numerical Standards:**
 - AQ5) Achieve an extinction coefficient of 25 inverse mega meters (Mm⁻¹) at least 50 percent of the time as calculated from aerosol species concentrations measured at the Bliss State Park monitoring site (visual range of 156 kilometers, 97 miles). Calculations will be made on three year running periods. Beginning with the existing 1991-93 monitoring data as the performance standards to be met or exceeded.
 - AQ6) Achieve an extinction coefficient of 34 Mm⁻¹ at least 90 percent of the time as calculated from aerosol species concentrations measured at the Bliss State Park monitoring site (visual range of 115 kilometers, 71 miles). Calculations will be made on three year running periods. Beginning with the existing 1991-93 monitoring data as the performance standards to be met or exceeded.

Subregional Visibility

- ▶ **Numerical Standards:**
 - AQ7) Achieve an extinction coefficient of 50 Mm⁻¹ at least 50 percent of the time as calculated from aerosol species concentrations measured at the South Lake Tahoe monitoring site (visual range of 78 kilometers, 48 miles). Calculations will be made on three year running periods. Beginning with the existing 1991-93 monitoring data as the performance standards to be met or exceeded.

- AQ8) Achieve an extinction coefficient of 125 Mm^{-1} at least 90 percent of the time as calculated from aerosol species concentrations measured at the South Lake Tahoe monitoring site (visual range of 31 kilometers, 19 miles). Calculations will be made on three year running periods. Beginning with the existing 1991-93 monitoring data as the performance standards to be met or exceeded.

Respirable and Fine Particulate Matter

▶ Numerical Standards:

- AQ9) PM₁₀ 24-hour Standard: Maintain PM₁₀ at or below $50 \mu\text{g}/\text{m}^3$ measured over a 24-hour period in the portion of the Region within California and maintain PM₁₀ at or below $150 \mu\text{g}/\text{m}^3$ measured over a 24-hour period in the portion of the Region within Nevada. PM₁₀ measurements shall be made using gravimetric or beta attenuation methods or any equivalent procedure which can be shown to provide equivalent results at or near the level of air quality standard.
- AQ10) PM₁₀ Annual Arithmetic Average - Maintain PM₁₀ at or below annual arithmetic average of $20 \mu\text{g}/\text{m}^3$ in the portion of the Region within California and maintain PM₁₀ at or below annual arithmetic average of $50 \mu\text{g}/\text{m}^3$ in the portion of the Region within Nevada. PM₁₀ measurements shall be made using gravimetric or beta attenuation methods or any equivalent procedure which can be shown to provide equivalent results at or near the level of air quality standard.
- AQ11) PM_{2.5} 24-hour Standard - Maintain PM_{2.5} at or below $35 \mu\text{g}/\text{m}^3$ measured over a 24-hour period using gravimetric or beta attenuation methods or any equivalent procedure which can be shown to provide equivalent results at or near the level of air quality standard.
- AQ12) PM_{2.5} Annual Arithmetic Average - Maintain PM_{2.5} at or below annual arithmetic average of $12 \mu\text{g}/\text{m}^3$ in the portion of the Region within California and maintain PM_{2.5} at or below annual arithmetic average of $15 \mu\text{g}/\text{m}^3$ in the portion of the Region within Nevada. PM_{2.5} measurements shall be made using gravimetric or beta attenuation methods or any equivalent procedure which can be shown to provide equivalent results at or near the level of air quality standard.

Nitrate Deposition

▶ Management Standards:

- AQ13) Reduce the transport of nitrates into the Basin and reduce NO_x produced in the Basin consistent with the water quality thresholds.
- AQ14) Reduce vehicle miles of travel in the Basin by 10 percent of the 1981 base year values.

Attainment status and trends of each air quality indicator are summarized in the 2015 Threshold Evaluation Report (TRPA 2016). In addition, the TRPA compact between California and Nevada states that the Regional Plan shall provide for attaining and maintaining federal, state, or local air quality standards, whichever are strictest, in the respective portions of the Tahoe Region for which the standards are applicable.

Code of Ordinances

Sections of the TRPA Code of Ordinances relevant to the proposed program include the following:

Chapter 33—Grading and Construction

Chapter 33 specifies requirements about grading, excavation, filling, clearing of vegetation, or soil disturbance which include limiting ground-disturbing activities to the portion of the calendar year between May 1 and October 15 unless approval is granted by TRPA.

Chapter 61.2—Prescribed Burning

Chapter 61.2 sets forth standards and regulations pertaining to the use of fire in controlled circumstances for vegetation management. Performance standards related to air quality include limiting prescribed burning to time periods where atmospheric conditions will allow complete dispersion of the smoke during each day of the burn.

Section 61.2.5 requires preparation of a burn prescription with a detailed description of the burn, timing, meteorological conditions under which the burn would take place, and additional information that TRPA may require.

Chapter 65.1—Air Quality Control

The purpose of Chapter 65.1 is to attain and maintain applicable state and federal air quality standards and TRPA thresholds. The chapter applies to direct sources of air pollution in the Tahoe Region, including certain on-road motor vehicles registered in the region, combustion heaters installed in the region, open burning and stationary sources of air pollution, and idling combustion engines. The following provisions are potentially applicable to the program:

- ▶ Section 65.1.5, “Open Burning,” specifies performance standards for prescribed burning pursuant to the provisions of Section 61.2.
- ▶ Section 65.1.8, “Idling Restrictions,” states that no person shall cause a combustion engine in a parked auto, truck, bus, or boat to idle for more than 30 consecutive minutes in the designated plan areas (with limited exemptions). It also states that no person shall cause a diesel engine in a vehicle exceeding 10,000 pounds gross vehicle weight or a diesel engine in off-road self-propelled equipment exceeding 25 horsepower to idle more than 15 minutes within the portions of the region in Nevada, or to idle longer than 5 minutes within the portions of the region in California.

STATE

California Clean Air Act

The Mulford-Carrell Air Resources Act of 1967 created the California Air Resources Board (CARB) and required it to adopt statewide air quality standards, which are referred to as the California Ambient Air Quality Standards (CAAQS). CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required local air districts to develop and implement plans to achieve the CAAQS. The CAAQS are presented with the NAAQS in Table 3.5-1. As shown in Table 3.5-1, CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. For most criteria air pollutants, the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the State endeavor to attain and maintain the CAAQS by the earliest date practical. The CCAA specifies that local air districts should focus attention on reducing the emissions from transportation and area-wide emission sources. The CCAA also provides air districts with the authority to regulate indirect sources.

Tanner Air Toxics Act of 1983 and Air Toxics Hot Spots Information and Assessment Act of 1987

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807, Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588, Chapter 1252, Statutes of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Research, public participation, and scientific peer review are required before CARB can designate a substance as a TAC. CARB has adopted all EPA-identified HAPs as TACs and identified 21 additional substances as TACs, including particulate matter exhaust from diesel engines (diesel PM) (CARB 2011a).

After a TAC is identified, CARB then adopts an airborne toxics control measure for sources that emit that particular TAC. If a safe threshold exists for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If no safe threshold exists, the measure must incorporate best available control technology for toxics to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare an inventory of toxic emissions, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including off-road diesel equipment (e.g., tractors, generators). Over time, the replacement of older vehicles and equipment will result in a vehicle and equipment fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of CARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be 85 percent less in 2020 than they were in 2000 (CARB 2000). Adopted regulations are also expected to continue to reduce formaldehyde emissions emitted by cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

California Code of Regulations Title 17

Title 17 of the California Code of Regulations (CCR) addresses public health issues. Division 3 of Title 17 specifically addresses issues related to air resources, such as: Air Basins and Air Quality Standards (Subchapter 1.5), Smoke Management Guidelines for Agricultural and Prescribed Burning (Subchapter 2), Toxic Air Contaminants (Subchapter 7), and Asbestos (Subchapter 7.5). These topics are relevant because treatment activities could result in criteria air pollutant and TAC emissions that affect air quality and health, include prescribed burning, and could occur in areas where naturally occurring asbestos (NOA) is present.

CARB oversees California's Smoke Management Program, which addresses potentially harmful smoke impacts from agricultural, forest, and rangeland management burning operations. The legal basis of the program is found in 17 CCR Section 80100 et. seq., *Smoke Management Guidelines for Agricultural and Prescribed Burning*, adopted by CARB in 2000 (CARB 2011b). Under these guidelines, air districts implement a daily burn authorization system under which they specify the amount, timing, and location of burns for the purposes of minimizing smoke impacts on sensitive areas, avoiding cumulative smoke impacts, and preventing public nuisances from occurring. Through the burn authorization system, air districts authorize no more burning on a daily basis than is appropriate considering meteorological and air quality conditions (CARB 2000).

Adoption of the amendments to the Smoke Management Guidelines for Agricultural and Prescribed Burning by CARB in 2000 triggered a CEQA analysis. CARB concluded that adoption of these guidelines would not cause significant adverse environmental impacts. CARB further concluded, in regard to air quality impacts, that compliance with the guidelines should result in reduced smoke impacts, improved air quality, and progress towards achievement of CAA and CCAA requirements, and also posited that potential benefits from the program may accrue from a reduction in risk of wildland fires because of increased prescribed burning activities (CARB 2000).

Prescribed Fire Information Reporting System

The Prescribed Fire Information Reporting System (PFIRS) was developed in response to Title 17 of the CCR and serves as an interface between air quality regulators, land management agencies and individuals that conduct prescribed burning in California. The system facilitates communications by providing access to a database containing information on burn planning, burn approvals and emissions information. PFIRS enables individuals involved in prescribed burning the ability to view this information on a statewide level. PCAPCD and EDCAQMD use PFIRS to register and report many of their burns, but it is not mandatory to use PFIRS. CARB is working to enroll more air districts in the use of PFIRS. CAL FIRE is providing information to PFIRS for all prescribed burns.

Senate Bill 1260, Statutes of 2018

SB 1260 was adopted in September 2018 in response to the devastating California wildfires, and seeks to address wildfire prevention by increasing the use of prescribed burning as a vegetation treatment tool. SB 1260 directs CAL FIRE to work cooperatively with nonprofits and others on planning and implementing prescribed burning on federally and privately owned property in the state. Additionally, the bill establishes training standards for personnel authorized to conduct prescribed burns and clarifies liability for landowners operating under a CAL FIRE permit. The bill also mandates that CAL FIRE and CARB, in coordination with local air pollution control and air quality management districts, develop a program to enhance air quality and smoke monitoring and to provide a public

awareness campaign regarding prescribed burns. In response, CARB and CAL FIRE have established a joint monitoring program that couples air quality measurements taken near prescribed burns with onsite measurements of short- and long-term effects on fire hazard and ecological characteristics.

California Smoke Management Program

Each air district controls emissions by regulating the amount, timing and location of burn events to minimize air quality impacts from smoke. All open burning is restricted to permissive burn days, marginal burn days, or through variances permitted by local air districts. CARB and local districts use information about existing air quality conditions and meteorological predictions to determine whether to allow burning, and if so, the volume and locations of burning on any given day. Each air district, fire control agency, or burning permit agency has the authority to be more restrictive than CARB to avoid or minimize impacts to air quality. Land managers who seek to conduct prescribed burns must register yearly or seasonally with their local district and, when applicable, submit a smoke management plan (SMP) for approval from the air district before burning. Even on otherwise permissive burn days, land managers (or his/her designee conducting the prescribed burn) must ensure that all conditions and requirements agreed to in the approved SMP are met on the day of the burn event before ignition (17 CCR Section 80160(j)).

Under the California Smoke Management Program, each air district is required to regulate prescribed burning through adoption of its own Smoke Management Program that adheres to the overall objectives and goals of the California Smoke Management Program. Each air district's smoke management program must include procedures for public notification and education, including the appropriate signage at burn sites, and for reporting smoke complaints (17 CCR Section 80160). Before obtaining district permission to burn, a burn manager must register their burn with the local air district, obtain an air district and/or fire agency burn permit, submit a SMP to the air district, and obtain air district approval of the SMP.

LOCAL

Placer County Air Pollution Control District

PCAPCD attains and maintains air quality conditions in Placer County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. PCAPCD's clean air strategy includes preparing plans for the attainment of ambient air quality standards, adopting, and enforcing rules and regulations concerning sources of air pollution, and issuing permits for stationary sources of air pollution. PCAPCD also inspects stationary sources of air pollution to verify compliance with applicable permit limits and air quality standards, as well as responding to citizen complaints, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the CAA, CAAA, and CCAA. These efforts to improve air quality by PCAPCD will ultimately help California meet the goals of its SIP by achieving attainment status in the LTAB.

All projects in Placer County are subject to PCAPCD's adopted rules and regulations. Specific rules applicable to the program may include but are not limited to the following:

- ▶ Rule 202—Visible Emissions
- ▶ Rule 205—Nuisance
- ▶ Rule 228—Fugitive Dust
- ▶ Rule 303—Prescribed Burning Smoke Management

The Smoke Management Program was adopted by the Board in December of 2001 to allow for agricultural and prescribed burning as resource management tools, while at the same time minimizing smoke impacts to the public. The program is divided into six sections:

- ▶ **Permitting:** An air permit is required for all agricultural and prescribed burning projects. The air permit includes conditions that limit burning to permissive burn days, limit types of material to be burned, require material that is burned to be free of moisture and dirt, and require approved ignition devices be used. The permit allows

PCAPCD to add conditions to limit the amount of material to be burned or burn hours if necessary. Additionally, PCAPCD may issue special permits for agricultural or prescribed burning on no-burn days if denial of such permits would threaten imminent and substantial loss.

- ▶ **Registration and Reporting:** All persons who want to conduct prescribed burning must register their planned burn projects with PCAPCD. The burn registration must include the name of the permittee, including a contact person with phone number; a listing of all projects planned, with legal descriptions of their locations; and an estimate of the total acreage and/or tons of material to be burned. A daily report must be submitted to PCAPCD during the burn season.
- ▶ **Burn Authorization System:** PCAPCD operates a daily burn authorization system that specifies the amount, timing, and location for each burn project. Burn authorizations are issued no more than 24 hours in advance of ignition of each project. A burn authorization from PCAPCD only authorizes the ignition of a burn if the smoke management conditions specified in the SMP are met at the time of ignition and for the duration of the burn. It is the burner's responsibility to ensure all conditions listed in the SMP are met before ignition. Multi-day burns or burns greater than 250 acres to be burned in one day require daily authorization from PCAPCD through CARB's consultation process.
- ▶ **Smoke Management Planning:** Prescribed burns less than 10 acres in size or that will emit less than one ton of particulate matter may only need to obtain an air permit. Burn projects greater than 10 acres or that will emit in excess of one ton of particulate matter must complete a SMP. The SMP specifies the "smoke prescription," which is a set of air quality, meteorological, and fuel conditions that must exist before burn ignition may be allowed. SMPs for prescribed burns greater than 10 acres in size or estimated to produce more than one ton of particulate matter are required to include the following information: meteorological prescription, contingency actions, smoke mitigation, burning alternatives, smoke sensitive receptors, public notification and complaint handling procedures, and smoke monitoring. For burns that are either in excess of 250 acres, created smoke impacts, or were burned on No Burn Days, the responsible burn agency must complete a District Project Post Burn Form. These are to be completed and returned to the District within 30 days from the completion of the burn project. This information will then be reviewed and can assist in issuing burn authorizations for similar projects.
- ▶ **Resources:** Resources include PCAPCD staff, meteorological resources, and air monitoring resources.
- ▶ **Inspection and Enforcement:** PCAPCD conducts on-site inspections of agricultural and prescribed burns each year, prioritized based on size and number of complaints.

PCAPCD's CEQA Handbook contains criteria used by PCAPCD to recommend when an air quality analysis should be needed, what types of analysis should be performed, and what kinds of mitigation measures should be identified to reduce overall air quality impacts from proposed land use projects. These criteria include specific methods for calculating emissions with references to applicable models, recommended thresholds for evaluating the level of significance, and mitigation strategies for mitigating a project's related air quality impacts. District-adopted significance thresholds for criteria air pollutants generated during the construction phase are 82 pounds per day (lb/day) for ROG, NO_x, and PM₁₀. During the operational phase, the thresholds are 55 lb/day for ROG, NO_x, and PM₁₀.

El Dorado County Air Quality Management District

EDCAQMD works to improve air quality and quality of life for El Dorado County residents by adopting and enforcing regulations to control emissions from all sources other than motor vehicles, including agricultural/open burning in the LTAB. EDCAQMD also responds to citizen complaints and issues permits for stationary sources of air pollution, periodically inspecting these point sources to verify compliance with applicable permit limits and air quality standards. These efforts to improve air quality by EDCAQMD will ultimately help California meet the goals of its SIP by achieving and maintaining attainment status in the LTAB. Specific rules and regulations applicable to the program may include but are not limited to the following:

- ▶ Rule 202—Visible Emissions
- ▶ Rule 207—Particulate Matter

- ▶ Rule 223-1—Fugitive Dust
- ▶ Rule 300—Open Burning

Rule 300 specifies the standards for forest management/range improvement burning, which must comply with the district's minimum drying time; no-burn day; smoke management; burn permitting, planning, and reporting; and noticing standards. Specifically, burn plans are required at least 30 day in advance of the proposed burn and must include information such as location, objectives, acreage or tonnage of vegetation to be burned, type and arrangement of vegetation, fuel prescription, projected schedule and duration, and specifications for monitoring and notification.

EDCAQMD's *Guide to Air Quality Assessment* (EDCAQMD 2002) sets forth qualitative and quantitative significance criteria for air quality impacts. It describes existing air quality in the county, types of emission sources, significance criteria, project screening and calculation methods, and various mitigation measures for project construction and operation. District-adopted significance thresholds for criteria air pollutants generated are 82 lb/day for ROG and NO_x.

El Dorado County General Plan

The El Dorado County General Plan (2019) contains the following relevant goals, objectives, and policies regarding air quality:

GOAL 6.7: Air Quality Maintenance. Strive to achieve and maintain ambient air quality standards established by the U.S. Environmental Protection Agency and the California Air Resources Board. Minimize public exposure to toxic or hazardous air pollutants and air pollutants that create unpleasant odors.

Objective 6.7.1: El Dorado County Clean Air Plan. Adopt and enforce Air Quality standards to reduce the health impacts caused by harmful emissions.

- ▶ **Policy 6.7.1.1:** Improve air quality through land use planning decisions.
- ▶ **Policy 6.7.1.2:** Support local and regional air quality improvement efforts.

Objective 6.7.5: Agricultural and Fuel Reduction Burning. Adopt and maintain air quality regulations which will continue to permit agricultural and fuel reduction burning while minimizing their adverse effects.

Objective 6.7.6: Air Pollution-Sensitive Land Uses. Separate air pollution sensitive land uses from significant sources of air pollution.

- ▶ **Policy 6.7.6.1:** Ensure that new facilities in which sensitive receptors are located (e.g., schools, child care centers, playgrounds, retirement homes, and hospitals) are sited away from significant sources of air pollution.
- ▶ **Policy 6.7.6.2:** New facilities in which sensitive receptors are located (e.g. residential subdivisions, schools, childcare centers, playgrounds, retirement homes, and hospitals) shall be sited away from significant sources of air pollution.

3.5.2 Environmental Setting

The program area is in the LTAB, which is located within portions of El Dorado and Placer counties on the California side of the Tahoe Basin, and Washoe County, Douglas County, and the Carson City Rural District on the Nevada side. The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by the sources of air pollutants and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the quantity of emissions released by existing air pollutant sources, as discussed separately below.

CLIMATE, METEOROLOGY, AND TOPOGRAPHY

Lake Tahoe Air Basin

Lake Tahoe lies in a depression between the crests of the Sierra Nevada and Carson ranges at a surface elevation of 6,260 feet above sea level. The mountains surrounding Lake Tahoe are approximately 8,000 to 9,000 feet high, with some reaching beyond 10,000 feet. According to documents from the Tahoe Integrated Information Management System, the bowl shape of the LTAB has significant air quality implications. There are two meteorological regimes that affect air quality in the basin, as described below.

First, thermal inversions occur when a warm layer of air traps a cold layer of air at the surface of the land and lake. Locally generated air pollutants are often trapped in LTAB's "bowl" by frequent inversions that limit the amount of air mixing, which allows pollutants to accumulate. Inversions most frequently occur during the winter in the LTAB, however are common throughout the year. Often, wintertime inversions result in a layer of wood smoke, mostly from residential heating, which can be seen over the lake.

The second meteorological regime affecting air quality in the LTAB is the atmospheric transportation of pollutants from the Sacramento Valley and San Francisco Bay Area. Lake Tahoe's location directly to the east of the crest of the Sierra Nevada mountain range allows prevailing winds from the west, combined with local mountain upslope winds, to bring air from populated regions west of the Sierra to the LTAB. The strength of this pattern depends largely on atmospheric temperature, which is usually highest in the summer, beginning in April and ending in late October.

Based on historic data from 1903 to 2016 from the Western Regional Climate Center (WRCC) Tahoe City Station, the normal annual precipitation is approximately 31.5 inches and average total snowfall is 190.7 inches. January temperatures range from a normal minimum of 19.1°F to a normal maximum of 38.6°F. July temperatures range from a normal minimum of 44.4°F to a normal maximum of 77.9°F (WRCC 2016).

CRITERIA AIR POLLUTANTS

Concentrations of criteria air pollutants are used to indicate the quality of the ambient air. A brief description of key criteria air pollutants is provided below. Emission source types and health effects are summarized in Table 3.5-2.

Table 3.5-2 Sources and Health Effects of Criteria Air Pollutants

Pollutant	Sources	Acute ¹ Health Effects	Chronic ² Health Effects
Ozone	Secondary pollutant resulting from reaction of ROG and NO _x in presence of sunlight. ROG emissions result from incomplete combustion and evaporation of chemical solvents and fuels; NO _x results from the combustion of fuels	increased respiration and pulmonary resistance; cough, pain, shortness of breath, lung inflammation	permeability of respiratory epithelia, possibility of permanent lung impairment
Carbon monoxide (CO)	Incomplete combustion of fuels; motor vehicle exhaust	headache, dizziness, fatigue, nausea, vomiting, death	permanent heart and brain damage
Nitrogen dioxide (NO ₂)	combustion devices; e.g., boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines	coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis or pulmonary edema; breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat, death	chronic bronchitis, decreased lung function
Sulfur dioxide (SO ₂)	coal and oil combustion, steel mills, refineries, and pulp and paper mills	Irritation of upper respiratory tract, increased asthma symptoms	Insufficient evidence linking SO ₂ exposure to chronic health impacts
Respirable particulate matter (PM ₁₀), Fine	fugitive dust, soot, smoke, mobile and stationary sources, construction, fires and natural windblown dust, and formation in	breathing and respiratory symptoms, aggravation of existing	alterations to the immune system, carcinogenesis

Pollutant	Sources	Acute ¹ Health Effects	Chronic ² Health Effects
particulate matter (PM _{2.5})	the atmosphere by condensation and/or transformation of SO ₂ and ROG	respiratory and cardiovascular diseases, premature death	
Lead	metal processing	reproductive/ developmental effects (fetuses and children)	numerous effects including neurological, endocrine, and cardiovascular effects

Notes: NO_x = oxides of nitrogen; ROG = reactive organic gases.

¹ "Acute" refers to effects of short-term exposures to criteria air pollutants, usually at fairly high concentrations.

² "Chronic" refers to effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations.

Source: EPA 2018

Ozone

Ozone is a photochemical oxidant (a substance whose oxygen combines chemically with another substance in the presence of sunlight) and the primary component of smog. Ozone is not directly emitted into the air but is formed through complex chemical reactions between precursor emissions of reactive organic gases (ROG) and nitrogen oxides (NO_x) in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_x are a group of gaseous compounds composed of nitrogen and oxygen that result from the combustion of fuels.

Emissions of the ozone precursors ROG and NO_x have decreased over the past several years because of more stringent motor vehicle standards and cleaner burning fuels. Emissions of ROG and NO_x decreased from 2000 to 2010 and are projected to continue decreasing from 2010 to 2035 (CARB 2013).

Nitrogen Dioxide

NO₂ is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO₂ are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO₂. The combined emissions of NO and NO₂ are referred to as NO_x and are reported as equivalent NO₂. Because NO₂ is formed and depleted by reactions associated with photochemical smog (ozone), the NO₂ concentration in a particular geographical area may not be representative of the local sources of NO_x emissions (EPA 2012).

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM₁₀. PM₁₀ consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by reaction of gaseous precursors (CARB 2013). Fine particulate matter (PM_{2.5}) includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less.

Ultrafine Particulate Matter

More recently, ultrafine particulate matter (UFP) has become a topic of greater concern. UFP refers to a subfraction of currently regulated PM_{2.5} and PM₁₀ size particles. UFP is most often defined as particles with an aerodynamic diameter of 0.1 microns or smaller. Although UFP consists of only a small fraction of the total mass of PM emissions, ultrafine particles have a large surface area to volume ratio, thus allowing for a large of toxic substances attached to this surface area and concentrated in a small volume. Because of its small size, a given mass of UFP contains thousands to tens of thousands more particles. Moreover, also because of its size, UFP is highly penetrative to human tissues as compared to PM₁₀ and PM_{2.5} and can easily pass from the alveoli of the lungs into the bloodstream. UFP are also more easily able to cross the blood-brain barrier and exert neurotoxic effects. Observed human health effects in selected studies include lung function changes, airway inflammation, enhanced allergic responses, vascular thrombogenic effects, altered endothelial function, altered heart rate and heart rate variability, accelerated atherosclerosis, and increased markers of brain inflammation (Health Effects Institute 2013:3, 36, 39, 45, and 65). The predominant source of UFP is combustion by on-road vehicles, off-road vehicles, stationary sources, and vegetation burning (Health Effects Institute 2013:1, CARB 2006:3, Kleeman et al. 2007:1, and Black et al. 2017a).

Criteria Air Pollutant Emissions from Wildfires and Prescribed Burns

Wildfires and prescribed burns have occurred and continue to occur within the program area. Both produce smoke, which is composed of a complex mixture of CO₂, water vapor, CO, particulate matter, hydrocarbons, ROG, NO_x, trace minerals, and other organic chemicals specific to wood smoke (e.g. levoglucosan, mannosan, galactosan). There are thousands of individual compounds present in smoke. Smoke composition can vary widely and depends on multiple factors, including how efficiently a fuel burns, the fuel type and moisture content, the fire temperature, wind conditions, and other weather-related influences. Different types of wood and vegetation are composed of varying amounts of cellulose, lignin, tannins and other polyphenols, oils, fats, resins, waxes, and starches, which produce various compounds that are released as smoke when burned (CARB and CDPH 2016).

The primary criteria air pollutant of concern from smoke is PM_{2.5}, a criteria air pollutant for which a NAAQS and CAAQS have been established. As compared to PM₁₀, PM_{2.5} (including UFP) is transported farther from a burn site and can cause more severe, adverse health impacts because of its ability to penetrate more deeply into lung tissue. Emergency visits for respiratory symptoms increase in wildfire smoke-affected areas; specifically, patients are more likely to visit the emergency room for asthma, bronchitis, dyspnea, and symptoms of chronic obstructive pulmonary disease (Black et al. 2017a). Typically, wildfire smoke produces proportionately more PM_{2.5} and UFP compared to PM₁₀ (Black et al. 2017b).

The open burning of woody plant materials produces a higher mass of ROG, as compared to the combustion of fossil fuels. However, NO_x and SO_x emissions are comparatively lower (Black et al. 2017a). ROG emissions may oxidize with NO_x emissions from fire and other sources to contribute to spikes in ground-level ozone (NCAR 2008). Exposure to ozone may result in acute and chronic health impacts including coughing, pulmonary distress, lung inflammation, shortness of breath, and permanent lung impairment.

CO is another pollutant of concern generated by incomplete combustion of wood or other organic materials. Exposure to CO-containing smoke does not pose a significant hazard, except to some sensitive individuals and to individuals very close to the fire (e.g., firefighters). Individuals with cardiovascular disease may experience chest pain or cardiac arrhythmias from lower levels of CO exposure. CO exposure can cause headache, weakness, dizziness, confusion, nausea, disorientation, visual impairment, coma, and death, even in otherwise healthy individuals (CARB and CDPH 2016).

Although the same types of criteria air pollutants are generated by wildfires and prescribed burns, the characteristics of their smoke plumes can differ. Prescribed burns are controlled events that are carefully planned to reduce smoke-related impacts. Wildfires burn in uncontrolled and unplanned circumstances. When wildfires burn, how much smoke is generated, where smoke travels, and how long smoke is generated are not managed. Wildfire frequency is typically highest during summer and early fall months when fuels are driest and the likelihood of adverse weather conditions are present (i.e., high temperatures, low relative humidity, and sustained wind speeds). Under these conditions, wildfires consume more vegetation on a per-acre basis than prescribed burns, resulting in more smoke emissions per unit area (Berger et al. 2018). Wildfires also have a long smoldering phase, because wildfire containment strategies focus on extinguishing the flame phase on the perimeter of the burned areas to protect life and property, while the smoldering phase within the burned area is left to burn out, sometimes for months after a fire is contained. The smoldering phase of wood burning is associated with higher output of particulate matter and can account for a large proportion of the total emissions from a wildfire event (Black et al. 2017a).

Recent major wildfires have created hazardous air pollution conditions requiring health advisories and "spare the air" days far from the site of the fire. For instance, during the Camp Fire in Butte County, air quality became hazardous not only in Chico near the fire, but also more than one hundred miles away in more heavily populated communities, such as in Sacramento, Modesto, and San Francisco (Rowan 2018). Moreover, a Stanford University study found that children experienced greater health impacts, including a diminished immune response, when exposed to wildfire smoke than to smoke generated by prescribed burns (Prunicki et al. 2019). Thus, wildfires are generally far more likely to result in adverse air quality and public health impacts than prescribed burns (Berger et al. 2018).

MONITORING STATION DATA AND ATTAINMENT DESIGNATIONS

PCAPCD and EDCAQMD, in collaboration with CARB, operate a regional monitoring network that measures ambient concentrations of the six criteria air pollutants within the LTAB. Existing and probable future air quality conditions in portions of the LTAB in Placer and El Dorado Counties can generally be inferred from ambient air quality measurements conducted by PCAPCD and EDCAQMD at their nearby monitoring stations. These monitoring stations measure maximum daily concentrations and the number of days during which CAAQS or NAAQS for a given pollutant are exceeded. These data are available at CARB's website.

Both CARB and EPA use ambient air quality monitoring data to designate the attainment status of an air basin relative to the CAAQS and NAAQS for each CAP. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are "nonattainment," "attainment," and "unclassified." "Unclassified" is used in an area that cannot be classified based on available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of the nonattainment designation, called "nonattainment-transitional." The nonattainment-transitional designation is given to nonattainment areas that are progressing and nearing attainment. Attainment designations for the year 2016 through 2018 in the LTAB are shown in Table 3.5-3 for each CAP.

Table 3.5-3 Ambient Air Quality Standards and Designations for the Lake Tahoe Air Basin

Pollutant	Averaging Time	California		National ¹	
		Standards ^{2,3}	Attainment Status ⁴	Primary ³	Attainment Status ⁵
Ozone	1-hour	0.09 ppm (180 µg/m ³)	Attainment	–	–
	8-hour	0.070 ppm (137 µg/m ³)		0.070 ppm (137 µg/m ³)	Attainment
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m ³)	Attainment	35 ppm (40 mg/m ³)	Attainment (Maintenance)
	8-hour (Lake Tahoe)	6 ppm (7 mg/m ³)		9 ppm (10 mg/m ³)	
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	Attainment	0.053 ppm (100 µg/m ³)	Attainment
	1-hour	0.18 ppm (339 µg/m ³)		0.100 ppm (188 µg/m ³)	
Respirable Particulate Matter (PM ₁₀)	Annual Arithmetic Mean	20 µg/m ³	Nonattainment	–	–
	24-hour	50 µg/m ³		150 µg/m ³	Attainment
Fine Particulate Matter (PM _{2.5})	Annual Arithmetic Mean	12 µg/m ³	Attainment	12.0 µg/m ³	Attainment
	24-hour	–		–	
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.07 per kilometer — visibility of 30 mi or more	Unclassified	–	–

Notes: µg/m³ = micrograms per cubic meter; ppm = parts per million; "–" = not applicable.

¹ National standards (other than ozone, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM₁₀ 24-hour standard is attained when 99 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The PM_{2.5} 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact EPA for further clarification and current federal policies.

² California standards for ozone, CO (except in the Lake Tahoe Air Basin), SO₂ (1- and 24-hour), NO₂, PM, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California Ambient Air Quality Standards (CAAQS) are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

³ Concentration expressed first in units in which it was promulgated [i.e., parts per million (ppm) or micrograms per cubic meter (µg/m³)]. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas. Secondary national standards are also available from EPA.

- ⁴ Unclassified (U): pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
- Attainment (A): pollutant is designated attainment if the state standard for that pollutant was not violated at any site in the area during a 3-year period.
- Nonattainment (N): a pollutant is designated nonattainment if there was a least one violation of a state standard for that pollutant in the area. Non-attainment designations for ozone are classified as marginal, serious, severe, or extreme depending on the magnitude of the highest 8-Hour ozone design value at a monitoring site in a non-attainment area.
- Nonattainment/Transitional (NT): is a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for that pollutant.
- ⁵ Nonattainment (N): any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.
- Attainment (A): any area that meets the national primary or secondary ambient air quality standard for the pollutant.
- Unclassifiable (U): any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.
- Maintenance (M): any area previously designated nonattainment pursuant to the CAAA of 1990 and subsequently redesignated to attainment subject to the requirement to develop a maintenance plan under Section 175A of the CAA, as amended.

Source: CARB 2016, CARB 2018a, EPA 2019; data compiled by Ascent Environmental in 2019

TOXIC AIR CONTAMINANTS

According to the *California Almanac of Emissions and Air Quality*, the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most prevalent being diesel PM (CARB 2013). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether the engine includes an emissions control system. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, CARB has made preliminary concentration estimates based on a particulate matter exposure method. This method uses the CARB PM₁₀ emissions inventory database, ambient PM₁₀ monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene. Diesel PM poses the greatest health risk among these 10 TACs mentioned.

Naturally Occurring Asbestos

Asbestos is the common name for a group of naturally occurring fibrous silicate minerals that can separate into thin but strong and durable fibers. Naturally Occurring Asbestos (NOA) was identified as a TAC in 1986 by CARB. NOA is located in many parts of California, and is commonly associated with ultramafic rocks and serpentinite, according to a special publication published by the California Geological Survey (Churchill and Hill 2000). Asbestos could be released from serpentinite or ultramafic rock if the rock is broken or crushed. Asbestos could also be released into the air due to vehicular traffic on unpaved roads on which asbestos-bearing rock has been used as gravel. Additionally, soil derived from asbestos-bearing rock could contain asbestos entrained into the air from new recreational uses added to route surfaces with exposed asbestos. At the point of release, asbestos fibers can become airborne, causing air quality and human health hazards. Natural weathering and erosion processes act on asbestos bearing rock and soil, increasing the likelihood for asbestos fibers to become airborne if disturbed (California Geological Survey 2002:22). The program area does not contain historic asbestos mines, historic asbestos prospects, or ultramafic rock (Van Gosen and Clinkenbeard 2011).

Toxic Air Contaminants from Wildfire and Prescribed Burns

In addition to criteria air pollutants, which are discussed above, smoke from wildfires and prescribed burns also contains TACs such as aldehydes (including formaldehyde and acrolein) and organic compounds such as polycyclic aromatic hydrocarbons (PAHs) and benzene. Aldehydes are volatile organic compounds that are detectable by their distinctive odor. Formaldehyde and acrolein are the two most potent aldehydes found in smoke that cause eye and respiratory

irritation and potentially exacerbate asthma. Chronic exposure to formaldehyde is associated with nasal cancer (NWCG 2018). PAHs and benzene are also carcinogenic, and long-term exposure could result in elevated cancer-risk.

Although there are many similarities between smoke produced from wildfires and prescribed burns, there are key differences that affect the types and quantities of TACs produced. As discussed under “Criteria Air Pollutants from Wildfire and Prescribed Burns,” prescribed burns are controlled events, whereas wildfires burn under uncontrolled and unplanned circumstances. Prescribed burns are generally short in duration whereas wildfires may last for weeks or even months, potentially resulting in a longer exposure of receptors to TACs from smoke emissions. Most critically, wildfires have a much greater potential to burn built structures in addition to vegetation. Built structures contain plastics, chemically treated wood, and other artificial materials which produce TACs when combusted. For example, chlorinated plastics (polyvinyl chloride) and those materials treated with flame retardants would create a wider array of chlorinated and other toxic compounds that could cause adverse health effects when inhaled (NWCG 2018). These toxic compounds are not typically present in smoke from prescribed burns.

TAC emissions may also be generated if vegetation treated with herbicides is burned, though herbicides have not been detected in prescribed burns occurring within months of their application (NWCG 2018). Studies conducted on herbicides (Bush et al. 1998, McMahon and Bush 1998) indicate that intense heat induced by flames quickly degrades most herbicides, whereas smoldering fires have the potential to volatilize small quantities of certain herbicides over the duration of the smoldering phase. However, exposure analyses indicate that even under conditions of smoldering fires, no significant human health risks from herbicides were present. Naturally occurring chemical by-products of biomass and fossil fuel combustion (e.g., PM_{2.5}, CO, formaldehyde, acrolein) are a far greater risk to human health than combustion of herbicides (Bush et al. 1998).

EXISTING LEVELS OF EMISSIONS GENERATED BY WILDFIRES

As discussed in Section 3.2, “Wildfire,” the Tahoe Region is considered a “fire environment,” because of the climate, steep topography, and high level of available fuel. A historic focus on fire suppression, increased development in the wildland-urban interface, and climate change have all contributed to an increased likelihood of ignition and high-intensity wildfire (TFFT 2015; Westerling et al. 2006; Miller et al 2012). The number of acres burned by wildfires in the Tahoe Basin has increased in each decade since 1973, including a ten-fold increase during the last decade (CAL FIRE 2019). Table 3.5-4 includes historic wildfires within the Basin that overlap with the program area and provides estimates of PM_{2.5} and PM₁₀ emissions for the entire wildfire areas.

Table 3.5-4 Historic Wildfires in Program Area

Fire Name	Year	Total Acres Burned	Acres within the Program Area	PM ₁₀ (tons) ^{1,2}	PM _{2.5} (tons) ^{1,2}
1918 Fire	1918	1,013	159	1,276	1,185
Gondola	2002	643	21	810	752
Pioneer 2	2002	24	6	30	28
Angora	2007	3,070	228	3,868	3,592
Washoe	2007	20	6	25	23
Emerald	2016	175	88	221	205

Notes: PM₁₀ = respirable particulate matter, PM_{2.5} = fine particulate matter.

¹ PM₁₀ and PM_{2.5} emissions estimated for entire wildfire area using the US Forest Service BlueSky modeling tool (USFS 2019). Emission estimates may have an uncertainty of between a factor of 2 to 3 (CARB 2019b).

² In this table, a ton represents 2,000 pounds rather than a metric ton, which totals 2,205 pounds or 1,000 kilograms.

Source: CARB 2019a, CAL FIRE 2019

According to the 2011 National Emissions Inventory, wildfire, agricultural burning, and prescribed burning for wildfire prevention made up 32 percent of the nation’s annual fine particulate emissions (EPA 2014); and the refinement of emission factors has increased this estimate to 48 percent (NWCG 2018:6). This category (burning) has grown in importance, considering its increased prevalence, when compared to other pollution sources.

Wildfire-generated air pollutant emissions are not considered by CARB to be anthropogenic and, as a result, are not included in CARB's statewide emissions inventory. Table 3.5-5 summarizes CARB's discrete estimation of PM₁₀ and PM_{2.5} emissions, as well as total acres burned from wildfire between 2007 and 2018 (CARB 2019a). As shown in the table, the number of acres burned and tons of particulate matter emitted from wildfires across the state vary from year to year with a statewide average of 0.77 million acres burned and 289 and 245 thousand tons of PM₁₀ and PM_{2.5} emitted, respectively, during the 2007–2018 period.

Table 3.5-5 Annual Particulate Emissions and Acres Burned from Wildfire, 2007–2018¹

Year	PM ₁₀ (thousand tons per year) ²	PM _{2.5} (thousand tons per year) ²	Acres Burned (million)
2007	219	186	1.04
2008	675	572	1.35
2009	101	86	0.43
2010	15	13	0.09
2011	43	36	0.20
2012	226	191	0.75
2013	277	235	0.56
2014	333	282	0.53
2015	320	272	0.79
2016	195	166	0.55
2017	467	397	1.34
2018	598	507	1.59

Notes: PM₁₀ = respirable particulate matter; PM_{2.5} = fine particulate matter.

¹ There are large uncertainties associated with mapped vegetation types, fuel loading, fuel moisture, burned area, modeled fuel consumption in flaming and smoldering phases, and emission factors. The emission estimates may have an uncertainty of between a factor of 2 to 3 (CARB 2019b).

² In this table, a ton represents 2,000 pounds rather than a metric ton, which totals 2,205 pounds or 1,000 kilograms.

Source: CARB 2019a

As shown in Table 3.5-5, the largest fraction of particulate matter emissions from wildfires is PM_{2.5}, which is of greater concern than PM₁₀ because of its smaller aerodynamic diameter size and ability to penetrate deep into the lungs and even the circulatory system. The emissions estimates displayed in Table 3.5-5 do not account for emissions associated with the combustion of petroleum fuels during wildfire response (firefighting). Jet fuel is combusted to operate aircrafts and helicopters that transport equipment, water, fire retardant, and crews to wildfire locations. Depending on the terrain, diesel-powered wildland fire engines may be used. Additional emissions would occur from the operation of gasoline and diesel-fueled automobiles to transport firefighters locally and regionally. These activities are discussed in greater detail in Section 3.8, "Energy."

EXISTING LEVELS OF EMISSIONS GENERATED BY VEGETATION TREATMENTS

As described in Section 2.4.2, "Pace and Scale of Treatments," project proponents have treated an average of 503 acres each year within the program area since 2007, with an average of 199 acres undergoing manual treatment and 200 acres undergoing mechanical treatment, in addition to 104 acres of pile burning. Criteria pollutant and precursor emissions are generated by existing treatment activities, including emissions generated by mechanical equipment, hand tools, worker commutes and haul trips, as well as pile burning.

ODORS

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals can smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., smells from fast food restaurants). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. Typical odor sources of concern include wastewater treatment plants, sanitary landfills, composting facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting operations, rendering plants, and food packaging plants. The odor associated with smoke generated by the burning of vegetative biomass on agricultural lands, forested areas, park and open space lands, and wildlands is also considered to be objectionable.

SENSITIVE RECEPTORS

Sensitive receptors generally include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children or the elderly. Residential dwellings, schools, hospitals, playgrounds, and similar facilities are of primary concern because of the presence of individuals particularly sensitive to pollutants and/or the potential for increased and prolonged exposure of individuals to pollutants.

Additionally, under the Smoke Management Program, smoke-sensitive areas are defined as populated areas and other areas where an air district determines that smoke and air pollutants can adversely affect public health. These areas include, but are not limited to, towns and villages, campgrounds, trails, populated recreational areas, hospitals, nursing homes, schools, roads, airports, public events, and shopping centers.

For the purposes of this PTEIR, smoke-sensitive areas are considered sensitive receptors. Although the program area is generally in less populated, rural, or undeveloped areas, sensitive receptors are present throughout the program area.

3.5.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The air quality analysis focuses on the potential for treatment activities described in the Tahoe PTEIR to result in substantial emissions of air pollutants that would affect regional and/or localized air quality such that human health would be adversely affected. Significance determinations account for the influence of relevant Standard Project Requirements (SPRs) and California Forest Practice Rules (CFPRs), which are incorporated into treatment design. Relevant SPRs include the following:

- ▶ **SPR AD-2 Public Notifications for Prescribed Burning:** One to three days prior to the commencement of prescribed burning operations, the project proponent or project implementer will: 1) post signs along the closest public roadway to the area describing the activity, and provide contact information for questions or concerns regarding smoke; 2) publish a public interest notification using methods such as: press release, social media or other methods as deemed appropriate to the project proponent describing the activity, timing, and contact information; 3) send the local county supervisor a notification letter describing the activity, its necessity, timing, and measures being taken to protect the environment and prevent prescribed burn escape. This SPR applies only to prescribed burn treatment activities

- ▶ **SPR AQ-1 Comply with Air Quality Regulations:** The project implementer will comply with the applicable air quality requirements of air districts within whose jurisdiction the treatment activity is located. Requirements specific to PCAPCD and EDCAQMD are detailed above in Section 3.5.1, "Regulatory Setting."
- ▶ **SPR AQ-2 Submit Smoke Management Plan:** The project proponent or project implementer will submit a smoke management plan for all prescribed burns greater than 10 acres or estimated to produce more than 1 ton of particulate matter, in accordance with 17 CCR Section 80160(b). Burning will only be conducted in compliance with the burn authorization program of the applicable air district(s) having jurisdiction over the treatment area. This SPR applies to pile and understory burning.
- ▶ **SPR AQ-3 Create Burn Plan:** The project proponent or project implementer will create a burn plan using the CAL FIRE burn plan template for all prescribed burns. The burn plan will include a fire behavior model output of First Order Fire Effects Model and BEHAVE or other fire behavior modeling simulation and that is performed by a qualified fire behavior technical specialist that predicts fire behavior, calculates consumption of fuels, tree mortality, predicted emissions, greenhouse gas emissions, and soil heating. The project implementer will minimize soil burn severity from understory burning to reduce the potential for runoff and soil erosion. The burn plan will be created with input from a qualified technician or certified State burn boss. This SPR applies to pile and understory burning.
- ▶ **SPR AQ-4 Minimize Dust:** To minimize dust that has the potential to transport fine sediment to waterbodies during treatment activities, the project implementer will implement the following measures:
 - Limit the speed of vehicles and equipment traveling on unpaved areas to 15 miles per hour to reduce fugitive dust emissions, in accordance with the California Air Resources Board (CARB) Fugitive Dust protocol.
 - If road use creates excessive dust, the project implementer will wet appurtenant, unpaved, dirt roads using water trucks or treat roads with a non-toxic chemical dust suppressant (e.g., emulsion polymers, organic material) during dry, dusty conditions. Any dust suppressant product used will be environmentally benign (i.e., non-toxic to plants and will not negatively impact water quality) and its use will not be prohibited by CARB, U.S. Environmental Protection Agency (EPA), or the State Water Resources Control Board (SWRCB). The project implementer will not over-water exposed areas such that the water results in runoff. The type of dust suppression method will be selected by the project implementer based on soil, traffic, site-specific conditions, and air quality regulations.
 - Remove visible dust, silt, or mud tracked-out on to public paved roadways where sufficient water supplies and access to water is available. The project implementer will remove dust, silt, and mud from vehicles at the conclusion of each workday, or at a minimum of every 24 hours for continuous treatment activities, in accordance with Vehicle Code Section 23113.
 - Suspend ground-disturbing treatment activities, including land clearing and bulldozer lines, when there is visible dust transport (particulate pollution) outside the treatment boundary, if the particulate emissions may "cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or endanger the comfort, repose, health, or safety of any of those persons or the public, or cause, or have a natural tendency to cause, injury or damage to business or property," per Health and Safety Code Section 41700.
- ▶ **SPR AQ-5: Prescribed Burn Safety Procedures.** Prescribed burns planned and managed by non-CAL FIRE crews will follow all safety procedures required of a CAL FIRE crew, including the implementation of an approved Incident Action Plan (IAP). The IAP will include the burn dates; burn hours; weather limitations; the specific burn prescription; a communications plan; a medical plan; a traffic plan; and special instructions such as minimizing smoke impacts to specific local roadways. The IAP will also assign responsibilities for coordination with the appropriate air district, such as conducting onsite briefings, posting notifications, weather monitoring during burning, and other burn related preparations. This SPR applies only to pile and understory burning.
- ▶ **SPR HAZ-1 Maintain All Equipment:** The project implementer will maintain all diesel- and gasoline-powered equipment per manufacturer's specifications, and in compliance with all state and federal emissions requirements. Maintenance records will be available for verification. Prior to the start of treatment activities, the

project implementer will inspect all equipment for leaks and inspect everyday thereafter until equipment is removed from the site. Any equipment found leaking will be promptly removed.

- ▶ **SPR NOI-4 Locate Staging Areas and Landings Away from Noise-Sensitive Land Uses:** The project proponent will locate landings, equipment, and equipment staging areas away from nearby noise-sensitive land uses (e.g., residential land uses, schools, hospitals, places of worship), to the extent feasible, to minimize noise exposure. This would apply only to mechanical treatments.
- ▶ **SPR NOI-5 Restrict Equipment Idle Time:** The project proponent will require that all motorized equipment be shut down when not in use. Idling of equipment and haul trucks will be limited to 5 minutes.

Later treatment activities implemented under the Tahoe PTEIR could result in an incremental increase in emissions of criteria air pollutants and precursors. The potential for mobile-source emissions of criteria air pollutants and precursors to exceed, or contribute to exceedances of, the NAAQS and CAAQS is examined by comparing treatment-related emissions to mass emission thresholds recommended by PCAPCD and EDCAQMD. Emissions are estimated for each treatment activity that may be conducted in the public lands identified for treatment in the Community Wildfire Protection Plan (CWPP) area, which are identified as "Planned CWPP Projects," and other public and private lands identified as "Community Fuel Reduction Areas." Treatment-generated emissions are estimated on a per-crew/day as well as a per-acre basis. Emissions generated by off-road equipment are estimated using emission factors from CARB's web-based OFFROAD2017 model (CARB 2017a). Emissions generated by on-road vehicle trips are estimated using emission factors from the Emission Factor 2017 model (EMFAC2017, Version 1.0.2) (CARB 2017b). Detailed calculations and assumptions are provided in Appendix D. The emissions intensity of treatment activities may vary widely according to multiple factors including, but not limited to, the amount of vegetation removed or treated per acre, the frequency of treatments over the course of a year, the number of workers and equipment needed for each treatment project, and the specific types of equipment available. For these reasons, all assumptions involved in the emissions calculations are included in Appendix D and all emissions estimates are approximations.

Treatment-related TAC emissions are also discussed qualitatively based on the potential for projects to result in increased exposure of sensitive receptors (e.g., populated areas, residences, schools) to high concentrations of TACs. This discussion addresses the types of TAC-emitting activities that could occur such as diesel PM emitted by diesel-powered off-road equipment and TACs contained in smoke emissions from prescribed burning.

The potential for treatments implemented under the Tahoe PTEIR to create objectionable odors affecting a substantial number of people is also discussed qualitatively with a focus on the types of odor sources, their intensity, smoke prevention measures, and the proximity of treatment activity to people.

THRESHOLDS OF SIGNIFICANCE

Per Appendix G of the CEQA Guidelines and PCAPCD, EDCAQMD, and TRPA recommendations, the program would result in a significant regional and/or localized air quality impact such that human health would be adversely affected if emissions-generating treatment activity would:

- ▶ conflict with or obstruct implementation of the applicable air quality plan;
- ▶ generate emissions of criteria air pollutant or precursor emissions to exceed the PCAPCD- and EDCAQMD-recommended significance criteria of 82 pounds per day (lb/day) for ROG, NO_x, or PM₁₀. These mass emission thresholds are used to evaluate whether the CAAQS or NAAQS would be exceeded;
- ▶ expose sensitive receptors to substantial concentrations of criteria air pollutants;
- ▶ expose sensitive receptors to a substantial incremental increase in TAC emissions that exceed 10 in one million for carcinogenic risk (i.e., the risk of contracting cancer) and/or a noncarcinogenic hazard index of 1.0 or greater; and/or
- ▶ create objectionable odors affecting a substantial number of people.

According to the California Supreme Court, lead agencies, in preparing EIRs, must make “a reasonable effort to substantively connect a project’s air quality impacts to likely *health consequences*” (*Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 510 [italics added]). Stated another way, the lead agency must make “a reasonable effort to discuss relevant specifics regarding the connection between... the general health effects associated with a particular pollutant and the estimated amount of that pollutant the project will likely produce” (*Id.* at p. 521). Where air quality effects are determined to be significant, “there must be a reasonable effort to put into a meaningful context the conclusion that the air quality impacts will be significant[,]” expressed in terms of “the nature and magnitude of the ‘health and safety problems caused by the physical changes’ resulting from the Project” (*Id.* at p. 522).

The court recognized, however, that in some instances, making the desired connection may not be scientifically feasible. “[I]f it is not scientifically possible to do more than has already been done to connect air quality effects with potential human health impacts, the EIR itself must explain why, in a manner reasonably calculated to inform the public of the scope of what is and is not yet known about the Project’s impacts” (*Id.* at p. 520).

Under State CEQA Guidelines section 15065, subdivision (a)(4), the environmental effects of a project are significant where they “will cause substantial adverse effects on human beings, either directly or indirectly” (See also *California Building Industry Assn. v. Bay Area Air Quality Management Dist.* (2015) 62 Cal.4th 369, 799). For purposes of this PTEIR, “substantial adverse effects on human beings” means emitting criteria air pollutants or precursors that could result in, or contribute to, an exceedance of the NAAQS or CAAQS in an air basin or at any location where people may be present; the exposure of people to a dose of TACs that results in an incremental increase in cancer risk greater than 10 in one million or a Hazard Index for acute or chronic risk greater than 1.0; exposure of people to airborne NOA; or exposing a substantial number of people to objectionable odors.

IMPACTS AND MITIGATION MEASURES

Impact 3.5-1: Potential to Generate Emissions that Would Contribute to an Exceedance of CAAQS or NAAQS in the LTAB

Emissions of criteria air pollutants and precursors generated by treatment activities implemented under the program would likely exceed PCAPCD- and EDCAQMD-established mass emission thresholds and, therefore, result in, or contribute to, ambient concentrations in the LTAB that exceed the NAAQS and CAAQS. These exceedances could result in adverse health effects to receptors and conflict with air quality planning efforts in the LTAB. This would be a **significant** impact.

Treatment activities implemented under the program would result in emissions of criteria air pollutants and precursors from several sources, including:

- ▶ exhaust generated by off-road equipment and machine-powered hand tools;
- ▶ exhaust from on-road vehicle trips associated with worker commutes and transport of equipment, as well as the hauling of merchantable timber and biomass;
- ▶ fugitive PM₁₀ and PM_{2.5} dust emissions generated by ground disturbance activities and vehicle travel on unpaved roads; and
- ▶ smoke generated by the combustion of vegetation during prescribed burns.

As discussed in Section 2.4.2, “Manual Treatments,” manual treatments would primarily be performed with chainsaws. Depending on the terrain and treatment area, a masticator and/or chipper may also be used to process the removed logs or biomass. Typically, one hand crew of up to 10 workers would conduct manual treatments and can typically treat approximately 1 acre per day, depending on existing vegetation, terrain, silvicultural prescription, and other factors.

As discussed in Section 2.4.3, “Mechanical Treatments,” mechanical treatments would be performed with heavy-duty off-road equipment such as harvesters, forwarders, skid steers, excavators, dozers, loaders, tow chippers, track

chippers, masticators, feller/bunchers, and rubber-tired skidders. Chainsaws could also be used. Typically, one crew of up to 10 workers would conduct mechanical treatments and progress at a rate of approximately 5 to 10 acres per day.

Forest biomass removed during mechanical or manual treatments would be disposed of in several ways. Merchantable sawlogs would be hauled to a sawmill to be processed into lumber. Some slash, branches, and smaller trees would be piled onsite and burned. Other biomass would be chipped and hauled to off-site biomass energy generation facilities. Some shrubs and smaller trees would be masticated into smaller pieces and then spread throughout the treatment site. In some cases, logs and branches would be cut into smaller pieces and left as firewood left near roads and access points to be available for public use. Some biomass could be lopped and scattered to create a "slash mat" throughout the treatment area to protect the forest floor and reduce erosion and soil compaction. And biomass could be sold as mulch, soil amendments, or other forest products. This could result in additional trips by haul trucks to transport material to processing facilities that would generate additional exhaust and fugitive dust emissions. Off-road equipment used to process raw vegetative debris (e.g., chippers, masticators) would also generate emissions.

As discussed in Section 2.4.4, "Prescribed Burning," pile burning would be used to dispose of some forest fuels removed by manual and mechanical treatments. A typical pile burn would require a crew of up to 15 workers and could treat approximately 10 acres per day. An understory burn would typically last one day and may occur for up to one week. The average number of workers onsite would be 25 workers, which would include one burn boss, one hand crew, and one engine company. Support crews and equipment used for an understory burn could include two to 10 engines, two to four crews, an onsite water truck for fire suppression, and hand torches. One crew could treat an average of 25 acres per day with understory burns. Hand tools to ignite the prescribed burn could include drip torches and Terra torches, which contain a blend of diesel fuel and gasoline called "burn mix." Iron/phosphorous-based hydrocarbon gelling agents may also be used to accelerate burning. All accelerants used are assumed to fully combust during the ignition phase of prescribed burning. No fire retardants or suppression chemicals would be used under the proposed program. Combustion of vegetation from prescribed burns would produce smoke, which is composed of a complex mixture of compounds, including criteria air pollutants and precursors.

Worker commute trips associated with all treatment activities would generate exhaust emissions of criteria air pollutants and precursors, including PM_{2.5}. In addition, worker trips and truck trips on unpaved roads would result in fugitive PM₁₀ and PM_{2.5} dust emissions. Although the majority of treatment sites would be accessed via paved local streets and highways, some sites would require travel on unpaved roads for a relatively short distance. It is estimated that access to roughly 29 percent of treatment sites would include travel of up to 5 miles on an unpaved road.

While the distribution and acreage of first-time treatments under the program is known, the exact characteristics of individual treatments in subsequent years would depend on treatment site characteristics and goals, as discussed in Section 2.6, "Implementation." The total number of acres treated each year, as well as the types of treatments conducted, would vary from year to year. The types of treatment activities implemented each year would depend on site-specific project priorities, goals, forest conditions, locations, topography, and other characteristics.

To provide a reasonable approximation of the scale of emissions associated with treatment activities, the rates of emissions associated with each treatment activity were estimated on a pounds-per-crew-per-day basis for each pollutant. These emission rates are based on the types and quantities of equipment that would be used by a treatment crew, as well as the number of acres treated per day, and are summarized in Table 3.5-6. See Appendix D for detailed input parameters and assumptions. Exact emissions for future treatment activities conducted under the Tahoe PTEIR in subsequent years may differ from the emission estimates provided in Table 3.5-6 because the equipment, crew size, and area treated per day could vary. However, these estimates provide a reasonable approximation of the levels of emissions generated by different treatment activities. Five percent of the biomass resulting from mechanical treatment activities would be hauled to biomass energy facilities. The emission rates presented in Table 3.5-6 do not include combustion emissions associated with biomass to energy generation processes. Criteria air pollutants and precursors directly emitted from biomass energy facilities are discussed separately under Impact 3.5-7.

Table 3.5-6 Daily Emissions of Criteria Air Pollutants and Precursors Associated with Treatments (lb/crew/day)

	ROG	NO _x	PM ₁₀	PM _{2.5}
Manual Treatment	47	6	5	1
Mechanical Treatment	19	63	7	3
Prescribed Burning (Pile)	2,735	967	4,040	4,034
Prescribed Burning (Understory)	54,665	4,151	35,540	35,533

Notes: lb/crew/day = pounds per crew per day; ROG = reactive organic gases; PM₁₀ = respirable particulate matter with an aerodynamic diameter of 10 microns or less; PM_{2.5} = fine particulate matter with an aerodynamic diameter of 2.5 microns or less; NO_x = oxides of nitrogen; PM emissions are weighted to include fugitive PM₁₀ and PM_{2.5} resulting from 5 miles of travel per vehicle trip on unpaved roads for 29 percent of treatment sites. See Appendix D for detailed calculations.

Source: Compiled by Ascent Environmental in 2019

PCAPCD and EDCAQMD recommend mass emission thresholds to determine whether a project would result in, or contribute to, an exceedance of NAAQS and/or CAAQS in the LTAB and conflict with air quality planning efforts. As discussed in Section 2.6, "Implementation," the typical number of acres to be treated in the program area would be 1,250 acres per year. As described in Table 2-1, "Estimated Increase in Annual Acres Treated by Treatment Type Under the Proposed Program," the net increase in acres treated as a result of the program would be 747 acres per year, in addition to the current pace of approximately 503 acres per year. The relative distribution of treatments of the 1,250-acre treatment area is anticipated to be 24 percent mechanical treatments (300 acres), 40 percent manual treatments (500 acres), 16 percent prescribed understory burning (200 acres), and 20 percent pile burning (250 acres). As discussed in Section 2.4.1, "Pace and Scale of Treatments," the number of concurrent treatments that could occur in one day would vary based on time of year, availability of funding and crews, and the size and complexity of individual treatments. However, 10 separate treatments could reasonably occur on the same day, including four existing treatment activities and six additional treatments resulting from implementation of the program. This analysis examines the maximum daily emissions that would be generated by the six additional treatments if they were all to be conducted on the same day. The mix would consist of three additional manual treatments, two additional mechanical treatments, and one additional understory burn, which is consistent with the breakdown of planned treatment types presented in Table 2-1 and the potential number of acres treated by each method per day. Maximum daily emissions are summarized in Table 3.5-7.

Table 3.5-7 Maximum Daily Emissions (May 1 to October 15) (lb/day)

	ROG	NO _x	PM ₁₀	PM _{2.5}
Manual Treatment Activity	140	19	14	1.9
Mechanical Treatment Activity	39	126	14	5.4
Prescribed Burning (Understory)	54,655	4,151	35,540	35,533
Total Maximum Daily Emissions	54,844	4,296	35,568	35,540
PCAPCD and EDCAQMD Emissions Thresholds	82	82	82	—

Notes: lb/day = pounds per day; ROG = reactive organic gases; PM₁₀ = respirable particulate matter with an aerodynamic diameter of 10 microns or less; PM_{2.5} = fine particulate matter with an aerodynamic diameter of 2.5 microns or less; NO_x = oxides of nitrogen; PCAPCD = Placer County Air Pollution Control District; EDCAQMD = El Dorado County Air Quality Management District.

PM emissions are weighted to include fugitive PM₁₀ and PM_{2.5} resulting from 5 miles of travel on unpaved roads for 29 percent of treatment sites. Pile burning would occur during the treatment off-season (i.e., October to May) and will thus not take place concurrently with other treatments. Therefore, the estimated daily maximum emission values do not include emissions from off-season pile burning.

See Appendix D for detailed calculations.

Source: Estimates calculated by Ascent Environmental 2019

As shown in Table 3.5-7, emissions of ROG, NO_x, and PM₁₀ would exceed the mass emission thresholds established by PCAPCD and EDCAQMD. Therefore, these emissions could result in, or contribute to, ambient concentrations of criteria air pollutants that exceed the NAAQS or CAAQS for ozone, and/or PM₁₀ in the LTAB. This would conflict with

air quality planning efforts in the LTAB, including Goal AQ-1 of TRPA's Regional Plan, which is to maintain air quality in the region at levels that are healthy for humans and the ecosystem.

While the resultant increase in ambient concentrations of these pollutants may adversely affect certain sensitive receptors, such as asthmatics, children, and the elderly, the degree of these health impacts is infeasible to assess because the dispersion of these pollutants across the LTAB would not be predictable. Like all pollutants, the dispersion of PM₁₀ and PM_{2.5} emissions is influenced by meteorology, topography, and ground characteristics. Also, the locations of emissions-generating treatment activities would vary from day to day. Concentrations of ground-level ozone are even more difficult to predict because ozone is a secondary pollutant formed during photochemical oxidation reactions involving ROG and NO_x that are catalyzed by the ultraviolet component of sunlight. Given the many factors (e.g., topography, meteorology, sunlight, emissions sources) that contribute to the formation and dispersion of ozone, it is not scientifically feasible to predict with a meaningful level of accuracy the number of days, if any, when ozone concentrations would exceed the NAAQS or CAAQS, or the specific locations in the LTAB where exceedances would occur.

Current photochemical models cannot accurately determine the locations, or specific concentrations, of ozone based on ROG or NO_x precursor emissions because of the complex physicochemical factors influencing the photochemical reactions that convert precursors to ground-level ozone (i.e., ultraviolet light, temperature, meteorology, topography). Any meaningfully accurate predictions of site-specific ozone concentrations using currently available ozone models would also require concentrations of precursor emissions to be accurately known and large enough to substantially affect the regional inventory of pollutants. Therefore, accurate predictions of ground-level ozone concentrations resulting from treatments conducted under the program would not be scientifically possible. Nonetheless, because precursor emission levels during the first year of the program would exceed daily mass emission thresholds established by local air districts, it is reasonably foreseeable that treatment activities in future years could also contribute to an increase in the number of days when the NAAQS and CAAQS for PM₁₀, PM_{2.5}, and ozone would be exceeded in some portions of the LTAB in which high concentrations of these pollutants are present, even if precisely determining the locations of these exceedances or determining exact concentrations is not possible.

As summarized in Table 3.5-2, human exposure to PM₁₀ and PM_{2.5} contributes to breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, and premature death; and human exposure to ozone may result in acute and/or chronic health effects including coughing, pulmonary distress, lung inflammation, shortness of breath, and permanent lung impairment. Air districts consider their mass emission thresholds to be the levels that constitute a cumulatively considerable contribution to an exceedance of the CAAQS and NAAQS, which have been established to protect human health. Because emissions of PM₁₀ and ozone precursors generated by the program would exceed the daily mass emission thresholds of PCAPCD and EDCAQMD, it is foreseeable that the aforementioned adverse health effects associated with exposure to these pollutants could be exacerbated by treatment activity-related emissions.

In summary, the criteria air pollutants and precursors emitted by treatment activities would contribute to ambient concentrations in the LTAB that exceed the CAAQS or NAAQS and conflict with regional air quality management plans. This would be a **significant impact**.

While implementation of the program would result in emissions of criteria air pollutants and precursors from on- and off-road equipment, vehicle travel, and prescribed burns that would exceed the PCAPCD and EDCAQMD's mass emission thresholds, it is also reasonable to expect that the program would result in some degree of long-term reduction in emissions of criteria air pollutants and precursors from wildfires by reducing the intensity of wildfires in treated landscapes, limiting wildfire spread, and slowing the progress of some fires to allow for more rapid containment. As described in Chapter 2, "Program Description," a primary purpose of the program is to reduce the risk of catastrophic wildfires that could damage the landscape, watersheds, and habitats of the Lake Tahoe Basin. Emergency response for firefighting efforts requires mobilizing and deploying substantial human and equipment resources from throughout the state, and in some cases nationally and internationally. Furthermore, when wildfires destroy structures, large volumes of debris are generated, which must be removed by haul trucks. This major surge in the use of on-road vehicles and off-road equipment during wildfire response results in an increase of emissions also unaccounted for by the air quality planning efforts of PCAPCD and EDCAQMD. Wildfire itself, through the

combustion of vegetative and non-vegetative fuels, also results in increased and unforeseen emissions. Recent major wildfires in California have created hazardous air pollution conditions requiring health advisories and “spare the air” days far from the site of the fire. Thus, wildfires are generally far more likely to result in adverse air quality and public health impacts than prescribed burns. Given the unpredictability of wildfire, and the possible variability in emissions from treatment activities under the program, evaluating the net effect of the program on emissions associated with wildfire and wildfire response is not possible, nor would doing so be pertinent to determining the significance of the emissions from treatment activities under CEQA. This information is presented to explain the broader context for consideration of fire-related emissions in the region, including both treatment emissions and wildfire emissions.

Mitigation Measures

Mitigation Measure 3.5-1a: Implement On-Road Vehicle and Off-Road Equipment Exhaust Emission Reduction Techniques

Where feasible, off-road equipment utilized in later treatment activities under the program shall implement emission reduction techniques to reduce exhaust emissions. It is acknowledged that because of cost, availability, and the limits of current technology, there may be circumstances where implementation of certain emission reduction techniques would not be feasible. The project proponents will document the emission reduction techniques that will be applied and will explain the reasons other techniques that could reduce emissions are infeasible.

Techniques for reducing emissions may include the following:

- ▶ Use renewable diesel fuel in diesel-powered construction equipment. Renewable diesel fuel must adhere to the following criteria:
 - meet California’s Low Carbon Fuel Standards and be certified by CARB Executive Officer;
 - be hydrogenation-derived (reaction with hydrogen at high temperatures) from 100 percent biomass material (i.e., non-petroleum sources), such as animal fats and vegetables;
 - contain no fatty acids or functionalized fatty acid esters; and
 - have a chemical structure that is identical to petroleum-based diesel and complies with American Society for Testing and Materials D975 requirements for diesel fuels to ensure compatibility with all existing diesel engines.
- ▶ Substitute electric equipment for diesel-powered equipment.
- ▶ Encourage or require workers to carpool to work sites, and/or use public transportation for their commutes.
- ▶ Equip off-road equipment, diesel trucks, and generators with Best Available Control Technology for emission reductions of NO_x and particulate matter.

Mitigation Measure 3.5-1b: Encourage Alternative Burning Techniques and Non-Burning Biomass Disposal

Later treatment activities that involve pile burning shall pursue alternative burning techniques and/or alternative means of biomass disposal that do not involve burning, as feasible. It is recognized that because of site access, cost, or other factors there may be circumstances where implementation of certain alternative burning techniques or non-burning disposal methods would not be feasible. Potential alternative burning techniques could include:

- ▶ Use of air curtain burners, also referred to as Air Curtain Incinerators, FireBoxes, or Trench Burners. These devices produce an “air curtain” over the top of burning biomass, which traps and reburns smoke at high temperatures. Air Curtain burners have been shown to achieve an approximately 23-fold reduction in PM_{2.5} emissions compared to pile burns (Susott et al. 2002).
- ▶ Development and use of portable biomass energy generators, which can more efficiently burn biomass while generating electrical power that can be stored in a battery or used to directly power a facility.
- ▶ Consider conservation burning, a technique for burning woody material that reduces the production of smoke particulates and carbon released into the atmosphere, in part by extinguishing the burn pile before the smoldering stage (UCCE Sonoma County 2019).

Significance after Mitigation

Mitigation Measure 3.5-1a would reduce the mass emission of criteria air pollutants and precursors generated by the use of on-road vehicles and off-road equipment during treatment activities. However, given the potential infeasibility of implementing specific emission reduction techniques and the uncertainties associated with treatment activity location, size, and timing, the emission reductions from implementation of Mitigation Measure 3.5-1a cannot be meaningfully quantified. Furthermore, Mitigation Measure 3.5-1a does not reduce emissions from the combustion of vegetation itself, which is the largest contributor to treatment activity-related emissions. Mitigation Measure 3.5-1b would reduce the emissions of prescribed burns; however, implementation of alternative burning techniques may be infeasible for burn crews because air curtain burners and portable biomass generators can be cost prohibitive, limit the amount of biomass that can be disposed of at one time, and because of the lack of adequate roadway access to burn locations. Similarly, conservation burning may not be feasible, because it requires fuel that is approximately uniform in size and more crew time to monitor and extinguish burns at the appropriate time.

While implementation of Mitigation Measures 3.5-1a and 3.5-1b would reduce emissions and the resultant exposures that may potentially contribute to adverse health effects, the amount of the reduction cannot be determined for the reasons described above; therefore, the potential would remain that emissions generated by treatment activities would exceed PCAPCD- and EDCAQMD-established mass emission thresholds and, thus, result in, or contribute to, ambient concentrations in the LTAB that exceed the NAAQS and CAAQS. Moreover, the potential would remain for these emissions to result in adverse health effects to receptors and conflict with air quality planning efforts in the LTAB. Therefore, this impact would be **significant and unavoidable**.

Impact 3.5-2: Potential to Expose Sensitive Receptors to Substantial Concentrations of Criteria Air Pollutants

Adherence to the SPRs, including implementation of SMPs, would prevent the exposure of off-site sensitive receptors to substantial localized concentrations of criteria air pollutants and associated adverse health effects. This impact would be **less than significant**.

Because ozone is a secondary formed by the reaction of ROG and NO_x in presence of sunlight it is not a pollutant of localized concern and, therefore, not discussed further in this analysis.

Although the majority of treatment sites would be accessed via local streets and highways, approximately 29 percent of sites are more than ¼ mile from a paved road. Thus, traveling a short distance on an unpaved surface would be necessary to reach these sites. Though vehicle travel on unpaved surfaces would generate emissions of fugitive PM₁₀ and PM_{2.5} dust, implementation of SPR AQ-4 would minimize fugitive PM₁₀ and PM_{2.5} dust emissions by limiting vehicle speeds on unpaved roads. As a further precaution, suspension of ground disturbing activities would be required if these activities result in visible dust transport outside the boundary of treatment areas. SPR AQ-4 also requires treatment crews to wet unpaved roads if excessive dust is created during road use, using water trucks or non-toxic chemical dust suppressants. Implementation of this SPR would minimize the contribution of treatment activities to localized concentrations of fugitive PM₁₀ and PM_{2.5} emissions. Additionally, stands of trees in and near the treatment sites may serve as barriers, limiting the fugitive dust emissions from being transported long distances from their origin. For these reasons, fugitive PM₁₀ and PM_{2.5} dust would not result in, or contribute to, localized exceedances of the applicable NAAQS and CAAQS and associated adverse health effects.

Prescribed burns have the potential to emit high levels of PM₁₀ and PM_{2.5}. As shown in Table 3.5-6, the activity of a single crew conducting a pile burn could generate 4,040 lb of PM₁₀ and 4,034 lb of PM_{2.5} daily; and the activity of a single understory burn crew could generate as much as 35,568 lb of PM₁₀ and 35,540 lb of PM_{2.5} daily. As discussed in Section 3.5.2, "Environmental Setting," the primary pollutant of local concern from prescribed burning is PM_{2.5}, which includes ultrafine particulate matter (UFP). In terms of localized impacts, studies indicate that exposure of workers implementing prescribed burns to PM_{2.5} can substantially exceed occupational exposure limits (OELs) established by the California Division of Occupational Safety and Health (Cal/OSHA) and the National Institute for Occupational Safety and Health (NWC 2018). Inhalation of particulate matter, especially PM_{2.5} and UFP, can cause short-term

breathing and adverse respiratory symptoms, aggravation of existing respiratory and/or cardiovascular conditions, premature death, exposure to carcinogens, and compromised immune function.

In addition to PM_{2.5}, smoke emissions contain CO, which at high concentrations can cause dizziness, nausea, and impaired mental function. CO levels are highest during the smoldering stages of a fire, and resultant concentrations are especially high in areas close to the fire. CO disperses rapidly with distance such that fire-generated CO would not adversely affect nearby receptors unless a large fire occurs, and inversion conditions trap the CO in areas where people are present.

Pursuant to SPR AQ-5 all prescribed burns would be conducted in accordance with the same safety procedures followed by CAL FIRE, including the implementation of an approved Incident Action Plan (IAP), which would minimize worker exposure to smoke. Localized exposure to smoke from prescribed burns, like other emissions, is dependent on proximity to the source. The workers implementing a prescribed burn are at greatest risk for smoke exposure because they would be in or adjacent to active burn areas. These safety measures would provide real-time monitoring of smoke conditions, reduce the potential for adverse smoke effects, and reduce inhalation hazards for fire personnel.

To protect the public from smoke emissions, emissions from prescribed burns would be controlled through reduction techniques, such as burning only when fuels have a prescribed moisture content and reducing fuels before ignition. According to the National Wildfire Coordinating Group, if emission reduction techniques are optimally used, emissions from prescribed burns around the U.S. could potentially be reduced by 20–25 percent without interfering with land management objectives (NWCG 2018). Furthermore, several SPRs address prescribed burning and would be implemented to minimize smoke emissions and potential exposure of people. SPR AD-2 requires adequate public noticing and signage about prescribed burns including their timing, contact information, and description of the activity. The public would be restricted from areas where active burns would take place. SPR AQ-2 requires burn managers to obtain approval of their SMP from the local air district, which would identify the locations where people may be present and specify the smoke prescription to reduce their exposure to smoke.

SPR AQ-3 requires completion of, and adherence to, a burn plan. Contents of a prescribed burn plan would include the date, location, and description of the area in detail, prescriptive weather requirements, fire behavior modeling, the ignition plan (including technique, time of day, and mop-up), a contingency plan, the SMP, public notification plan, a go/no go checklist, and contact information for the burn boss and others in charge of the prescribed burn. Burn plans would reduce the potential for public exposure to smoke by requiring the activity to be designed in a way that prioritizes public safety, and by identifying the specific conditions under which a safe prescribed burn can commence and proceed. For prescribed burns implemented by CAL FIRE, one crew member would typically be assigned to report weather conditions to the Incident Commander every 30 minutes to make sure the burn stays within its prescription. If conditions deviate from the burn plan, crews would transition from active burning activities to patrolling and/or extinguishing. In the event a prescribed burn extends beyond the perimeter of its planned area, on-site hand crews would be deployed to control the escape. Because the maximum area treated by a single prescribed burn as part of the program would be 25 acres per day, escape would be unlikely, and if escape were to occur, it could be quickly extinguished.

Additionally, as described in Section 2.2, the portions of the program area designated as Community Fuel Reduction Areas, including 5,850 acres of developed parcels and undeveloped urban lots within and surrounding developed neighborhoods, would not be subject to prescribed burning. This means that prescribed burns would not take place adjacent to developed urban lots, further minimizing the potential for these receptors to be exposed to emissions generated by prescribed burns.

Finally, while there is a small chance that meteorological conditions may change during a prescribed burn and the quantity of smoke generated and the direction and height of its plume dispersion may not occur as predicted, the small size of treatment areas, distance from developed neighborhoods, adherence to required burn plans, including contingency measures, and close coordination with the air district in the days leading up to the prescribed burn would ensure that exposure to smoke and other burn-related air pollutants would be minimal.

In summary, adherence to SPR AQ-4 to minimize fugitive dust emissions, adherence to the safety measures of SPRs AQ-2, AQ-3, AQ-5 and AD-2 during prescribed burns, and because prescribed burns would not take place in designated Community Fuel Reduction Areas, the exposure of off-site sensitive receptors to substantial localized concentrations of criteria air pollutants and associated adverse health effects would be prevented. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.5-3: Potential to Expose People to Diesel Particulate Matter Emissions and Related Health Risk

Because of the short duration of treatment activities and because treatment activity would not take place near a single group of people for an extended period of time, diesel PM generated by treatment activities would not expose any person to an incremental increase in cancer risk greater than 10 in one million or a Hazard Index of 1.0 or greater. This impact would be **less than significant**.

Implementation of treatments under the program would result in exhaust emissions of diesel PM from off-road equipment and haul truck trips associated with treatment activities. Mechanical treatments would generally involve the greatest number of large, heavy-duty off-road diesel equipment, such as harvesters, forwarders, skid steers, masticators and track chippers in comparison to manual thinning and prescribed burns. Some diesel-powered equipment may be used in manual treatments, such as cable skidders, backhoes, and the occasional use of masticators. The preparation of prescribed burn areas may include bulldozing and chaining to loosen vegetation and for clearing vegetation to establish control lines. Diesel-powered on-road trucks would also be used to haul equipment and workers to and from treatment sites. Diesel-powered on-road trucks would also be used on those occasions when haul merchantable timber is transported to mills or biomass is transported to a biomass energy generation facility.

As described in Section 3.5.1, "Regulatory Setting," diesel PM is a TAC. It is estimated that about 70 percent of total known cancer risk related to air toxics in California is attributable to diesel PM (CARB 2019c). The potential cancer risk from inhaling diesel PM is greater than the potential for all other diesel PM-related health impacts (i.e., noncancer chronic risk, short-term acute risk) and health impacts from other TACs (CARB 2003:K-1). Based on the emissions calculations summarized under Impact 3.5-1 and presented in Appendix D, the level of diesel PM exhaust (PM₁₀) that would be emitted by a single crew performing mechanical treatments would be approximately 2.6 pounds per crew per day at the treatment location. This level would be higher than for any other treatment activity.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual (the hypothetical individual who receives the greatest possible projected dose in the area of highest TAC concentration levels over a specified period of time). Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of people to TAC emissions, should be based on a 30- or 70-year exposure period, depending on whether the analysis is for a maximally exposed individual or population-wide impacts. However, such assessments should be limited to the period/duration of activities that generate TAC emissions (OEHHA 2015).

Treatment activities would progress across treatment sites such that diesel PM generated by treatment activities would not take place near any single sensitive receptor area for an extended period. For example, mechanical treatment by a single treatment crew progresses at a rate of approximately 5–10 acres per day. Thus, the diesel PM-emitting activities associated with treatment activities would not take place in the same approximate 5-acre area for more than one day. This means the period during which a single person could be exposed to diesel PM emissions from a treatment activity would be short relative to the 30- or 70-year exposure timeframe recommended for health

risk assessments. In addition, diesel PM dissipates rapidly from the source, and exposure concentrations would decline with distance from these activities (Zhu et al. 2002:1032). Furthermore, there are multiple SPRs that would help minimize the level of diesel PM exposure. SPR HAZ-1 requires that all diesel and gasoline-powered equipment be properly maintained to comply with all state and federal emissions requirements, which would prevent excessive emissions of diesel PM because of poorly functioning equipment. SPR NOI-4 requires staging areas and landings be located as far as possible from noise-sensitive land uses and SPR NOI-5 restricts equipment idling time.

Lastly, an emerging set of research on diesel PM generated by roadway traffic (i.e., on-road vehicles) indicates that vegetation removes particulates from the air. It does so through the direct absorption of gaseous pollutants through leaf stomata and by dissolving water soluble pollutants onto moist leaf surfaces (Islam et al. 2012; Tong 2016). The research demonstrates that the presence of trees between vehicles and receptors further reduce potential exposure to diesel PM along roadways. Thus, treatment activities would experience the same mitigating effect on diesel PM emitted by equipment, because the remaining stands of trees provide the same buffering condition identified in the research. For the reasons stated above, it is expected that residents and other receptors located near treatment sites would not be exposed to an incremental increase in cancer risk greater than 10 in one million, or a Hazard Index greater than 1.0. This impact would be **less than significant**.

Moreover, implementation of Mitigation Measure AQ-1 would reduce the emissions of diesel PM generated by use of on-road vehicles and off-road equipment during treatment activities.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.5-4: Potential to Expose People to Toxic Air Contaminants Emitted by Prescribed Burns and Related Health Risk

Smoke emitted by the increase in prescribed burn activity under the program would not result in the short- or long-term exposure of residential areas or other places where people spend time to levels of acute or chronic, noncarcinogenic risk that exceeds a Hazard Index greater than 1.0 or to an incremental increase in cancer risk that exceeds 10 in on million. This impact would be **less than significant**.

The primary air pollutant of concern from smoke generated by prescribed burning is PM_{2.5}. PM_{2.5} is a criteria air pollutant, subject to the health-based NAAQS and CAAQS and exceedance of NAAQS and CAAQS for PM_{2.5} is discussed under Impact 3.5-1. PM_{2.5} contained in the smoke generated by prescribed burns is also a composite pollutant that contains several TACs.

As discussed in Section 3.5.2, "Environmental Setting," smoke from prescribed burning generates small concentrations of TACs, such as aldehydes (including formaldehyde and acrolein), and organic compounds, such as PAHs and benzene, which are included in the composition of PM_{2.5}. Smoke from prescribed burns also contains CO, which is identified as a TAC as well as a criteria pollutant. Although the concentrations of TACs within smoke generated by prescribed burns are much lower than concentrations of total PM_{2.5}, TACs emitted by prescribed burning have the potential to expose people to adverse short- and long-term health effects (CARB and CDPH 2016). Risk factors published for these TACs indicate that they can expose receptors to short- and/or long-term health effects depending on the concentration and exposure time (CARB 2018b). The potential for receptors located near prescribed burn sites to be exposed to short- and long-term health effects are addressed below. Published research has studied exposure to workers (i.e., firefighters) administering prescribed burns; the results of these studies are used to inform the analysis of the effects of human exposure in general to TACs from prescribed burns.

Exposure to Short-Term Acute Health Effects

Exposure to the types of TACs found in smoke could result in acute short-term health impacts such as eye and respiratory irritation and exacerbated asthma symptoms. Studies evaluating exposure of firefighters to smoke from prescribed burns have compared measured exposure levels at or next to burn sites to the Permissible Exposure Limits (PELs) established by the U.S. Occupational Safety and Health Administration's (OSHA) and to more stringent OELs

established by Cal/OSHA and the National Institute for Occupational Safety and Health. Although studies have not found the time-weighted average TAC exposure levels that would exceed OSHA's PELs, up to 14 percent of firefighters evaluated in the studies were exposed to short-term respiratory irritant levels above the more stringent OELs (NWCG 2018, Reinhardt et al. 2000). Studies also found that the level of acute health risk experienced by firefighters from short-term exposure to formaldehyde, acrolein, benzene, and CO exceeded a Hazard Index of 1.0 (NWCG 2018). The highest levels of exposure to TACs occurred when burn personnel were maintaining prescribed burns within designated containment lines and performing direct attack of spot fires that crossed containment lines. These events and the associated smoke exposures occur more frequently during stronger winds, which hamper fire management and can carry the convective plume of smoke into the breathing zone of firefighters (Reinhardt and Ottmar 2004).

Additionally, the general population would be further from prescribed burn smoke than firefighters. Prescribed burning would not be a typical treatment method in the Community Fuel Reduction Areas, and thus would generally be conducted in less populated areas far from residential areas, where people are sparse. This is meaningful because prescribed burn smoke exposure, like other emissions, is dependent on proximity to the source. Thus, exposure of sensitive receptors in residential areas to TACs generated during prescribed burns is unlikely.

Furthermore, as discussed under Impact 3.5-1, implementation of multiple SPRs would help minimize the level of exposure of people to smoke emitted by prescribed burns. SPR AQ-5 requires prescribed burns to follow all CAL FIRE safety procedures (even if they are not conducted by CAL FIRE crews), including developing and implementing an approved IAP. For safety reasons, the public would be restricted from areas where active burns would take place, which would also avoid and minimize smoke exposure. SPR AD-2 requires adequate public notice and signage about prescribed burns including timing, contact information, and description of the activity. SPR AQ-2 requires burn managers to submit and obtain approval for each SMP, which would identify nearby locations where people spend time and specify the prescription to reduce smoke exposure. CAL FIRE's SMP protocol requires one crew member to report weather conditions to the Incident Commander every 30 minutes to make sure the burn is staying within its prescription. If conditions ever deviate from the burn plan, the burn is rescheduled, and crews transition from managing active burning activities to patrolling and/or extinguishing the burn. In the event a prescribed burn extends beyond the perimeter of its planned area, hand crews are onsite to control the escape. For these reasons, it is not expected prescribed burn emissions would expose residents and other receptors to short-term acute risk that exceeds a Hazard Index of 1.0.

Exposure to Long-Term Chronic Health Effects

Exposure to the types of TACs contained in smoke generated by prescribed burns could result in chronic long-term health risk, including elevated cancer-risk. The long-term public health impacts of prescribed burns are not well studied; however, a human health risk assessment conducted on wildland firefighters found that the levels of PAHs wildland firefighters were exposed to in smoke were not found to be the major contributors to their overall level of cancer risk (NWCG 2018). Short-term elevated exposures (i.e., over days to weeks) to carcinogens found in wildfire smoke were found to be small relative to total lifetime exposures to carcinogens in other, more common combustion sources (CARB and CDPH 2016).

As discussed in Impact 3.5-2, the dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of concentration and duration of exposure. Prescribed burns typically last 1 day and may occur up to 1 week in any given location. Also, as discussed above, the requirements of SPR AQ-2 and SPR AQ-5 would prevent and minimize exposure of people to smoke emitted by prescribed burns. Thus, it is not anticipated that the dose resulting from prescribed burns conducted under the program would expose any people to a level of chronic, noncarcinogenic risk that exceeds a Hazard Index of 1.0 or to an incremental increase in cancer risk that exceeds 10 in one million.

Summary

As discussed in Section 3.5.2, "Environmental Setting," wildfires are a large source of TACs, and represent a greater public health concern than prescribed burns because of their uncontrolled nature and longer duration. Wildfires may last for weeks or even months, potentially resulting in a longer exposure of receptors to TACs from smoke emissions over a broad geography. Most critically, wildfires often burn structures in addition to vegetation, releasing a wider

array of chlorinated and other toxic compounds not present in prescribed burns that could cause adverse health effects when inhaled by firefighters amid the conflagration or other nearby receptors (NWCG 2018). This contrasts with prescribed burns, which are not only conducted in small areas under very controlled conditions, but also are closely coordinated with the local air district and CARB to ensure that meteorological conditions are optimal for preventing excessive exposure of receptors to smoke. As discussed in Section 3.2, "Wildfire," air district authorization to conduct a prescribed burn is given no more than 24 hours before the burn, thus ensuring the most up-to-date meteorological data are considered. Given the unpredictability of wildfire, the variability in TAC emission characteristics of wildfire fuels (i.e., type of vegetation, man-made structures), and the possible variability in TAC emissions during prescribed burns under the program, evaluating the net effect of the program on TAC exposure associated with wildfire and wildfire response is not possible, nor is it pertinent to determining the significance of short-term exposure to TACs under CEQA. This information is presented to explain the broader context for consideration of fire-related emissions, within which treatment emissions would occur.

In summary, the increase in prescribed burn activity under the program would not result in the short- or long-term exposures of residential areas or other places where people spend large amounts of time to TAC-containing smoke and, therefore, the exposure of any people to a level of acute or chronic, noncarcinogenic risk that exceeds a Hazard Index of 1.0 or to an incremental increase in cancer risk that exceeds 10 in one million. This impact would therefore be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.5-5: Expose People to Objectionable Odors from Diesel Exhaust

While the use of diesel-powered equipment during treatment activities would result in temporary emissions of odorous diesel exhaust, the levels of diesel exhaust would be excessive, nor would it affect a substantial number of people. This would be a **less-than-significant** impact.

The occurrence and severity of odor impacts depends on numerous factors, including: the nature, frequency, and intensity of the source; wind speed and direction; and the proximity and sensitivity of exposed individuals. The program would not introduce any new permanent sources of odors to the program area or any new locations where people spend time that could be exposed to existing odor sources. Diesel-powered equipment used during treatment activities could result in short-term odorous diesel exhaust emissions.

As discussed in Impact 3.5-3, diesel exhaust emissions would be temporary, would not be generated at any one location for an extended period, and would dissipate rapidly from the source with an increase in distance. Additionally, treatment activities utilizing diesel equipment would generally be in less populated, undeveloped areas of the LTAB, where human receptors are sparse. Furthermore, SPR HAZ-1 requires that all diesel and gasoline-powered equipment be properly maintained to comply with all state and federal emissions requirements, which would prevent the occurrence of higher emissions of diesel exhaust because of poorly functioning equipment. Also, SPR NOI-4 requires staging areas and landings be located as far as possible from noise-sensitive receptors (e.g., residential land uses, schools, hospitals, places of worship) and SPR NOI-5 restricts equipment idling time. These SPRs would reduce exposure of receptors to diesel exhaust odors because they require diesel-powered equipment to be located away from receptors and also reduce the amount of time that engines would be idling and producing odorous emissions. Accordingly, treatment activities would not create objectionable odors affecting a substantial number or people. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.5-6: Expose People to Objectionable Odors from Smoke During Prescribed Burning

Prescribed burns conducted under the program would generate odorous smoke emissions. However, adherence to air district regulations, SPRs, including an approved SMP, would ensure the exposure would be minimized. This would be a **less-than-significant** impact.

Prescribed burns and pile burning conducted under the program could result in temporary odorous smoke emissions, which could be perceived as objectionable depending on the frequency and intensity of the resultant smoke, wind speed and direction, and the proximity and sensitivity of exposed individuals.

Per SPR AQ-1, SPR-AQ-2, and as discussed in Section 3.5.1, "Regulatory Setting," prescribed burning implemented under the program would be conducted in accordance with PCAPCD and EDCAQMD regulations regarding open burning and in accordance with requirements of the California Smoke Management Program. SMPs are intended to reduce smoke impacts from prescribed burning and must include basic information such as the location, types, and amounts of material to be burned; expected duration of the fire; identification of responsible personnel; and identification of all smoke-sensitive areas. Larger burns require additional information such as meteorological conditions necessary for burning, projections of where the smoke is expected to travel (both day and night), contingency actions to be taken if smoke impacts occur or meteorological conditions deviate from those specified in the SMP, and monitoring.

Additionally, prescribed burning (i.e., understory burning) would primarily be conducted within Planned CWPP Projects, and would not be a typical treatment method in the Community Fuel Reduction Areas that are in close proximity to residential neighborhoods. While pile burning could occur in Community Fuel Reduction Areas, other prescribed burns would generally be conducted in less populated regions, far from sensitive receptors. This is meaningful because prescribed burn smoke exposure, like other emissions, is dependent on proximity to the source. Thus, exposure of sensitive receptors in residential areas to smoke odors generated during prescribed burns is unlikely.

Furthermore, as discussed in Section 2.4.5, "Retreatments," it is estimated that retreatments would typically occur approximately ten years after the initial treatment to maintain lower fuel hazards in consideration of the natural fire return interval of the vegetation community and other environmental factors as well as treatment objectives. Exposure of the same people in any given location to odorous smoke emissions would therefore occur infrequently over a period of a few days to weeks, with the possibility of recurring every 10 years.

As discussed in Section 3.5.2, "Environmental Setting," wildfires are a large source of smoke, and represent a greater odor source because of their uncontrolled nature and longer duration. Wildfires may last for weeks or even months, potentially resulting in a longer exposure of receptors to objectionable odors from smoke. Most critically, wildfires often burn structures in addition to vegetation, releasing a wider array of odorous emissions not present in prescribed burns, which only combust vegetation. Given the unpredictability of wildfire, evaluating the net effect of the program on odors associated with wildfire is not possible, nor is it pertinent to determining the significance of short-term exposure to smoke-related odors associated with small-scale prescribed burns conducted under the program. While short-term exposure to smoke odors in proximity to burn treatment areas may occur, compliance with SMPs, small burn areas, and prescribed burns only occurring in areas remote from residential areas, make it unlikely that unexpected exposures to smoke odors would occur. Thus, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.5-7: Stationary-Source Emissions from a Biomass Energy Generation Facility

Combustion or gasification of biomass at an energy generation facility would generate emissions of criteria air pollutants and precursors. However, because the program-related emissions from energy generation facilities would be nominal, and because these stationary sources are subject to mandatory and enforceable emission limits set forth in permits administered by the air district these emissions would not result in, or contribute to, ambient concentrations that exceed the NAAQS and CAAQS. This impact would be **less than significant**.

As described in Section 2.4.6 of the Program Description, "Biomass Disposal," approximately 5 percent, or 500 to 750 green tons, of chipped biomass treated under the program would be hauled to a power generation facility each year. The Greenleaf Honey Lake energy generation facility, which is located 155 miles away from the program area, was chosen as a typical, nearby facility for this analysis. For the purposes this analysis, the conservative approach of assuming the identified biomass and sawmill facility and biomass energy facility furthest from the program area would be where the forest products would be hauled. Vehicle exhaust and fugitive emissions associated with hauling this biomass to this facility are discussed under Impact 3.5-1. Hauling emissions were calculated and have been included in the estimated program emissions associated with mechanical treatment, as shown in Table 3.5-6.

The Greenleaf power plant's annual fuel demand is 150,000 bone dry tons (BDT) of biomass per year, or 411 BDT/day. Thus, the 250 to 375 BDT of chipped biomass (assuming 50 percent moisture content of green biomass) provided by the program's mechanical treatment activities would result in less than 22 hours of energy production, and associated emissions, per year of operation. As the program-related stationary-source emissions from the permitted Greenleaf energy generation facility, which is under jurisdiction of the Lassen County Air Pollution Control District, represent less than 0.25 percent of the plant's typical annual emissions, they would have minimal impact to regional air quality. Thus, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

3.6 BIOLOGICAL RESOURCES

This section addresses common and sensitive biological resources that could be affected by implementation of the proposed program. Biological resources include common terrestrial vegetation/habitat types and wildlife, aquatic biological resources, sensitive plant communities and habitats, and special-status plant and animal species. Regulatory requirements that pertain to biological resources are summarized. The analysis describes potential direct, indirect, and cumulative impacts from implementation of the proposed program and identifies mitigation measures for those impacts determined to be significant.

The primary issues raised in comments on the notice of preparation that pertain to biological resources included the following:

- ▶ Assessment of the flora and fauna within and adjacent to the project footprint, with particular emphasis on identifying rare, threatened, endangered, and other sensitive species and their associated habitats.
- ▶ Impacts from lighting, noise, human activity, wildlife-human interactions, exotic or invasive species, and drainage.
- ▶ Assessment of potential indirect and cumulative impacts, including to resources in open space lands adjacent to the program area.
- ▶ Impacts on nesting birds.
- ▶ Design of mitigation measures to avoid or minimize impacts to protected species and sensitive plant communities, with emphasis on avoidance; and, for unavoidable impacts, consideration of onsite mitigation.
- ▶ Qualifications of individuals preparing restoration and revegetation plans to include expertise in California ecosystems and native plant restoration techniques.
- ▶ Presence of a qualified biologist to monitor ground-disturbing activities to protect special-status wildlife or other species with limited mobility that may otherwise be injured or killed by project related activities.
- ▶ Lack of support for the relocation or salvage of special-status plant species.
- ▶ Support for removal of encroaching conifers from meadows in the program area and aspen stands.
- ▶ Measures to protect sensitive meadow and riparian habitat while conducting fuels reduction and restoration treatments.

For this analysis, information about common and sensitive biological resources known or with potential to occur in the program area is based primarily on review of the following sources: results of previous biological surveys conducted for other projects planned in the program area; TRPA and U.S. Forest Service (USFS) survey and GIS data; a records search of the California Natural Diversity Database (CNDDDB; CDFW 2019); a list of federally proposed, candidate, threatened, and endangered species that may occur in the program region obtained from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) system (USFWS 2019); USFWS National Wetlands Inventory (updated July 2016) (USFWS 2016); high resolution aerial imagery; and various reports and published studies cited in this section. Additionally, the analysis of cumulative effects incorporates relevant outputs from the LANDIS-II modeling of wildlife habitat conducted for the Lake Tahoe West Restoration Partnership (Lake Tahoe West).

No adopted habitat conservation plans (HCPs) or natural community conservation plans (NCCPs) apply to the proposed program. Therefore, the following analysis does not evaluate potential conflicts with adopted conservation plans.

The proposed program has been developed in a manner that is consistent with applicable local plans (e.g., general plans), policies, and ordinances to the extent the program is subject to them. Tree removal would not conflict because the program was developed consistent with regional and local plans, including TRPA Code Section 61.1. Tree removal is further discussed in Section 3.4, "Agriculture and Forestry Resources." Implementation of the proposed program would not conflict with any local or regional tree preservation policies or ordinances. This issue is not evaluated further.

3.6.1 Regulatory Setting

FEDERAL

Federal Endangered Species Act

Pursuant to the federal Endangered Species Act (ESA; 16 U.S.C. Section 1531 et seq.), USFWS and the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) regulate the taking of species listed in the ESA as threatened or endangered. In general, persons subject to ESA (including private parties) are prohibited from “taking” endangered or threatened fish and wildlife species on private property, and from “taking” endangered or threatened plants in areas under federal jurisdiction or in violation of state law. Under Section 9 of the ESA, the definition of “take” is to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” USFWS has also interpreted the definition of “harm” to include significant habitat modification that could result in take.

Two sections of the ESA address take. Section 10 regulates take if a non-federal agency is the lead agency for an action that results in take and no other federal agencies are involved in permitting the action. However, if a project would result in take of a federally listed species and federal discretionary action (even if a non-federal agency is the overall lead agency) is involved (i.e., a federal agency must issue a permit), the involved federal agency consults with USFWS under Section 7 of the ESA. Section 7 of the ESA outlines procedures for federal interagency cooperation to protect and conserve federally listed species and designated critical habitat. Section 7(a)(2) requires federal agencies to consult with USFWS and NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat.

Clean Water Act

Section 404 of the CWA requires a project applicant to obtain a permit before engaging in any activity that involves any discharge of dredged or fill material into waters of the United States, including wetlands. Fill material is material placed in waters of the United States that has the effect of replacing any portion of waters of the United States with dry land or changing the bottom elevation of any portion of waters of the United States. Waters of the United States include navigable waters; interstate waters; all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce; relatively permanent tributaries to any of these waters; and wetlands adjacent to these waters. Wetlands are defined as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Potentially jurisdictional wetlands typically must meet three wetland delineation criteria: hydrophytic vegetation, hydric soil types, and wetland hydrology. Wetlands that meet the delineation criteria may be jurisdictional under Section 404 of the CWA pending USACE verification.

Under Section 401 of the CWA, an applicant for a Section 404 permit must obtain a certificate from the appropriate state agency stating that the intended dredging or filling activity is consistent with the state’s water quality standards and criteria. In California, the authority to grant water quality certification is delegated by the State Water Resources Control Board to the nine regional water quality control boards (RWQCBs).

Bald and Golden Eagle Protection Act

Under the Bald and Golden Eagle Protection Act, it is illegal to take bald eagles, including their parts, nests, or eggs unless authorized. “Take” is defined as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment (USFWS 2007:31156). In addition to immediate impacts, this definition also addresses impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle’s return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), first enacted in 1918, provides for protection of international migratory birds and authorizes the Secretary of the Interior to regulate the taking of migratory birds. The MBTA provides that it shall be unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest, or egg of any such bird. Under the MBTA, “take” is defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities.” A take does not include habitat destruction or alteration, as long as there is not a direct taking of birds, nests, eggs, or parts thereof. The current list of species protected by the MBTA can be found in Title 50 of the Code of Federal Regulations (CFR), Section 10.13 (50 CFR 10.13). The list includes nearly all birds native to the United States.

Executive Order 13112—National Invasive Species Management Plan

Executive Order 13112 directs all federal agencies to prevent the introduction and control the spread of invasive species in a cost-effective and environmentally sound manner to minimize economic, ecological, and human health impacts. It established a national Invasive Species Council made up of federal agencies and departments and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. The Invasive Species Council and advisory committee oversee and facilitate implementation of the executive order.

TAHOE REGIONAL PLANNING AGENCY

Tahoe Regional Plan

The TRPA Regional Plan is a regulatory framework that includes several initiatives and documents, including Goals and Policies, threshold standards (thresholds), and Code of Ordinances (Code). The elements of the Regional Plan that apply to terrestrial and aquatic biological resources are summarized below.

Thresholds

The TRPA thresholds include standards and indicators that have been developed to focus management efforts and provide a measure of progress for vegetation, wildlife, and fisheries. The threshold standards for vegetation, wildlife, and fisheries, and the attainment status for each are summarized in Table 3.6-1 (TRPA 2016). Specific targets and indicators used to evaluate the standards can be found in the TRPA 2015 Threshold Evaluation Report (TRPA 2016).

Table 3.6-1 TRPA Vegetation, Wildlife, and Fisheries Resource Threshold Standards and their Attainment Status

TRPA Threshold Reporting Category and Standard	2015 Attainment Status
Vegetation	
Common Vegetation:	
Vegetation Community Richness	At or Somewhat Better than Target
Relative Abundance of Red Fir Forest in Seral Stages Other Than Mature	Considerably Worse than Target
Relative Abundance of Yellow Pine Forest in Seral Stages Other Than Mature	Considerably Worse than Target
Relative Abundance of Meadow and Wetland Vegetation	Somewhat Worse than Target
Relative Abundance of Shrub Vegetation	Considerably Better than Target
Relative Abundance of Deciduous Riparian Vegetation	Considerably Worse than Target
Size of Forest Openings and Juxtaposition of Vegetation Communities – Management Standard	Implemented
Consistency with Baily Land Capability System	Implemented
Nondegradation of Stream Environment Zones	Implemented
Appropriate Management Practices	Implemented
Uncommon Plant Communities:	
Upper Truckee Marsh	Somewhat Worse than Target

TRPA Threshold Reporting Category and Standard	2015 Attainment Status
Taylor Creek Marsh	Insufficient Data to Determine Status
Pope Marsh	Insufficient Data to Determine Status
Osgood Swamp	Insufficient Data to Determine Status
Hell Hole	Insufficient Data to Determine Status
Grass Lake	Insufficient Data to Determine Status
Freel Peak Cushion Plant Community	Somewhat Worse than Target
Deep-Water Plants	Considerably Worse than Target
Sensitive Plants:	
Tahoe Yellow Cress	Considerably Better than Target
Tahoe Draba	Considerably Better than Target
Long-petaled Lewisia	Considerably Better than Target
Cup Lake Draba	Considerably Better than Target
Galena Creek Rockcress	Considerably Worse than Target
Late Seral/Old Growth Ecosystems Overall and in Montane, Upper Montane, and Subalpine Elevation Zones	Considerably Worse than Target (in all elevation zones)
Wildlife	
Special Interest Species:	
Northern Goshawk Population Sites	Insufficient Data to Determine Status
Osprey	Considerably Better than Target
Nesting Bald Eagle Population	At or Somewhat Better than Target
Wintering Bald Eagle Population Sites	Considerably Better than Target
Golden Eagle Population Sites	Insufficient Data to Determine Status
Peregrine Falcon Population Sites	Considerably Better than Target
Waterfowl Population Sites	Somewhat Worse than Target
Deer	Insufficient Data to Determine Status
Disturbance Free Zones Management Standards	Implemented
Habitats of Special Significance:	
Riparian Habitat	Implemented
Fisheries	
Stream Habitat:	
Miles of Stream Habitat in Excellent Condition	Considerably Better than Target
Miles of Stream Habitat in Good Condition	Considerably Worse than Target
Miles of Stream Habitat in Marginal Condition	Considerably Worse than Target
Instream Flow:	
Nondegradation Standard for Instream Flow	Implemented
Divert Stream Intakes to Lake Sources	Implemented
Lahontan Cutthroat Trout	Implemented
Lake Habitat:	
Acres of "Prime" Fish Habitat	At or Somewhat Better than Target

Source: TRPA 2016

Goals and Policies

The Conservation Element of the TRPA Goals and Policies document establishes goals for the preservation, development, utilization, and management of natural resources within the Tahoe Basin. These goals and policies are designed to achieve and maintain adopted threshold standards and are implemented through the Code.

The Conservation Element includes 10 subelements that address the range of Lake Tahoe's natural and historical resources. The applicable Subelements and Goals are discussed in this section. Policies associated with each goal can be found in the TRPA Goals and Policies document online at: <http://www.trpa.org/regional-plan/goals-policies/>.

Chapter 4 of the Goals and Policies identifies the following six goals and associated policies for vegetation in the Tahoe Region:

GOAL Veg-1: Provide for a wide mix and increased diversity of plant communities.

- ▶ **Policy VEG-1.1:** Forest management practices shall be allowed when consistent with acceptable strategies for the maintenance and enhancement of forest health and diversity, prevention of wildfire, protection of water quality, and enhancement of wildlife habitats.
- ▶ **Policy VEG-1.2:** Opportunities to improve the age structure of the pine and fir plant communities shall be encouraged when consistent with other environmental considerations.
- ▶ **Policy VEG-1.3:** Forest pattern shall be manipulated whenever appropriate as guided by the size and distribution of forest openings.
- ▶ **Policy VEG-1.7:** Maintain forest litter for its erosion control and nutrient cycling functions in naturally-vegetated areas except to the extent it poses a fire hazard.
- ▶ **Policy VEG-1.9:** All proposed actions shall consider the cumulative impact of vegetation removal with respect to plant diversity and abundance, wildlife habitat and movement, soil productivity and stability, and water quality and quantity.
- ▶ **Policy VEG-1.10:** Work to eradicate and prevent the spread of invasive species.
- ▶ **Policy VEG-1.11:** Encourage local governments to develop urban forestry components within their area plans. Urban forestry programs should seek to reestablish natural forest conditions in a manner that does not increase the risk of catastrophic wildfire.

GOAL Veg-2: Provide for the protection, maintenance, and restoration of such unique ecosystems as wetlands, meadows, and other riparian vegetation.

- ▶ **Policy VEG-2.1:** Riparian plant communities shall be managed for the beneficial uses of passive recreation, groundwater recharge, and nutrient catchment, and as wildlife habitats.
- ▶ **Policy VEG-2.2:** Riparian plant communities shall be restored or expanded whenever and wherever possible. When complete restoration is not feasible, restoration programs shall focus on restoring the natural function of riparian areas to the greatest extent practical.

GOAL Veg-3: Conserve threatened, endangered, and sensitive plant species and uncommon plant communities of the Lake Tahoe Region.

- ▶ **Policy VEG-3.1:** Uncommon plant communities shall be identified and protected for their natural values.
- ▶ **Policy VEG-3.2:** The population sites and critical habitat of all sensitive plant species in the Lake Tahoe region shall be identified and preserved.

GOAL Veg-4: Provide for and increase the amount of late seral/old growth stands within the Lake Tahoe Region.

- ▶ **Policy VEG-4.1:** Stands exhibiting late seral/old growth characteristics shall be managed to allow these stands to sustain these conditions.

- ▶ **Policy VEG-4.2:** Stands not exhibiting late seral/old growth characteristics shall be managed to progress towards late seral/old growth.
- ▶ **Policy VEG-4.3:** Prescriptions for treating these stands shall be prepared by licensed foresters or otherwise qualified individuals on a stand-by-stand basis. Each prescription shall demonstrate/ explain how it will promote late seral or old growth characteristics prior to applying any mechanical treatment or prescribed fire. Stand-specific prescriptions will be developed using the best available forest and ecosystem management science, strategies, standards and guidelines as well as all applicable regulations.
- ▶ **Policy VEG-4.4:** Retain large trees as a principal component of late seral/old growth ecosystems.
- ▶ **Policy VEG-4.5:** Retain trees of medium and small size sufficient to provide for large tree recruitment over time, and to provide structural diversity. Preferably, these trees will be the most vigorous in the stand using one of the standard tree classifications. In addition, species composition should be key consideration in tree retention.
- ▶ **Policy VEG-4.6:** Use of prescribed fire is preferred to reduce fire hazard and perpetuate desired natural ecological processes. Manual and mechanical treatment may be used to reduce forest fuel levels and to improve late seral forest conditions in addition to, or in lieu of, prescribed fire.

GOAL Veg-5: The appropriate stocking level and distribution of snags and coarse woody debris shall be retained in the Region's forests to provide habitat for organisms that depend on such features and to perpetuate natural ecological processes.

- ▶ **Policy VEG-5.1:** Allow for a sufficient number and an appropriate distribution of snags throughout the region's forests to provide and maintain habitat for species dependent on such features.
- ▶ **Policy VEG-5.2:** Allow for an appropriate amount, level and distribution of coarse woody debris (downed woody material) throughout the region's forests to maintain biological integrity, to stabilize soil, and to afford a reasonable level of fire safety.

GOAL Veg-6: TRPA shall work with fire protection agencies in the Region to reduce the risk of catastrophic wildfire.

- ▶ **Policy VEG 6.1:** Promote hazardous fuels reduction in order to reduce the intensity of naturally occurring wildfire and prevent catastrophic wildfire.
- ▶ **Policy VEG-6.2:** Promote creation of defensible space using forest management practices that are consistent with state defensible space codes and community wildfire protection plans.

The two goals and associated policies identified for wildlife are as follows:

GOAL WL-1: Maintain suitable habitats for all indigenous species of wildlife without preference to game or nongame species through maintenance and improvement of habitat diversity.

- ▶ **Policy WL-1.1:** All proposed actions shall consider impacts to wildlife.
- ▶ **Policy WL-1.2:** Riparian vegetation shall be protected and managed for wildlife.

GOAL WL-2: Preserve, enhance, and where feasible, expand habitats essential for threatened, endangered, rare, or sensitive species found in the Region.

- ▶ **Policy WL-2.1:** Endangered, threatened, rare, and special interest species shall be protected and buffered against conflicting land uses.

The following describes goals and policies of the Regional Plan that relate to protection of water quality and aquatic species.

GOAL WQ-3: Reduce or eliminate nonpoint sources of pollutants which affect, or potentially affect, water quality in the Tahoe Region in a manner consistent with the Lake Tahoe TMDL [total maximum daily load], where applicable.

- ▶ **Policy WQ-3.3:** Units of local government, state transportation departments, U.S. Forest Service and other implementing agencies shall restore 25 percent of the SEZ lands (from the 1983 baseline) that have been disturbed, developed, or subdivided in accordance with the environmental improvement program.

GOAL FI-1: Improve aquatic habitat essential for the growth, reproduction, and perpetuation of existing and threatened fish resources in the Lake Tahoe Region.

- ▶ **Policy FI-1.1:** Development proposals affecting streams, lakes and adjacent lands shall evaluate impacts to the fishery.
- ▶ **Policy FI-1.2:** Unnatural blockages and other impediments to fish movement shall be prohibited and removed, wherever appropriate.
- ▶ **Policy FI-1.3:** An instream maintenance program should be developed and implemented.
- ▶ **Policy FI-1.4:** Standards for boating activity shall be established for the shallow zone of Lake Tahoe.
- ▶ **Policy FI-1.5:** Habitat improvement projects are acceptable practices in streams and lakes.
- ▶ **Policy FI-1.6:** Instream flows shall be regulated, when feasible, to maintain fishery values.
- ▶ **Policy FI-1.7:** Existing points of water diversion from streams shall be transferred to lakes, whenever feasible, to help protect instream beneficial uses.
- ▶ **Policy FI-1.8:** Support, in response to justifiable evidence, state and federal efforts to reintroduce Lahontan cutthroat trout in appropriate remote locations.
- ▶ **Policy FI-1.9:** Prohibit the release of nonnative aquatic invasive species in the region in cooperation with public and private entities. Control or eradicate existing populations of these species and take measures to prevent accidental or intentional release of such species.

Code of Ordinances

The applicable provisions of the TRPA Code regarding vegetation, wildlife, and aquatic resources are summarized below.

Protection and Management of Vegetation

The Code requires the protection and maintenance of all native vegetation types. Section 61.3, "Vegetation Protection and Management," of Chapter 61, "Vegetation and Forest Health," provides for the protection of stream environment zone (SEZ) vegetation, other common vegetation, uncommon vegetation, and sensitive plants in SEZs (TRPA 2012). TRPA defines an SEZ as an area that owes its biological and physical characteristics to the presence of surface water or groundwater. TRPA can require the preparation and implementation of a remedial vegetation management plan, where the need has been identified, for the purposes of threshold standard maintenance or attainment. In addition, Chapter 61, Section 61.4, "Revegetation," specifies minimum criteria for revegetation programs.

Protection of Sensitive and Uncommon Plants

Code Chapter 61, Section 61.3.6, "Sensitive and Uncommon Plant Protection and Fire Hazard Reduction," establishes standards for preserving and managing sensitive plants and uncommon plant communities, as referenced above in Thresholds. Projects and activities that are likely to harm, destroy, or otherwise jeopardize sensitive plants or their habitat must fully mitigate their significant adverse effects. Measures to protect sensitive plants and their habitat include:

- ▶ fencing to enclose individual populations or habitat,
- ▶ restricting access or intensity of use,
- ▶ modifying project design as necessary to avoid adverse impacts,
- ▶ dedicating open space to include entire areas of suitable habitat, and
- ▶ restoring disturbed habitat.

Wildlife

TRPA sets standards for preserving and managing wildlife habitats, with special emphasis on protecting and increasing habitats of special significance, such as deciduous trees, wetlands, meadows, and riparian areas (Code Chapter 62). Specific habitats that are protected include riparian areas, wetlands, and SEZs; wildlife movement and migration corridors; important habitat for any species of concern; critical habitat necessary for the survival of any species; nesting habitat for raptors and waterfowl; fawning habitat for deer; and snags and coarse woody debris. In addition, TRPA-designated special-interest species (also referred to as "threshold species"), which are locally important because of rarity or other public interest, and species listed under the ESA or California Endangered Species Act (CESA) are protected from habitat disturbance by conflicting land uses.

TRPA-designated special-interest wildlife species are northern goshawk (*Accipiter gentilis*), osprey (*Pandion haliaetus*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), peregrine falcon (*Falco peregrinus anatum*), mule deer (*Odocoileus hemionus*), and waterfowl species.

The Code includes the following requirements for protection of wildlife movement and migration corridors.

- ▶ SEZs adjoining creeks and major drainages that link islands of habitat will be managed, in part, for use by wildlife as movement corridors. Structures, such as bridges, proposed within these movement corridors will be designed to avoid impairment of wildlife movement.
- ▶ Projects and activities in the vicinity of deer migration areas will be required to mitigate or avoid significant adverse impacts.

The TRPA Code also contains several provisions regarding critical habitat. TRPA defines critical habitat as any element of the overall habitat for any species of concern that, if diminished, could reduce the existing population or impair the stability or viability of the population. This also applies to habitat for special-interest species native to the Tahoe Basin whose breeding populations have been extirpated, but could return or be reintroduced. The Code includes the following critical-habitat provisions.

- ▶ No project or activity will cause, or threaten to cause, the loss of any habitat component considered critical to the survival of a particular wildlife species.
- ▶ No project or activity will threaten, damage, or destroy nesting habitat of raptors and waterfowl or fawning habitat of deer.
- ▶ Wetlands shall be preserved and managed for their ecological significance, including their value as nursery habitat to fishes, nesting and resting sites for waterfowl, and as a source of stream recharge, except as permitted pursuant to Chapter 30 of the TRPA Code.

Fish Resources

Chapter 63, "Fish Resources," of the TRPA Code includes provisions to ensure the protection of fish habitat and to provide for the enhancement of degraded habitat. The chapter applies to all projects and activities that could interfere with the health of fish populations in Lake Tahoe, its tributaries, and other lakes in the region. Provisions for the protection or enhancement of fish habitat shall be included for all new uses, projects and activities within fish habitat as identified by TRPA fish habitat maps or a qualified biologist. Fish habitat consists of a complex set of elements, such as spawning and nursery areas, food supply, and escape cover.

For instream habitats, protection provisions in Chapter 63 include prohibiting stream channel alterations, facilitating fish movement at stream crossings, removing barriers to fish movement, mitigating impacts on fish habitat from development, maintaining instream flows, preventing sediment entry into the stream system, and encouraging native vegetative cover.

Aquatic Invasive Species

Code Section 63.4, "Aquatic Invasive Species," discusses how aquatic invasive species (AIS) pose a serious threat to the waters of the Tahoe Region and can disrupt the ecology and economy of the region. Section 63.4.1 prohibits the transport or introduction of AIS into the Tahoe Basin.

STATE

California Endangered Species Act

Pursuant to CESA, a permit from California Department of Fish and Wildlife (CDFW) is required for projects that could result in the “take” of a plant or animal species that is listed by the state as threatened or endangered. Under CESA, “take” is defined as an activity that would directly or indirectly kill an individual of a species, but the CESA definition of take does not include “harm” or “harass,” like the ESA definition does. As a result, the threshold for take is higher under CESA than under ESA. Authorization for take of state-listed species can be obtained through a California Fish and Game Code Section 2081 incidental take permit.

California Native Plant Protection Act

In addition to CESA, the California Native Plant Protection Act provides protection to endangered and rare plant species, subspecies, and varieties of wild native plants in California. The California Native Plant Protection Act definitions of “endangered” and “rare” closely parallel the CESA definitions of endangered and threatened plant species.

California Fish and Game Code Sections 3503 and 3503.5—Protection of Bird Nests and Raptors

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 of the California Fish and Game Code states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders *Falconiformes* and *Strigiformes*), including their nests or eggs. Typical violations include destruction of active nests as a result of tree removal or disturbance caused by project construction or other activities that cause the adults to abandon the nest, resulting in loss of eggs and/or young.

California Fish and Game Code Fully Protected Species

Protection of fully protected species is described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species and do not provide for authorization of incidental take. CDFW has informed nonfederal agencies and private parties that their actions must avoid take of any fully protected species.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act requires that each of the nine RWQCBs prepare and periodically update basin plans for water quality control. Each basin plan sets forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Basin plans offer an opportunity to protect wetlands through the establishment of water quality objectives. The RWQCB’s jurisdiction includes waters of the United States, as well as areas that meet the definition of “waters of the state.” “Waters of the state” is defined as any surface water or groundwater, including saline waters, within the boundaries of the state. The RWQCB has the discretion to take jurisdiction over areas not federally protected under CWA Section 404 provided they meet the definition of waters of the state and the State Water Resources Control Board published a new set of procedures for discharges of dredged or fill material into waters of the state on March 22, 2019. Mitigation requiring no net loss of wetlands functions and values of waters of the state typically is required by the RWQCB.

The State Water Resources Control Board has adopted the following definition of wetlands:

An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater or shallow surface water or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area’s vegetation is dominated by hydrophytes the area lacks vegetation.

Section 1602 of the California Fish and Game Code

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by CDFW under Section 1600 et seq. of the California Fish and Game Code. Under Section 1602, it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by CDFW, or use any material from the streambeds, without first notifying CDFW of such activity and obtaining a final agreement

authorizing such activity. CDFW's jurisdiction in altered or artificial waterways is based on the value of those waterways to fish and wildlife.

LOCAL

Placer County General Plan

The Placer County General Plan includes Goal 6.C, to protect, restore, and enhance habitat that support fish and wildlife species to maintain populations at viable levels and Goal 6.D, to preserve and protect the valuable vegetation resources of Placer County.

Placer County Code

Article 12.20. Tree Preservation in Area East of Sierra Summit

Placer County Code, Article 12.20, addresses tree preservation in the county east of the Sierra summit. The ordinance is applicable to all trees east of the Sierra summit that are 6 inches diameter or greater at breast height, excluding lands devoted to the growing and harvesting of timber for commercial purposes. A Timber Harvest Plan must be prepared and considered by the California Department of Forestry and Fire Protection before the removal of timberland, and a tree permit must be obtained before removal of trees over 6 inches dbh.

El Dorado County General Plan

The El Dorado County General Plan includes Goal 7.3 which supports conservation, enhancement, and management of water resources and protecting their quality from degradation. Goal 7.4 promotes identification, conservation, and management of wildlife, wildlife habitat, fisheries, and vegetation resources of significant biological, ecological, and recreational value. The general plan also supports conservation of open space land for the continuation of the county's rural character, commercial agriculture, forestry and other productive uses, the protection of natural resources, for wildlife habitat, and other qualities (Goal 7.6). The following policies are applicable to the proposed program:

- ▶ **Policy 7.3.1.1:** Encourage the use of Best Management Practices, as identified by the Soil Conservation Service, in watershed lands as a means to prevent erosion, siltation, and flooding.
- ▶ **Policy 7.3.2.1:** Stream and lake embankments shall be protected from erosion, and streams and lakes shall be protected from excessive turbidity, provided for horticultural and grazing activities on agriculturally zoned lands that utilize "best management practices (BMPs)" as recommended by the County Agricultural Commission and adopted by the Board of Supervisors. Until standards for buffers and special setbacks are established in the Zoning Ordinance, the County shall apply a minimum setback of 100 feet from all perennial streams, rivers, lakes, and 50 feet from intermittent streams and wetlands. These interim standards may be modified in a particular instance if more detailed information relating to slope, soil stability, vegetation, habitat, or other site- or project-specific conditions supplied as part of the review for a specific project demonstrates that a different setback is necessary or would be sufficient to protect the particular riparian area at issue. For projects where the County allows an exception to wetland and riparian buffers, development in or immediately adjacent to such features shall be planned so that impacts on the resources are minimized. If avoidance and minimization are not feasible, the County shall make findings, based on documentation provided by the project proponent, that avoidance and minimization are infeasible.
- ▶ **Policy 7.3.4.2:** Modification of natural stream beds and flow shall be regulated to ensure that adequate mitigation measures are utilized.
- ▶ **Policy 7.4.2.6:** El Dorado County Biological Community Conservation Plans shall be required to protect, to the extent feasible, rare, threatened, and endangered plant species only when existing federal or State plans for non-jurisdictional areas do not provide adequate protection.

City of South Lake Tahoe General Plan

The following policies from the City of South Lake Tahoe General Plan (CSLT 2011) apply to vegetation, wildlife, and fisheries and aquatic resources that could be affected by the proposed program.

- ▶ **Policy NCR-3.1:** Natural Habitat Preservation: The City shall protect, maintain, and restore key riparian areas, natural open space meadows, and Stream Environment Zones for the preservation of natural habitats.
- ▶ **Policy NCR-3.6:** Stream Environment Zone (SEZ) Restoration and Enhancement: The City shall increase the area of naturally functioning SEZs by preserving existing SEZ and restoring/rehabilitating disturbed SEZ.
- ▶ **Policy NCR-3.11:** Natural Habitat and Open Space Management: The City shall encourage and support public agencies formed to acquire and manage important natural habitat areas, and other open space lands.
- ▶ **Policy NCR-3.12:** Tree Preservation: The City shall adopt a tree preservation ordinance that protects large native trees, trees with historic importance, and trees that support sensitive species and healthy forest habitat.
- ▶ **Policy NCR-3.14:** Diseased Tree Removal: The City shall support awareness and removal of diseased trees to reduce the threat of urban fires.

3.6.2 Environmental Setting

The following sections summarize the biological resources in the program area that are most relevant to the significance criteria and impact analysis applicable to the program, which are provided in Section 3.6.3, "Environmental Impacts and Mitigation Measures."

The proposed program is located within a substantial portion of the western Lake Tahoe Basin, which includes numerous vegetation communities, terrestrial and aquatic habitats, special-status plant and animal habitats, and sensitive plant communities. By virtue of the nature and scope of the proposed treatment activities focused in the WUI, program implementation is expected to primarily affect the more urban-influenced areas of the region, which are concentrated in the lower to middle elevation ranges and areas of relatively moderate topography.

Because of the program level and regional scope of this analysis, the environmental setting described herein is not intended to provide a full inventory of all common and sensitive biological resources that are known or could occur in the program area or in a specific later treatment activity site. During any project-level planning and evaluation for later treatment activities, a combination of data sources and survey efforts would be used to determine the specific biological resources known or with potential to occur in a treatment site.

TERRESTRIAL VEGETATION TYPES AND WILDLIFE HABITATS

The program area is located within a unique Sierra Nevada geologic basin. The types, distribution, and functions of vegetation and wildlife resources in the Lake Tahoe Basin and the PTEIR program area are strongly influenced by the geology, climate, topography, and hydrology of the region, as well as development and land use patterns in the WUI. In the Lake Tahoe Basin, the Lake elevation averages 6,225 feet, and surrounding peaks reach elevations of up to 10,880 feet; the PTEIR program area spans much of this elevation range, up to 8,840 feet. This elevation gradient results in three general vegetation zones that are recognized in the Basin: montane, upper montane, and subalpine. Numerous vegetation types are present within each vegetation zone. The hydrologic, topographic, and elevation gradients present in the Tahoe Basin support a diverse mix of vegetation communities and wildlife habitats. For example, more than 50 vegetation types and 22 California Wildlife Habitat Relationships System (CWHR) habitat types are recognized in the Tahoe Basin, many of which are represented in the PTEIR program area.

Table 3.6-2 summarizes the CWHR vegetation and wildlife habitat types mapped in the program area (USFS 2014); maps displaying the distribution of these habitat types are provided in Appendix E. Vegetation/habitat types were mapped using the comprehensive existing vegetation (EVEG) databases that meet regional and national vegetation mapping standards. EVEG vegetation types are based on the Classification of California Vegetation (CALVEG) classification system. CWHR classifications were derived primarily from CALVEG type and relative cover. Because of the

large number of vegetation communities and wildlife habitats in the program area, these are not described in further detail in this PTEIR. Most of these vegetation/habitat types have been described numerous times in various environmental review and other documents; and descriptions can be found in the *Lake Tahoe Watershed Assessment* (Murphy and Knopp 2000) and the CWHR habitat classification and type descriptions (CDFW 2020).

Table 3.6-2 Vegetation Types and Wildlife Habitats in the Program Area

California Wildlife Habitat Relationships Vegetation/Habitat Type	Acres
Forest Habitats	
Jeffrey pine	5,908.32
Sierran mixed conifer	5,403.7
White fir	685.1
Lodgepole pine	607.9
Red fir	594.8
Subalpine conifer	69.1
Aspen	60.6
Montane hardwood-conifer	25.6
Eastside pine	13.4
Chaparral and Scrub Habitats	
Montane chaparral	938.6
Sagebrush	63.3
Bitterbrush	14.23
Alpine-dwarf shrub	1.4
Riparian and Aquatic Habitats	
Montane riparian	338.5
Lacustrine	43.2
Riverine	9.4
Meadow Habitats	
Wet meadow	909.2
Perennial grassland	727.8
Barren Habitats	
Barren	133.8
Anthropogenic (Human-Made) Habitats	
Urban	936.4
Total	17,484.2

Source: USFS 2014

FISHERIES AND AQUATIC RESOURCES

Aquatic Habitat

Aquatic habitats utilized by fishes found in the program area include stream, nearshore, and pelagic habitats. Streams provide freshwater to lakes and ponds, recharge groundwater, and provide habitat and migration corridors for a wide variety of aquatic organisms. The program area includes approximately 184 linear miles of stream habitat; 42 linear miles occur within Community Fuel Reduction Areas and 142 miles are within Planned CWPP Project Areas (SFEI 2016). Approximately 80 percent of stream length in the program area is characterized as 1st, 2nd, and 3rd order (i.e., relatively small streams and headwaters (SFEI 2016). Streamflow regimes within the program area are mostly ephemeral (61 percent) and perennial (31 percent), with a relatively small amount of stream length (8 percent) characterized by an intermittent flow. Perennial, ephemeral, and intermittent streams are defined by different flow patterns: perennial streams have continuous flow year-round during years of normal precipitation, ephemeral streams have flow in them for a short duration (days or weeks) after a precipitation event occurs, and intermittent streams cease flowing for weeks or months each year. The program area includes approximately 21 miles of lake perimeter (nearshore) habitat; 11 miles in the Community Fuel Reduction Areas and 10 miles in the Planned CWPP Project areas. Within the program area, approximately 54 percent of lake perimeter habitat occurs around Lake Tahoe and the remaining 46 percent around other small lakes. The program area also includes approximately 220 acres of the Upper Truckee Marsh, over 99% of which is located in the Planned CWPP Project areas. The effects of program activities on nearshore, pelagic, or marsh habitats would be limited to potential water quality effects, as discussed in Section 3.11, "Hydrology and Water Quality."

Stream habitats in the Tahoe Basin were historically characterized by "v-shaped" channels bordered by deciduous and coniferous riparian forests and understory vegetation (TRPA 2016). At higher elevations, Tahoe streams are characterized by cascades, riffles, runs, and pools with substrates dominated by boulder, cobble, and gravel (TRPA 2016). At lower elevations, streams are characterized by low-gradient floodplains bordered by willow and meadows, with streambed substrates dominated by sand and silt (TRPA 2016).

Decades of resource extraction throughout the Tahoe Basin has adversely affected the physical features of streams and their biota. Channel modifications associated with logging and livestock grazing are two of the primary activities that altered stream channel structure and watershed-specific hydrology. Historical logging frequently led to the degradation of spawning stream; whereas, livestock grazing damaged stream banks and altered stream channel habitat structure through sedimentation and degradation of riparian habitats (Murphy and Knopp 2000). As a result of these past activities, Tahoe Basin streams have a high percentage of sand and fine sediment (TRPA 2016).

To assess stream condition, the TRPA stream habitat condition monitoring program was developed in partnership with the EPA, CDFW, Nevada Department of Environmental Protection (NDEP), Lahontan Water Quality Control Board (Lahontan), and the U.S. Forest Service (USFS). Benthic macroinvertebrates (BMIs), and physical and chemical stream characteristics, are sampled annually from 48 streams in the Tahoe Basin using Standard Operating Procedures for Collecting Benthic Macroinvertebrate Samples and Associated Physical and Chemical Data for Ambient Bioassessments in California (Ode 2007). Results of these surveys are analyzed using the California Stream Condition Index (CSCI) model developed by the CDFW Aquatic Bioassessment Laboratory (Rehn et al. 2015). CSCI is a robust analytical scoring tool that requires the use of GIS and statistical software for its calculation (Rehn et al. 2015). In the development of the CSCI, the State of California developed four conditional categories for stream health (Figure 3.6-1). In the 1980s, the TRPA adopted their own stream condition categories. Translation of the four CSCI categories to the three TRPA categories is provided in Table 3.6-3 below.

Table 3.6-3 California Stream Condition Categories and Corresponding TRPA Condition Categories

California (CSCI) Condition Categories	TRPA Condition Categories
CSCI Score ≥ 0.92 = good	CSCI Score ≥ 0.92 = excellent
0.91 to 0.80 = fair	0.91 to 0.80 = good
0.79 to 0.63 = poor	≤ 0.79 = marginal
≤ 0.62 = very poor	

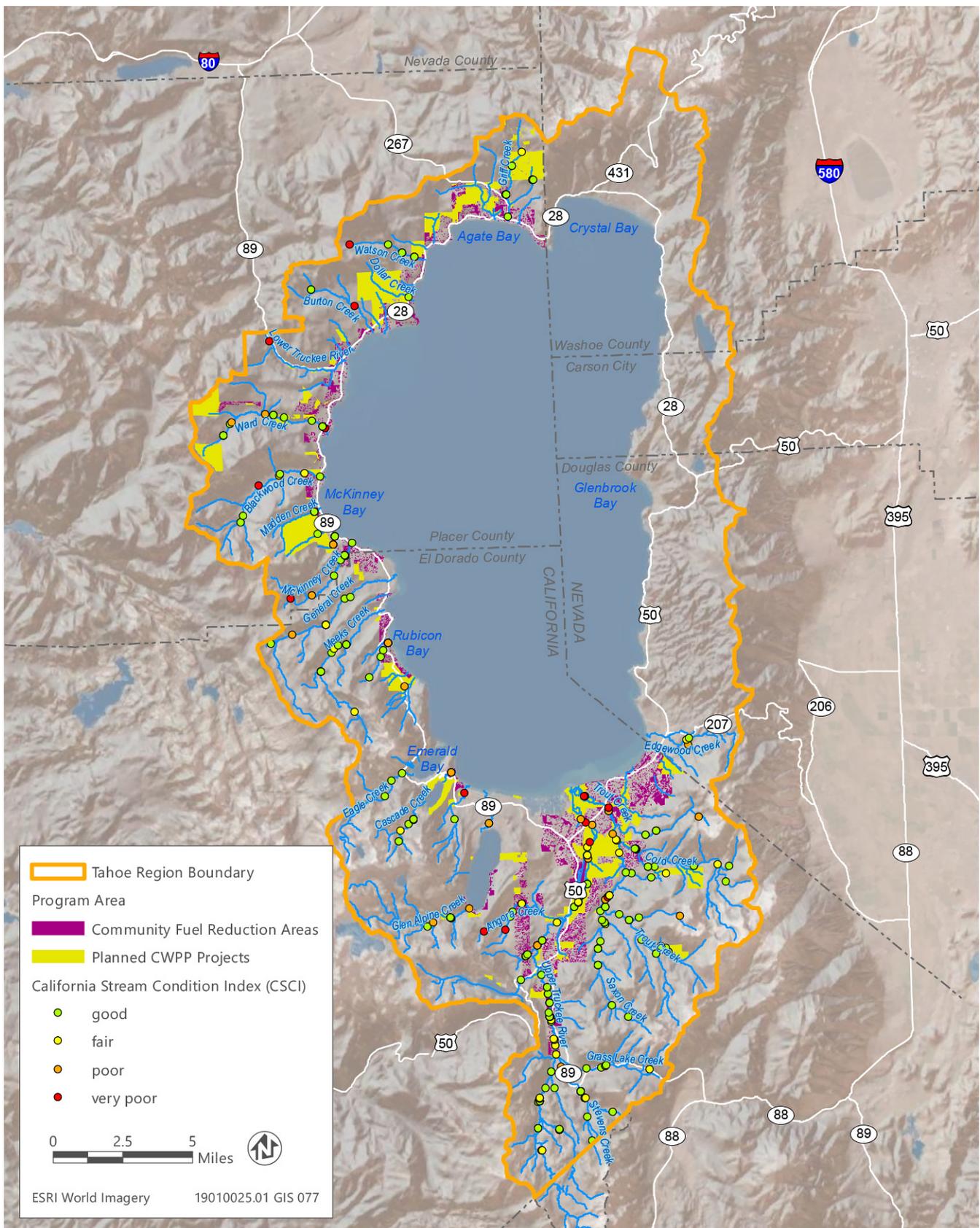
Source: TRPA 2016

Stream condition targets set by the TRPA include four percent of streams in excellent condition, 48 percent in good condition, and 17 percent in marginal condition. Monitoring results from 2009 through 2014 indicate 55 percent of streams are in excellent condition, which exceeds the target of 4 percent; approximately 18 percent of streams are in good condition, which is less than the target of 48 percent; and approximately 27 percent of streams are in marginal condition, which exceeds the target of 17 percent (TRPA 2016). Stream habitat conditions based on CSCI data (SWAMP 2019) were found to be good or fair throughout most of the program area. Poor conditions occurred in only a few locations including the mouth of Ward Creek and Tallac Creek, at the inlet to Fallen Leaf Lake, and at downstream reaches of the Upper Truckee River.

To conserve and protect aquatic and associated upland and riparian habitats, as well as water quality, TRPA delineated SEZs and developed threshold standards, goals, and policies to protect the environmental resources within SEZs (TRPA 2012). SEZ is a land designation unique to the Tahoe Basin that includes lands surrounding and including streams, lakes, and wetlands. In addition to providing water quality protection, SEZs are designed to protect streams, wetlands, ponds, lakes, seeps, springs and transitional areas between surface waters and adjacent upland plant communities (Roby et al. 2015). SEZ data were obtained from the Tahoe Aquatic Resources Inventory (SFEI 2016). Approximately 3,700 acres of SEZ occur in the program area (Figures 3.6-2 through 3.6-7).

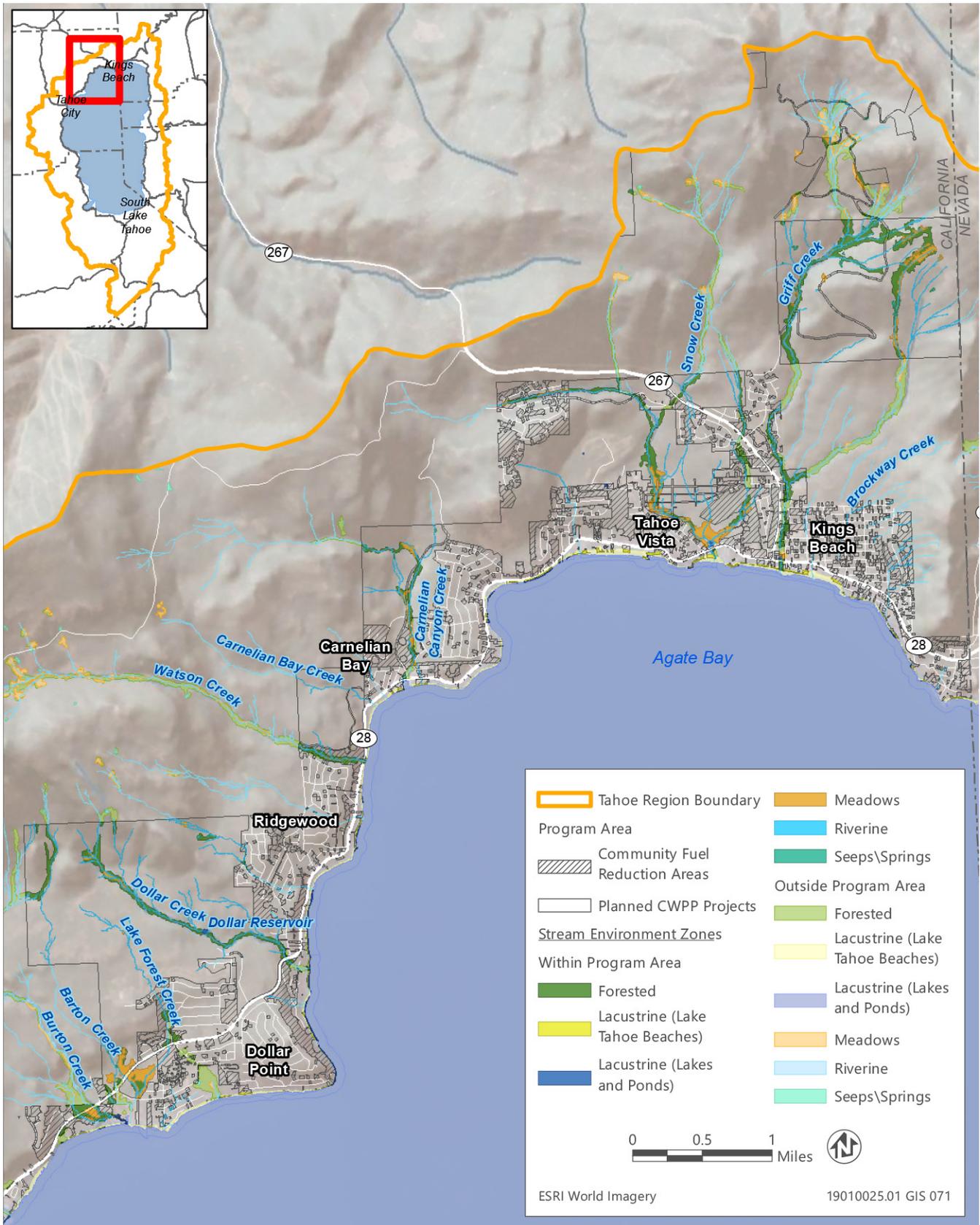
Fish Species

Common native fish species known or with potential to occur in the program area include Lahontan redbreast shiner (*Richardsonius egregius*), speckled dace (*Rhinichthys osculus*), Tahoe sucker (*Catostomus tahoensis*), and Paiute sculpin (*Cottus beldingi*). Special-status native fish with potential to occur, which are addressed further in "Sensitive Biological Resources," below, include Lahontan cutthroat trout (*Oncorhynchus clarkia henshawi*, Federally Threatened), mountain sucker (*Castostomus platyrhynchus*; California species of special concern [SSC]), mountain whitefish (*Prosopium williamsoni*; SSC), and Lahontan Lake tui chub (*Siphateles bicolor pectinifer*; SSC). Non-native fish species known or with potential to occur in the program area include rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*), lake trout (*Salvelinus namaycush*), Kokanee salmon (*Oncorhynchus nerka*), bluegill (*Lepomis macrochirus*), brown bullhead (*Ameiurus nebulosus*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), black crappie (*Pomoxis nigromaculatus*), and goldfish (*Carassius auratus*).



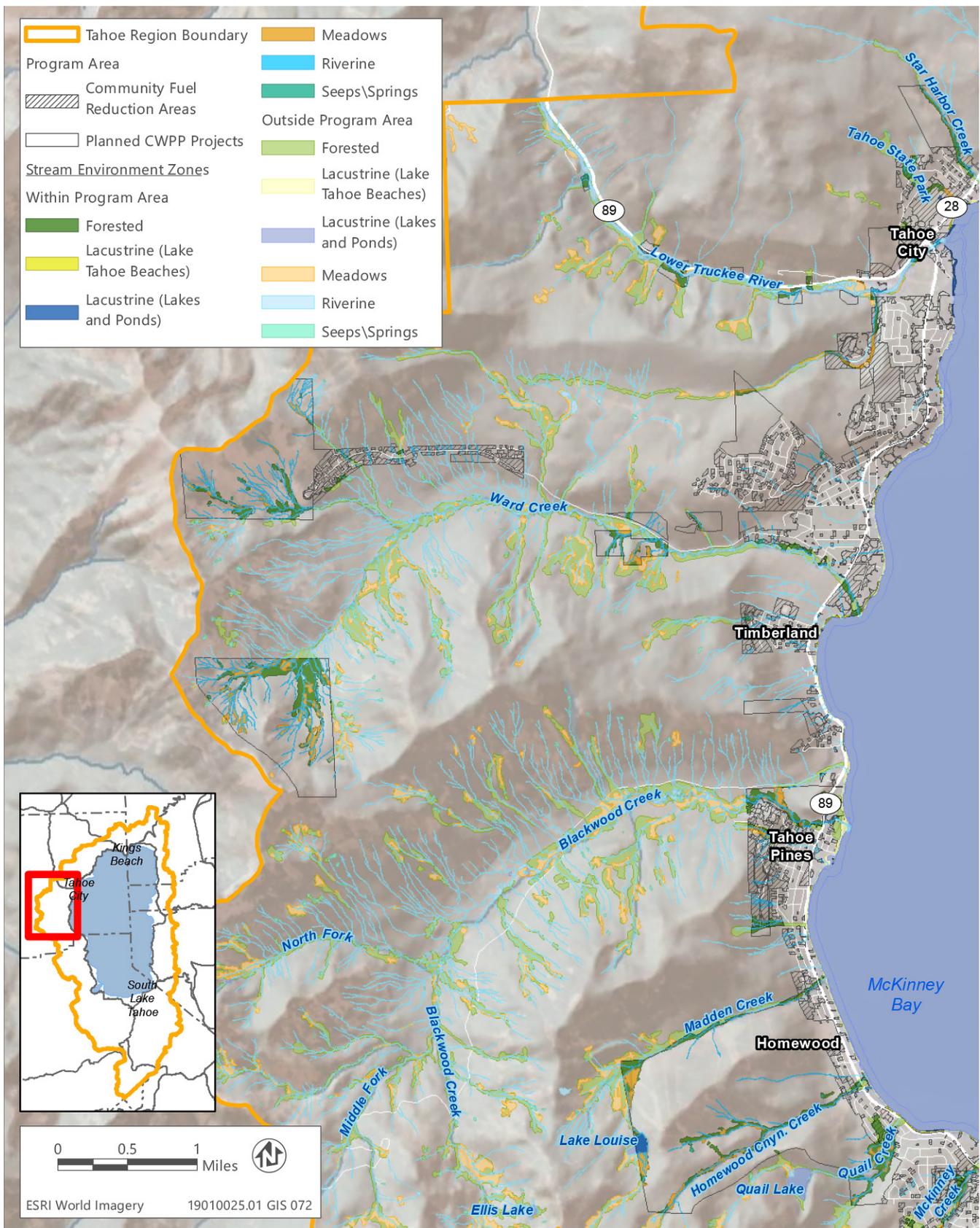
Source: Data received from CTC, Stillwater Sciences, and TRPA in 2019

Figure 3.6-1 Stream Condition in the Program Vicinity



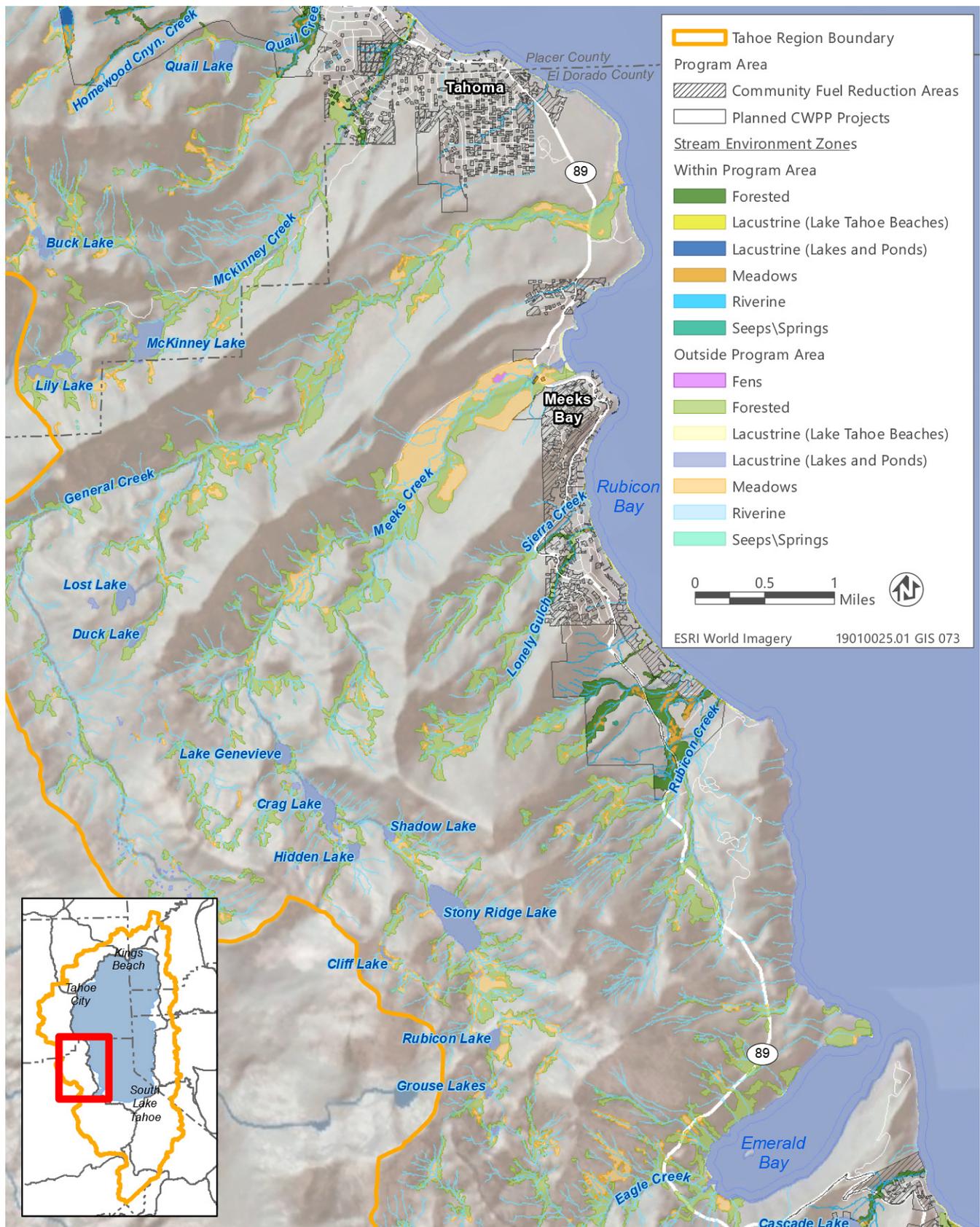
Source: Data received from CTC, Stillwater Sciences, and TRPA in 2019

Figure 3.6-2 Stream Environment Zone: Kings Beach to Dollar Point



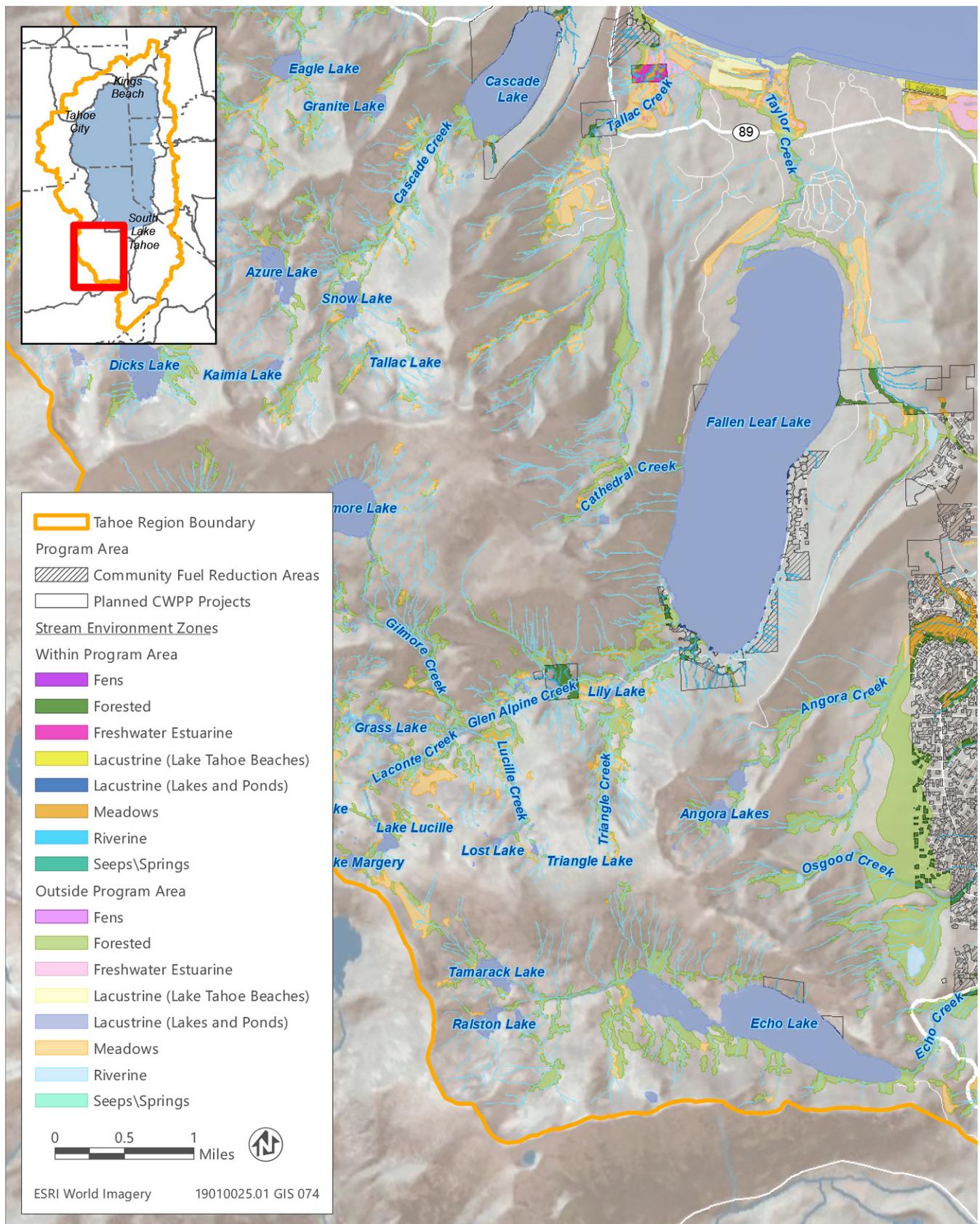
Source: Data received from CTC, Stillwater Sciences, and TRPA in 2019

Figure 3.6-3 Stream Environment Zone: Tahoe City to Homewood



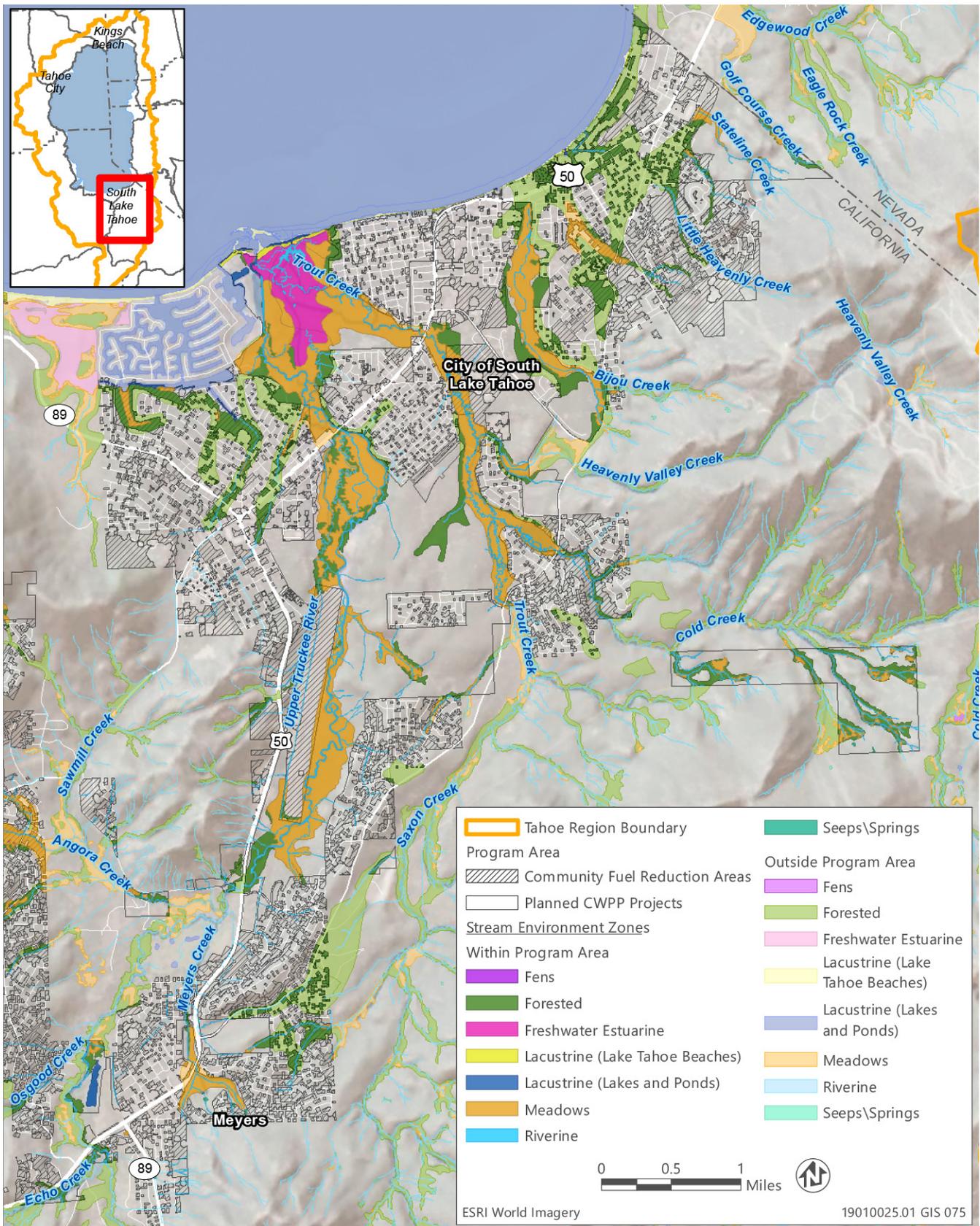
Source: Data received from CTC, Stillwater Sciences, and TRPA in 2019

Figure 3.6-4 Stream Environment Zone: Tahoma to Emerald Bay



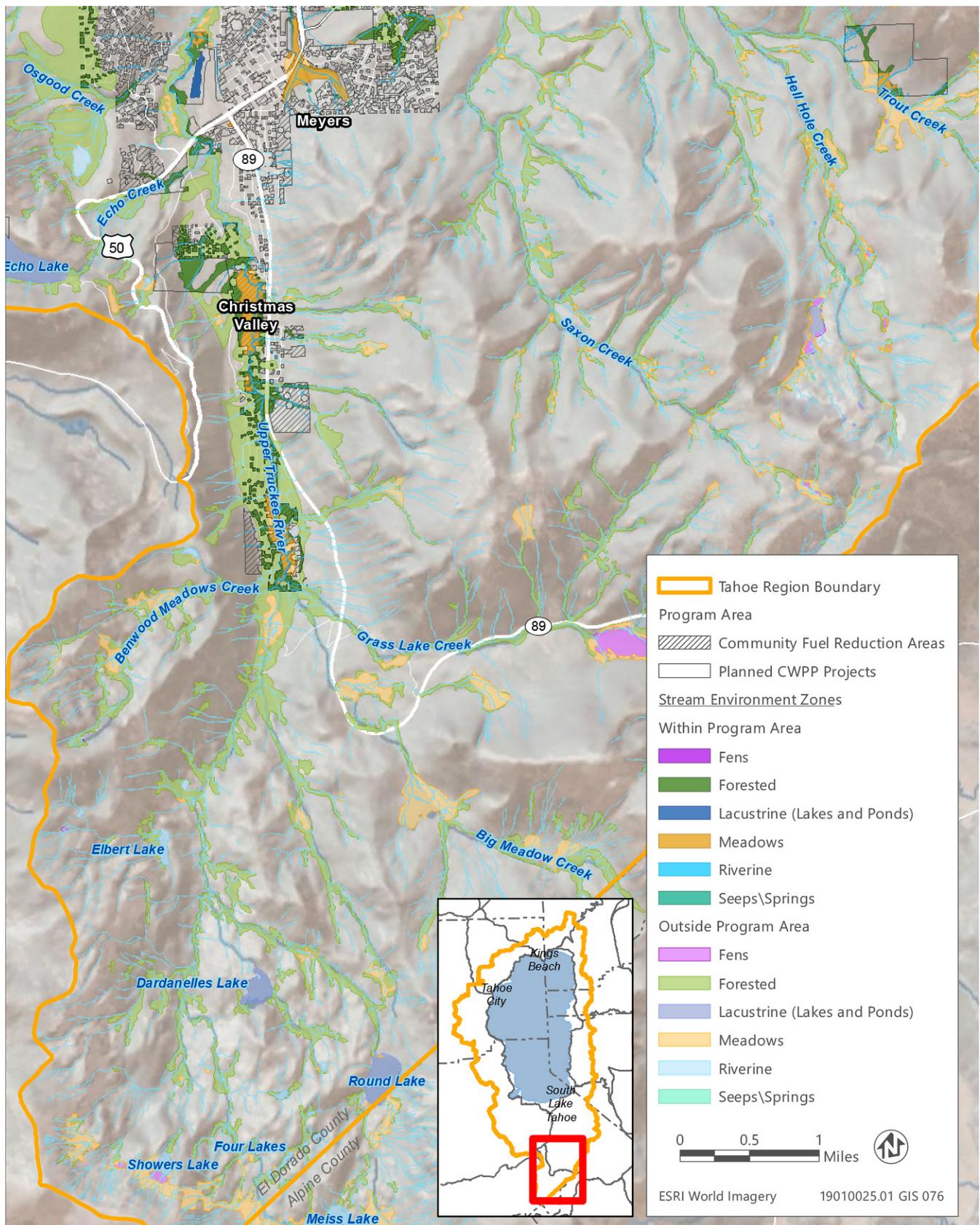
Source: Data received from CTC, Stillwater Sciences, and TRPA in 2019

Figure 3.6-5 Stream Environment Zone: Cascade Lake to North Upper Truckee



Source: Data received from CTC, Stillwater Sciences, and TRPA in 2019

Figure 3.6-6 Stream Environment Zone: South Lake Tahoe



Source: Data received from CTC, Stillwater Sciences, and TRPA in 2019

Figure 3.6-7 Stream Environment Zone: Christmas Valley

INVASIVE PLANTS

Several invasive plant species are present in the western portion of the Tahoe Basin and are assumed to occur in parts of the program area. The TRPA Code specifically prohibits the release of invasive or nonnative species in the Tahoe Basin because they can invade important native habitats and compete for resources. Table 3.6-4 lists invasive plants that have been documented in the vicinity of the program area.

Table 3.6-4 Status of Several Invasive Plant Species Known to Occur in the California Portion of the Tahoe Basin

Common Name and <i>Scientific Name</i>	LTBWCG ¹	CDFA ²	Cal-IPC ³	LTBMU ⁴
Cheatgrass, <i>Bromus tectorum</i>	-	-	High	Low
Bull thistle, <i>Cirsium vulgare</i>	Group 2	-	Moderate	High
Poison hemlock, <i>Conium maculatum</i>	-	-	Moderate	Medium
Scotch broom, <i>Cytisus scoparius</i>	Group 2	C	High	Medium
Klamath weed, <i>Hypericum perforatum</i>	Group 1	C	Moderate	Medium
Dyer's woad, <i>Isatis tinctoria</i>	-	B	Moderate	Medium
Broadleaved pepperweed, <i>Lepidium latifolium</i>	Group 2	B	High	Medium
Oxeye daisy, <i>Leucanthemum vulgare</i>	Group 2	-	Moderate	Medium
Dalmatian toadflax, <i>Linaria dalmatica</i> ssp. <i>dalmatica</i>	Group 2	A	Moderate	High
Butter and eggs, <i>Linaria vulgaris</i>	Group 2	-	Moderate	Medium
Eurasian water milfoil, <i>Myriophyllum spicatum</i>	-	C	High	N/A
Scotch thistle* <i>Onopordum acanthium</i> ssp. <i>acanthium</i>	Group 1	A	High	High
Russian thistle, <i>Salsola tragus</i>	-	C	Limited	-
Woolly mullein, <i>Verbascum thapsus</i>	-	-	Limited	-

Note: N/A = not applicable.

- ¹ Lake Tahoe Basin Weed Coordinating Group (LTBWCG) prioritizes invasive weeds of concern by management group. Group 1: watch for, report, and eradicate immediately. Group 2: manage infestations with the goal of eradication.
- ² The California Department of Food and Agriculture's (CDFA) noxious weed list (<http://www.cdffa.ca.gov/phpps/ipc/>) List A: eradication or containment is required at the state or county level; List B: eradication or containment is at the discretion of the County Agricultural Commissioner; List C: eradication or containment only when found in a nursery or at the discretion of the County Agricultural Commissioner.
- ³ California Invasive Plant Council (Cal-IPC) High: these species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure; Moderate: these species have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure; Limited: these species are invasive but their ecological impacts are minor on a statewide level. (Cal-IPC 2006, 2020)
- ⁴ The Lake Tahoe Basin Management Unit (LTBMU) High: species that have a large ecological impact and/or invasive potential and are easily controlled; Medium: species that have a medium ecological impact and/or invasive potential and medium ability to be controlled; Low: species that have a low ecological impact and/or invasive potential and are not easily controlled; species with an N/A were not evaluated.

Source: Compiled by Ascent Environmental 2019

SENSITIVE BIOLOGICAL RESOURCES

Sensitive biological resources addressed in this PTEIR include those that are afforded special protection or consideration through CEQA, the California Fish and Game Code (including but not limited to the CESA), ESA, CWA, Porter-Cologne Water Quality Control Act (Porter-Cologne Act), and local or regional policies.

Special-Status Species

Plants and animals may be special-status species due to declining populations, vulnerability to habitat change, or restricted distributions. Special-status species include those species legally protected under the CESA, the ESA, or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. In this document, special-status species are defined as the following.

- ▶ Species listed or proposed for listing as threatened or endangered under ESA (50 CFR 17.12 for listed plants, 50 CFR 17.11 for listed animals, and various notices in the Federal Register for proposed species) or candidates for possible future listing as threatened or endangered under ESA (75 CFR 69222);
- ▶ Species listed or candidates for listing by the State of California as threatened or endangered under CESA (14 Cal. Code Regs., Section 670.5);
- ▶ Animals fully protected under the California Fish and Game Code (FGC) (Section 3511 for birds, Section 4700 for mammals, Section 5050 for reptiles and amphibians, and Section 5515 for fish);
- ▶ Plants and animals designated as a sensitive, special interest, or threshold species by TRPA (TRPA Code of Ordinances, Chapters 61, 62, and 63);
- ▶ Plants listed as rare under the California Native Plant Protection Act (FGC Section 1900 et seq.);
- ▶ Plants considered by CDFW to be “rare, threatened or endangered in California” (California Rare Plant Ranks of 1A, presumed extinct in California and either rare or extinct elsewhere; 1B, considered rare or endangered in California and elsewhere; 2A, presumed extinct in California but common elsewhere; and 2B, considered rare or endangered in California but more common elsewhere). While these rankings do not afford the same type of legal protection as ESA or CESA, the uniqueness of these species requires special consideration under Section 15380 of the CEQA Guidelines;
- ▶ Animals identified by CDFW as species of special concern;
- ▶ Species considered locally significant, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA Section 15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G); or
- ▶ Species that otherwise meets the definition of rare or endangered under CEQA Section 15380.

A preliminary list of special-status plant and animal species with potential to occur in the program area was developed based on a review of the existing data sources described previously.

Plants

The data review preliminarily identified 29 special-status plant species that could occur in or near the program area. Table E-1 in Appendix E summarizes the regulatory status, habitat associations, and potential for occurrence in the program area for each special-status plant species evaluated during this analysis. Of these 29 plant species, six have documented occurrences in the program area (threetip sagebrush, scalloped moonwort, woolly-fruited sedge, broad-nerved hump moss, American manna grass, Tahoe yellow cress), 13 have a moderate or high likelihood to occur (Mingan moonwort, upswept moonwort, common moonwort, western goblin, Davy’s sedge, marsh skullcap, mud sedge, short-leaved hulsea, Santa Lucia dwarf rush, alder buckthorn, Munro’s desert mallow, Tulare rockcress, Galena Creek rockcress) and the remainder have a low (or no) potential and are not expected to occur (Table E-1 in Appendix E). (Scientific names for these species are provided in Table E-1.) These determinations were based on the types, extent, and quality of habitats in the program area determined during the reconnaissance-level field surveys; the proximity of the program area to known occurrences of the species; and the regional distribution and abundance of the species.

Wildlife and Fish

The data review preliminarily identified 28 special-status wildlife and fish species that could occur in or near the program area. Table E-1 (Appendix E) summarizes the regulatory status, habitat associations, and potential for occurrence in the program area for each special-status wildlife and fish species evaluated during this analysis. Of these 28 animal species, 12 are known or assumed to occur in the program area (northern goshawk, California spotted owl, osprey, bald eagle,

peregrine falcon, willow flycatcher, yellow-headed blackbird, olive-sided flycatcher, yellow warbler, Sierra Nevada mountain beaver, Sierra Nevada snowshoe hare, mule deer), six have a moderate or high likelihood to occur (southern long-toed salamander, western red bat, pallid bat, Lahontan cutthroat trout, mountain whitefish, mountain sucker), and the remainder have a low (or no) potential and are not expected to occur (Table E-1 in Appendix E). (Scientific names for these species are provided in Table E-1.) These determinations were based on the types, extent, and quality of habitats in the program area determined during the reconnaissance-level field surveys; the proximity of the program area to known occurrences of the species; and the regional distribution and abundance of the species.

Sensitive Natural Communities and Habitats

Sensitive habitats include those that are of special concern to resource agencies or are afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, Section 404 of the CWA, the state's Porter-Cologne Act, the TRPA Goals and Policies, and the TRPA Code. Sensitive natural habitat may be of special concern to agencies and conservation organizations for a variety of reasons, including their locally or regionally declining status, or because they provide important habitat to common and special-status species. Sensitive natural communities are those native plant communities defined by CDFW as having limited distribution statewide or within a county or region and that are often vulnerable to environmental effects of projects (CDFW 2018); many of these communities are tracked in the CNDDDB. In addition to habitats officially identified by CDFW as sensitive natural communities or meeting the definition of waters of the United States, examples of other sensitive habitats in California include riparian habitats, oak woodlands, chaparral, and coastal sage scrub.

In the program area, sensitive habitats include montane riparian, wet meadow, riverine (streams and rivers), and lacustrine (open water). The wet meadow, riverine, and lacustrine habitats would likely be considered jurisdictional by U.S. Army Corps of Engineers (USACE) and Lahontan Regional Water Quality Control Board (Lahontan RWQCB) under Section 404 of the federal CWA and the state's Porter-Cologne Act. Montane riparian habitats sometimes meet all three criteria required to qualify as wetlands as defined under the CWA; however, it is also common for one or more wetland criteria to be lacking in montane riparian communities. Regardless of whether riparian communities meet the wetland criteria to qualify as waters of the United States, they would all likely meet the definition of waters of the state regulated by the Lahontan RWQCB. The channel within the ordinary high water mark of rivers and creeks (e.g., Truckee River, Griff Creek, and Blackwood Creek) would also likely qualify as waters of the United States even if the associated riparian habitat did not. In addition, CDFW has jurisdiction over activities affecting the bed and bank of drainages. Additionally, habitats consisting of deciduous trees, wetlands, and meadows (i.e., riparian, wetland, and meadow habitats) are designated by TRPA as habitats of special significance. The TRPA threshold standard for habitats of special significance is non-degradation while providing for opportunities to increase the acreage of these habitats. Most of the areas within wetland/riparian habitats in the program area are also designated as SEZ, which is one of two TRPA-adopted threshold standards for soil conservation, as described previously.

WILDLIFE MOVEMENT CORRIDORS

A wildlife movement corridor is generally a topographical/landscape feature or movement zone that connects two or more natural habitat areas. Wildlife corridors link areas of suitable wildlife habitat that are separated by variation in vegetation, rugged terrain, human disturbance and habitat fragmentation, or other biophysical factors. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas, such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors allowing animals to move between various locations within their range. Therefore, wildlife movement and migration corridors are considered an important ecological resource by CDFW and other agencies and are protected by many local governments in California.

Ecological movement corridors have been addressed in several conservation biology and landscape planning applications. As landscapes become increasingly fragmented, organisms that occupy remaining patches of suitable habitat may experience a reduction in habitat quality and area, and become at risk to processes that affect small or isolated populations. These processes may include changes in microclimates, limits to daily or seasonal movements, inbreeding depression, and random demographic or environmental catastrophes. These factors can result in

increased mortality or local extinction of populations. Protecting and managing ecological corridors that link core areas of habitat, and facilitate movement or dispersal among habitat patches, has been widely proposed to reduce the adverse effects of habitat fragmentation. By maintaining or increasing connectivity among habitat patches or distinct regions, corridors may play an important role in maintaining population persistence and genetic diversity, facilitating recolonization of sites where populations have gone extinct, or allowing for traditional seasonal movements within a population's overall range.

In addition to large blocks of open space and traditional long-distance migratory corridors across landscapes, many habitat features provide wildlife dispersal and other movement opportunities at more local or site-specific scales. For example, depending on their landscape position and habitat quality, riparian areas can function as important movement corridors for amphibians, reptiles, birds, mammals, and fish by providing connectivity between other areas of natural habitat and between populations. Additionally, relatively small open space lands (e.g., County and regional parks) can function as part of a regional corridor or "stepping stones" for species whose movements are less sensitive to the presence of human disturbance and major roads or other impediments to movement, such as birds.

Some long-ranging mammal species (e.g., mule deer [*Odocoileus hemionus*], mountain lion [*Felis concolor*], and black bear [*Ursus americana*]) are known or likely to occur in the program area and these species exhibit several different movement and migration strategies. Mule deer, the most common ungulate species in California, is not considered abundant in the program area but occurs there primarily during non-winter months, including spring/fall migrations. The Verdi sub-unit of the Loyalton-Truckee Deer Herd migrates from the eastern Sierra Nevada foothills outside of Reno, Nevada, southwest into eastern Sierra, Nevada, and Placer counties in California during the spring and summer months after breeding. As described in the Loyalton-Truckee Deer Herd Management Plan (CDFG 1982), individuals migrated along the northern and southern sides of Interstate 80 (I-80) southwest from the Truckee Meadows in Nevada. Deer moving along the southern side of I-80 then followed the Truckee River into the Martis Valley before diverging into the Donner Lake and western Lake Tahoe Basin areas. Migratory corridors are believed to cross Martis Valley as deer move along riparian corridors to the western Lake Tahoe Basin. The program area is located in the vicinity of, or overlaps with a portion of, the migration route along the Truckee River into the western Lake Tahoe Basin.

Because the 1982 Loyalton-Truckee Deer Herd Management Plan is over 35 years old, deer migratory and fawning patterns may have shifted since the Plan's completion because of development in the Truckee and Northstar region, the increased use of SR 267, and the expansion of I-80. For example, decreased migration across SR 267 and through the portions of the project west of SR 267, and limited movement across I-80, have likely occurred to some extent. Additionally, over the last 15 years, migratory habitat loss and fragmentation has increased throughout the herds' range because of residential development; also, the mule deer population has declined. The loss of wintering habitat and reduced access to wintering areas may be the primary causes of this population decline. One of the objectives of the CDFW California Deer Conservation and Management Plan is to update and maintain range maps for this species including migration routes in order to better manage the species (CDFW 2015).

Additionally, although rarely observed in the Lake Tahoe Basin, the range of resident mountain lion includes most of the wildland areas of the program area. Mountain lions occupy a variety of habitats but may be most abundant in riparian habitats. Habitat use is typically associated with prey availability. Mule deer make up a large percentage of mountain lion diet. Mountain lion home ranges can be greater than 200 square miles, though home ranges typically range from 5 to 100 square miles (Allen et al. 2015). The program area overlaps with deer summer and migratory ranges and thus also contains mountain lion home ranges. Deer migration areas, and thus mountain lion occurrences, are probably largely associated with waterways and riparian areas within the program area.

While smaller wildlife species typically do not migrate distances as large as ungulates and mountain lions, these species exhibit movement patterns throughout their habitats in search of foraging opportunities, mates, aquatic breeding sites (e.g., reptiles, amphibians) or cover (e.g., nests, dens), as well as in response to stressors (e.g., weather, predators, other disturbance). Forest species such as Pacific marten require large contiguous blocks of forest habitat with a high degree of canopy cover, large structural features (e.g., logs, rock piles, snags), and a dense shrub layer (Zielinski et al. 2001, Sauder and Rachlow 2014). Martens will avoid forest habitats without complex understory structure, which can result in decreased foraging success and increased vulnerability to predation (Moriarty et al. 2016). Other smaller wildlife species (e.g., rodents, amphibians, reptiles) migrate much smaller distances than larger

wildlife species. Amphibians typically migrate no more than 1 mile; some only several feet (Russell et al. 2005) although distances greater than 2 miles have been recorded (Bulger et al. 2003).

WILDLIFE NURSERY SITES

Nursery sites are locations where fish and wildlife concentrate for hatching and/or raising young, such as spawning areas for native fish, fawning areas for deer, and maternal roosts for bats, and nesting rookeries for birds. In this PTEIR, nursery sites are considered for native wildlife that are not defined as special-status species; special-status species are considered separately. The program area could contain a variety of wildlife nursery sites. For example, mule deer use early to mid-successional stages of several vegetation types, including riparian, meadow, and forest for summer range. Important habitat requirements for mule deer fawning include undisturbed meadow and riparian areas that provide hiding cover and forage. The program area includes potential fawning habitat for mule deer in riparian and wet meadow areas; however, the suitability of these areas for deer fawning in much of the WUI is limited because of existing levels of human disturbance and lack of dense vegetation in some areas. Bat maternity roost sites could also occur throughout the program area. The type and suitability of roost sites vary by bat species, but may include specialized roosting habitat, such as caves or tree foliage, or a bat species may use multiple different habitat types for maternity roosts. Other roosting habitat includes buildings, bridges, and other built structures, cliffs including rock crevices and cracks, rip-rap, and tree hollows. Some bat species will also use different types of roost habitat in different geographic regions within their range. Native nursery sites are not mapped on a regional scale and would need to be evaluated at a project-specific level.

3.6.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The impact analysis below is primarily based on review of the existing data sources described previously. To evaluate the potential impacts of the Tahoe PTEIR on biological resources, the types, extent, and quality of biological resources that could be directly or indirectly affected were considered in relation to the range of proposed treatment activities within the program area and any policies and programs related to the protection of biological resources. This section analyzes the proposed program and its potential effects on biological resources at a program level of detail. Individual projects implemented under the Tahoe PTEIR would be evaluated to determine if they would result in new or greater impacts than those identified in this PTEIR.

This program-level impact analysis generally assumes that some of the vegetation communities, wildlife habitats, aquatic resources, sensitive natural communities, and special-status species known or with potential to occur in the program area could be directly or indirectly affected by implementation of the Tahoe PTEIR, depending on the specific location, type, and timing of the treatment activity. For analysis of fisheries and aquatic habitats, any stream, lake, or SEZ within or immediately downstream of the program area was considered potentially affected.

Among other factors, the determination of impacts includes an evaluation of whether treatments under the proposed program could result in a loss of habitat function. Maintenance of habitat function is one of the performance standards for mitigation. Habitat function is defined here as the arrangement and capability of habitat features to provide refuge, foraging, and reproduction habitat to plants and animals, and thereby contribute to the conservation of biological and genetic diversity and evolutionary processes (de Groot et al. 2002). Some modification of habitat characteristics may occur without causing a significant effect, provided that habitat function is maintained (i.e., the location, essential habitat features, and species supported are not substantially changed). Essential habitat features are those that provide food, water, shelter, living space, breeding areas or substrates, and nursery areas to the species that reside in or migrate through the habitat type.

Section 3.6.2, "Environmental Setting," describes the special-status plant and animal species evaluated in this analysis, and Table E-1 in Appendix E summarizes the potential for each of these species to occur in the program area. Generally, plant and animal species that are not expected to regularly occur or with a low probability to occur

(because of a lack of suitable habitat, existing disturbance levels, or lack of occurrence records) are not addressed further in the impact analysis. Implementation of the Tahoe PTEIR would not considerably affect those species.

Importantly, the impact analysis for biological resources assumes that implementation of later activities would be planned, designed, and confirmed to comply, as required, with all resource protection provisions of the California Forest Practice Rules (CFPRs) (included in Appendix B) and applicable state, federal, TRPA, and local regulations and policies. Therefore, mitigation measures are provided for impacts determined to be significant after compliance with applicable state, federal, TRPA, and local regulations and policies. Significance determinations also account for the influence of relevant SPRs (also included in Appendix B), which are incorporated into treatment design and include:

- ▶ **SPR BIO-1 Review and Survey Project-Specific Biological Resources:** The project proponent will require a qualified RPF or biologist to conduct a data review and reconnaissance-level survey prior to treatment. The data reviewed will include the biological resources setting, species and sensitive natural communities tables, and habitat information in this PTEIR for the ecoregion(s) where the treatment will occur. It will also include review of the best available, current data for the area, including vegetation mapping data, species distribution/range information, CNDDDB, California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California, relevant BIOS queries, and relevant general and regional plans. Reconnaissance-level biological surveys will be general surveys that include visual and auditory inspection for biological resources to help determine the setting present on a treatment site. The qualified surveyor will 1) identify and document sensitive resources, such as riparian or other sensitive habitats, sensitive natural community, wetlands, or wildlife nursery site or habitat (including bird nests); and 2) assess the suitability of habitat for special-status plant and animal species. The surveyor will also record any incidental wildlife observations. Habitat assessments will be completed at a time of year that is appropriate for identifying habitat and no more than one year prior to the submittal of the Project Consistency Checklist for each treatment activity, unless it can be demonstrated that habitat assessments older than one year remain valid. The Project Consistency Checklist includes habitat suitability maps that would guide project proponents in project planning based on the habitat suitability at individual later treatment activity sites. Based on the results of the data review and reconnaissance-level survey, the project proponent, in consultation with a qualified RPF or biologist, will determine which one of the following best characterizes the treatment:

1. **Suitable Habitat Is Present but Adverse Effects Can Be Clearly Avoided.** If, based on the data review and reconnaissance-level survey, the qualified RPF or biologist determines that suitable habitat for sensitive biological resources is present but adverse effects on the suitable habitat can clearly be avoided through one of the following methods, the avoidance mechanism will be implemented prior to initiating treatment and will remain in effect throughout the treatment:
 - a. by physically avoiding the suitable habitat, or
 - b. by conducting treatment outside of the season when a sensitive resource could be present within the suitable habitat or outside the season of sensitivity (e.g., outside of special-status bird nesting season, during dormant season of sensitive annual or geophytic plant species, or outside of maternity and rearing season at wildlife nursery sites).

Physical avoidance will include flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway) to delineate the boundary of the avoidance area around the suitable habitat. For physical avoidance, a buffer may be implemented as determined necessary by the qualified RPF or biologist.

2. **Suitable Habitat is Present and Adverse Effects Cannot Be Clearly Avoided.** Further review and surveys will be conducted to determine presence/absence of sensitive biological resources that may be affected, as described in the SPRs below. Further review may include contacting USFWS, NOAA Fisheries, CDFW, CNPS, or local resource agencies as necessary to determine the potential for special-status species or other sensitive biological resources to be affected by the treatment activity. Focused or protocol-level surveys will be conducted as necessary to determine presence/absence. If protocol surveys are conducted, survey procedures will adhere to methodologies approved by resource agencies and the scientific community, such as those that are available on the CDFW webpage at: <https://www.wildlife.ca.gov/Conservation/Survey->

Protocols. Specific survey requirements are addressed for each resource type in relevant SPRs (e.g., additional survey requirements are presented for special-status plants in SPR BIO-7).

- ▶ **SPR BIO-2 Require Biological Resource Training for Workers:** The project proponent will require crew members and contractors to receive training from a qualified RPF or biologist prior to beginning a treatment activity. The training will describe the appropriate work practices necessary to effectively implement the biological SPRs and mitigation measures and to comply with the applicable environmental laws and regulations. The training will include the identification, relevant life history information, and avoidance of pertinent special-status species; identification and avoidance of sensitive natural communities and habitats with the potential to occur in the treatment area; impact minimization procedures; and reporting requirements. The training will instruct workers when it is appropriate to stop work and allow wildlife encountered during treatment activities to leave the area unharmed and when it is necessary to report encounters to a qualified RPF, biologist, or biological technician. The qualified RPF, biologist, or biological technician will immediately contact CDFW or USFWS, as appropriate, if any wildlife protected by the California Endangered Species Act (CESA) or Federal Endangered Species Act (ESA) is encountered and cannot leave the site on its own (without being handled).
- ▶ **SPR BIO-3 Survey Sensitive Natural Communities and Other Sensitive Habitats:** If SPR BIO-1 determines that sensitive natural communities or sensitive habitats may be present and adverse effects cannot be avoided, the project proponent will:
 - require a qualified RPF or biologist to perform a protocol-level survey following the CDFW “Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities” (current version dated March 20, 2018) of the treatment area prior to the start of treatment activities for sensitive natural communities and sensitive habitats. Sensitive natural communities will be identified using the best means possible, including keying them out using the most current edition of *A Manual of California Vegetation*, or referring to relevant reports (e.g., reports found on the VegCAMP website).
 - map and digitally record, using a Global Positioning System (GPS), the limits of any potential sensitive habitat and sensitive natural community identified in the treatment area.
- ▶ **SPR BIO-4 Design Treatment to Avoid Loss or Degradation of Riparian Habitat Function:** The project proponent, in consultation with a qualified RPF or qualified biologist, will design treatments in riparian habitats to retain or improve habitat functions by implementing the following within riparian habitats:
 - Retain at least 75 percent of the overstory and 50 percent of the understory canopy of native riparian vegetation within the limits of riparian habitat identified and mapped during surveys conducted pursuant to SPR BIO-3. Native riparian vegetation will be retained in a well distributed multi-storied stand composed of a diversity of species similar to that found before the start of treatment activities.
 - Treatments will be limited to removal of uncharacteristic fuel loads (e.g., removing dead or dying vegetation), trimming/limbing of woody species as necessary to reduce ladder fuels, and select thinning of vegetation to restore densities that are characteristic of healthy stands of the riparian vegetation types characteristic of the region. This includes hand removal (or mechanized removal where topography allows) of dead or dying riparian trees and shrubs, invasive plant removal, selective thinning, and removal of encroaching upland species.
 - Removal of large, native riparian hardwood trees (e.g., willow, ash, maple, oak, alder, sycamore, cottonwood) will be minimized to the extent feasible and 75 percent of the pretreatment native riparian hardwood tree canopy will be retained. Because tree size varies depending on vegetation type present and site conditions, the tree size retention parameter will be determined on a site-specific basis depending on vegetation type present and setting; however, live, healthy, native trees that are considered large for that type of tree and large relative to other trees in that location will be retained.
 - Removed trees will be felled away from adjacent streams or waterbodies and piled outside of the riparian vegetation zone (unless there is an ecological reason to do otherwise that is approved by applicable regulatory agencies, such as adding large woody material to a stream to enhance fish habitat, e.g., see

Accelerated Wood Recruitment and Timber Operations: Process Guidance from the California Timber Harvest Review Team Agencies and National Marine Fisheries Service).

- Vegetation removal that could reduce stream shading and increase stream temperatures will be avoided.
 - Ground disturbance within riparian habitats will be limited to the minimum necessary to implement effective treatments.
 - The project proponent will notify CDFW pursuant to California Fish and Game Code Section 1602 prior to implementing any treatment activities in riparian habitats. Notification will identify the treatment activities, map the vegetation to be removed, identify the impact avoidance identification methods to be used (e.g., flagging), and appropriate protections for the retention of shaded riverine habitat, including buffers and other applicable measures to prevent erosion into the waterway.
 - In consideration of spatial variability of riparian vegetation types and condition and consistent with California Forest Practice Rules (CFPR) (14 CCR Section 956.9[v]), a different set of vegetation retention standards and protection measures from those specified in the above bullets may be implemented on a site-specific basis if the qualified RPF and the project proponent demonstrate through substantial evidence that alternative design measures provide a more effective means of achieving the treatment goals and would result in effects to the Beneficial Functions of Riparian Zones equal or more favorable than those expected to result from application of the above measures. Deviation from the above design specifications, different protection measures and design standards will only be approved when the treatment plan incorporates an evaluation of beneficial functions of the riparian habitat and with written concurrence from CDFW.
- ▶ **SPR BIO-5 Water Drafting:** Water drafting involves drawing water from sources such as a lake, pond, or stream into a pump and could serve to provide a supply of water for dust abatement or fire suppression in treatment areas that are inaccessible to water trucks or are not in close proximity to fire hydrants. The project proponent and project implementer, as applicable, will comply with the following requirements and best management practices:
- Water drafting operations shall follow CFPR requirements in 14 CCR Section 963.7(l), which are intended to apply to water drafting operations in watersheds with listed anadromous salmonids but for this PTEIR are proposed to apply throughout the program area.
 - Vehicles used for water drafting shall only access drafting sites through existing watercourse crossings and will not enter WLPZs/SEZs where they would otherwise be prohibited.
 - Water drafting shall be subject to all applicable requirements of Fish and Game Code Section 1600, as determined in consultation with CDFW.
 - In addition to the above (if not required for Section 1600 compliance), the following requirements shall be met for all water drafting operations in the program area:
 - a. The project proponent shall consult with CDFW prior to any water drafting operation to convey and receive any information relevant to the drafting operation.
 - b. Water shall not be drafted by more than one truck simultaneously at the same site.
 - c. In Class I watercourses, streambed or bank material shall not be excavated for intakes or any other purposes related to drafting.
 - d. All water drafting vehicles shall be checked each day used, and shall be repaired as necessary to prevent leaks of deleterious materials from entering the watercourse, the Watercourse and Lake Protection Zone (WLPZ), or the stream environment zone (SEZ).
 - e. Pumps used for drafting shall be capable of being adjusted to comply with specified withdrawal rates.
 - f. Operators shall follow all applicable requirements and guidelines to prevent the introduction and spread of aquatic invasive species (AIS). This shall include: (i) inspecting truck tires, hoses, screens, and any equipment entering the water before and after each drafting operation and removing and properly

disposing of any aquatic plants or other aquatic organisms; (ii) decontaminating prior to initiation of drafting any truck or equipment that has come into contact with any waterbody outside the Tahoe Basin; and (iii) applying water only within the same watershed in which it originated. Inspection and decontamination shall follow the latest protocols endorsed by the Lake Tahoe Aquatic Invasive Species Coordination Committee, and may be accomplished at existing boat decontamination stations located throughout the Tahoe Basin.

- g. Intake screens shall be kept in good repair and shall be used wherever water is drafted. Intakes shall be inspected periodically and kept clean and free of accumulated algae, leaves, or other debris that could block portions of the screen surface and increase approach velocities at any point on the screen.
- h. Intakes shall be at least 6 inches above the bottom of the channel and away from submerged vegetation, where practicable. Where not practicable, intakes shall maximize these clearances.
- i. At the end of drafting operations, intakes shall be completely removed from the watercourse and disturbed ground, including exposed soil, shall be treated according to CFPR requirements or Fish and Game Code Section 1600 requirements to minimize erosion.

- ▶ **SPR BIO-6 Survey for Special-Status Plants:** If SPR BIO-1 determines that suitable habitat for special-status plant species is present and cannot be avoided, the project proponent will require a qualified RPF or botanist to conduct protocol-level surveys for special-status plant species with the potential to be affected by a treatment prior to initiation of the treatment. The survey will follow the methods in the current version of CDFW's "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities."

Surveys to determine the presence or absence of special-status plant species will be conducted in suitable habitat that could be affected by the treatment and timed to coincide with the blooming or other appropriate phenological period of the target species (as determined by a qualified RPF or botanist), or all species in the same genus as the target species will be assumed to be special-status.

If potentially occurring special-status plants are listed under CESA or ESA, protocol-level surveys to determine presence/absence of the listed species will be conducted in all circumstances, unless determined otherwise by CDFW or USFWS.

For other special-status plants not listed under CESA or ESA, as defined in Section 3.6.2 of the Tahoe PTEIR, surveys will not be required under the following circumstances:

- If protocol-level surveys, consisting of at least two survey visits (e.g., early blooming season and later blooming season) during a normal weather year, have been completed in the last 5 years and no special-status plants were found, and no treatment activity has occurred following the protocol-level survey, treatment may proceed without additional plant surveys.
- If the target special-status plant species is an herbaceous annual, stump-sprouting, or geophyte species, the treatment may be carried out during the dormant season for that species or when the species has completed its annual lifecycle without conducting presence/absence surveys provided the treatment will not alter habitat or destroy seeds, stumps, or roots, rhizomes, bulbs and other underground parts in a way that would make it unsuitable for the target species to reestablish following treatment.

- ▶ **SPR BIO-7 Prevent Spread of Invasive Plants and Noxious Weeds:** The project implementer will take the following actions to prevent the spread of invasive plants and noxious weeds:
 - clean clothing, footwear, and equipment used during treatments of soil, seeds, vegetative matter or other debris or seed-bearing material before entering the treatment area or when leaving an area with infestations of invasive plants and noxious weeds;
 - for all heavy equipment and vehicles traveling off road, pressure wash, if feasible, or otherwise appropriately decontaminate equipment at a designated weed-cleaning station prior to entering the treatment area from

an area with infestations of invasive plants and noxious weeds. Anti-fungal wash agents will be specified if the equipment has been exposed to any pathogen that could affect native species;

- inspect all heavy equipment, vehicles, tools, or other treatment-related materials for mud or other signs that weed seeds or propagules could be present prior to use in the treatment area. If the equipment is not clean, the qualified RPF or biological technician will deny entry to the work areas;
 - stage equipment in areas free of invasive plant infestations unless there are no uninfested areas present within a reasonable proximity to the treatment area;
 - identify significant infestations of invasive plant species (i.e., those rated as invasive by Cal-IPC or designated as noxious weeds by California Department of Food and Agriculture) during reconnaissance-level surveys and target them for removal during treatment activities. Treatment methods will be selected based on the invasive species present and may include herbicide application, manual or mechanical treatments, and/or prescribed burning, and will be designed to maximize success in killing or removing the invasive plants and preventing reestablishment based on the life history characteristics of the invasive plant species present. Treatments will be focused on removing invasive plant species that cause ecological harm to native vegetation types, especially those that can alter fire cycles;
 - treat invasive plant biomass onsite to eliminate seeds and propagules and prevent reestablishment or dispose of invasive plant biomass offsite at an appropriate waste collection facility (if not kept on site); transport invasive plant materials in a closed container or bag to prevent the spread of propagules during transport; and
 - implement Fire and Fuel Management BMPs outlined in the “Preventing the Spread of Invasive Plants: Best Management Practices for Land Mangers” (California Invasive Plant Council [Cal-IPC] 2012, or current version).
- ▶ **SPR BIO-8 Survey for Special-Status Wildlife and Nursery Sites:** If SPR BIO-1 determines that suitable habitat for special-status wildlife species or nurseries of any wildlife species is present and cannot be avoided, the project proponent will require a qualified RPF or biologist to conduct focused or protocol-level surveys for special-status wildlife species or nursery sites (e.g., bat maternity roosts, deer fawning areas, heron or egret rookeries) with potential to be directly or indirectly affected by a treatment activity. The survey area will be determined by a qualified RPF or biologist based on the species and habitats and any recommended buffer distances in agency protocols.

The qualified RPF or biologist will determine if following an established protocol is required, and the project proponent may consult with CDFW and/or USFWS for technical information regarding appropriate survey protocols. Unless otherwise specified in a protocol, the survey will be conducted no more than 21 days (3 weeks) prior to the beginning of treatment activities. Focused or protocol surveys for a special-status species with potential to occur in the treatment area may not be required if presence of the species is assumed.

- ▶ **SPR BIO-9 Protect Common Nesting Birds, Including Raptors.** The project proponent will schedule treatment activities to avoid the active nesting season of common native bird species, including raptors, that could be present within or adjacent to the treatment site, if feasible. Common native birds are species not otherwise treated as special status in this PTEIR. The active nesting season will be defined by the qualified RPF or biologist.

If active nesting season avoidance is not feasible, a qualified RPF or biologist will conduct a survey for common nesting birds, including raptors. Existing records (e.g., CNDDDB, eBird database, State Wildlife Action Plan) should be reviewed in advance of the survey to identify the common nesting birds, including raptors, that are known to occur in the vicinity of the treatment site. The survey area will encompass reasonably accessible areas of the treatment site and the immediately surrounding vicinity viewable from the treatment site. The survey area will be determined by a qualified RPF or biologist, based on the potential species in the area, location of suitable nesting habitat, and type of treatment. For vegetation removal or later treatment activities that would occur during the nesting season, the survey will be conducted at a time that balances the effectiveness of detecting nests and the reasonable consideration of potential avoidance strategies. Typically, this timeframe would be up to 3 weeks before treatment. The survey will occur in a single survey period of sufficient duration to reasonably detect nesting birds, including raptors, typically one day for most treatment projects (depending on the size,

configuration, and vegetation density in the treatment site), and conducted during the active time of day for target species, typically close to dawn and/or dusk. The survey may be conducted concurrently with other biological surveys, if they are required by other SPRs. Survey methods will be tailored by the qualified RPF or biologist to site and habitat conditions, typically involving walking throughout the survey area, visually searching for nests and birds exhibiting behavior that is typical of breeding (e.g., delivering food).

If an active nest is observed (i.e., presence of eggs and/or chicks) or determined to likely be present based on nesting bird behavior, the project proponent, in consultation with CDFW and/or TRPA (depending on species), will implement a feasible strategy to avoid disturbance of active nests, which may include, but is not limited to, one or more of the following:

- **Establish Buffer.** The project proponent will establish a temporary, species-appropriate buffer around the nest sufficient to reasonably expect that breeding would not be disrupted. Treatment activities will be implemented outside of the buffer. The buffer location will be determined by a qualified RPF or biologist. Factors to be considered for determining buffer location will include: presence of natural buffers provided by vegetation or topography, nest height above ground, baseline levels of noise and human activity, species sensitivity, and expected treatment activities. Nests of common birds within the buffer need not be monitored during treatment. However, buffers will be maintained until young fledge or the nest becomes inactive, as determined by the qualified RPF, biologist, or biological technician.
- **Modify Treatment.** The project proponent will modify the treatment in the vicinity of an active nest to avoid disturbance of active nests (e.g., by implementing manual treatment methods, rather than mechanical treatment methods). Treatment modifications will be determined by the project proponent in coordination with the qualified RPF or biologist.
- **Defer Treatment.** The project proponent will defer the timing of treatment in the portion(s) of the treatment site that could disturb the active nest. If this avoidance strategy is implemented, treatment activity will not commence until young fledge or the nest becomes inactive, as determined by the qualified RPF, biologist, or biological technician.

Feasible actions will be taken by the project proponent to avoid loss of common native bird nests. The feasibility of implementing the avoidance strategies will be determined by the project proponent based on whether implementation of this SPR will preclude completing the treatment project within the reasonable period of time necessary to meet program objectives, including, but not limited to, protection of vulnerable communities. Considerations may include limitations on the presence of environmental and atmospheric conditions necessary to execute treatment prescriptions (e.g., the limited seasonal windows during which prescribed burning can occur when vegetation moisture, weather, wind, and other physical conditions are suitable). If it is infeasible to avoid loss of common bird nests (not including raptor nests), the project proponent will document the reasons implementation of the avoidance strategies is infeasible in the Project Consistency Checklist. After completion of the Project Consistency Checklist and prior to or during treatment implementation, if there is any change in the feasibility of avoidance strategies from those explained in the checklist, this will be documented in the post-project implementation report.

The following avoidance strategies may also be considered together with or in lieu of other actions for implementation by a project proponent to avoid disturbance to raptor nests:

- **Monitor Active Raptor Nest During Treatment.** A qualified RPF, biologist, or biological technician will monitor an active raptor nest during treatment activities to identify signs of agitation, nest defense, or other behaviors that signal disturbance of the active nest is likely (e.g., standing up from a brooding position, flying off the nest). If breeding raptors are showing signs of nest disturbance, one of the other avoidance strategies (establish buffer, modify treatment or defer treatment) will be implemented or a pause in the treatment activity will occur until the disturbance behavior ceases.
- **Retention of Raptor Nest Trees.** Trees with visible raptor nests, whether occupied or not, will be retained.

- ▶ **SPR HYD-1 Comply with Water Quality Regulations:** The project implementer will comply with all applicable water quality requirements adopted by Lahontan RWQCB and approved by the SWRCB (i.e., Basin Plan). If applicable, this includes compliance with the conditions of general waste discharge requirements (GWDR) and waste discharge requirement waivers for timber or silviculture activities where these waivers are designed to apply to non-commercial fuel reduction and forest health projects. In general, GWDR and Conditional Waiver of Waste Discharge Requirements for Waste Discharges Resulting From Timber Harvest and Vegetation Management Activities in the Lahontan Region (Timber Waiver; Lahontan RWQCB 2019) for fuel reduction and forest health activities require that wastes, including petroleum products, soil, silt, sand, clay, rock, felled trees, slash, sawdust, bark, ash, and pesticides must not be discharged to surface waters or placed where it may be carried into surface waters; and that Lahontan RWQCB staff must be allowed reasonable access to the property in order to determine compliance with the waiver conditions.
- ▶ **SPR HYD-3 Identify and Protect Watercourse and Lake Protection Zones:** The project proponent will establish WLPZs as defined in 14 CCR Section 916.5 of the CFPR and Waterbody Buffer Zones as defined in Attachment B of the Timber Waiver (Lahontan RWQCB 2019). WLPZs and Waterbody Buffer Zones are classified based on the uses of the stream and the presence of aquatic life. Wider WLPZs are required for steep slopes. Waterbody Buffer Zone widths for Class I and II watercourses are equivalent to WLPZs. Whereas WLPZ widths or other watercourse protections for Class III and IV watercourses are determined on a site-specific basis (see 14 CCR Section 956.4), Waterbody Buffer Zone widths for Class III and IV watercourses are fixed and correspond with the steepness of adjacent slopes, as defined in Attachment B of the Timber Waiver (Lahontan RWQCB 2019). The following WLPZ protections will be applied for all treatments:
 - Treatment activities within Waterbody Buffer Zones and WLPZs will meet the overstory and understory vegetation retention guidelines and ground disturbance limitations described in the Timber Waiver (Lahontan RWQCB 2019) and in 14 CCR Section 956.4 Subsection (b) and Section 956.5, including retention of at least 75 percent surface cover and undisturbed area.
 - Equipment, including tractors and vehicles, must not be driven in wet areas, Waterbody Buffer Zones, or WLPZs, except over existing roads or watercourse crossings where vehicle tires or tracks remain dry.
 - Equipment used in vegetation removal operations will not be serviced in Waterbody Buffer Zones or WLPZs, within wet meadows or other wet areas, or in locations that would allow grease, oil, or fuel to pass into lakes, watercourses, or wet areas.
 - Watercourses will be kept free of slash, debris, and other material that harm the beneficial uses of water. Accidental deposits will be removed immediately.
 - Burn piles will be located outside of WLPZs or other applicable watercourse protection zones unless all applicable Timber Waiver and/or Basin Plan exemption requirements are met.
 - No fire ignition will occur within WLPZs or other applicable watercourse protection zones unless all applicable Timber Waiver and/or Basin Plan exemption requirements are met; however, low intensity backing fires may be allowed to enter or spread into watercourse protection zones.
 - Within the WLPZs, mulch treatments to stabilize soils, minimize soil erosion, and prevent significant sediment discharge, as described in 14 CCR Section 956.9(n)(1), will be as follows:
 - Soil stabilization is required for areas where timber operations have exposed bare soil exceeding 100 contiguous square feet.
 - Where straw or slash mulch is used, the minimum straw coverage shall be 90 percent, and any treated area that has been reused or has less than 90 percent surface cover shall be treated again by the end of timber operations.
 - Where slash mulch is packed into the ground surface through the use of a tractor or equivalent piece of heavy equipment the minimum slash coverage shall be 75 percent.

- Equipment limitation zones (ELZs) will be designated adjacent to Class III and Class IV watercourses with minimum widths of 25 feet where side-slope is less than 30 percent and 50 feet where side-slope is 30 percent or greater. An RPF will describe the limitations of heavy equipment within the ELZ and, where appropriate, will include additional measures to protect the beneficial uses of water.
- ▶ **SPR HYD-4 Identify and Protect Stream Environment Zones:** Prior to conducting treatment activities, an RPF or qualified biologist or botanist will flag SEZ areas within the treatment site. Project implementers will comply with TRPA requirements for tree cutting within SEZ areas. These requirements are described in detail under TRPA Code of Ordinances Section 61.1.6.C and Attachment N of the Timber Waiver (Lahontan RWQCB 2019), include:
 - Vehicle use is restricted in SEZs with exceptions for use of vehicles in over-snow tree removal operations and use of “innovative technology” vehicles or “innovative techniques,” provided that no significant soil disturbance or significant vegetation damage will result from the use of equipment;
 - Work within SEZs shall be limited to times of the year when soil conditions are dry and stable, when conditions are adequate for over-snow tree removal operations, or when conditions are consistent with TRPA and Lahontan RWQCB standards for tree removal operations on frozen ground;
 - Felled trees and harvest debris are kept out of all watercourses classified as Class I through IV including perennial streams, intermittent streams, man-made waterbodies, and ephemeral (unclassified) streams;
 - Crossings of perennial streams or other wet areas, shall be limited to improved crossings meeting Best Management Practices or to temporary bridge spans that can be removed upon project completion or at the end of the work season, whichever is sooner; and
 - New waterholes will not be constructed within the 100-year floodplain or SEZ;
 - Permanent disturbance or fill within SEZs will be avoided;
 - Activities conducted within 100-year floodplains or in SEZs that would require a Timber Waiver exemption granted by the Lahontan RWQCB include: enlargement of existing permanent watercourse crossings and/or roads, construction of temporary roads, construction of temporary watercourse crossings and associated approaches in place longer than one season, construction of skid trails, slash piling and burning not conducted in accordance with Timber Waiver, and conventional equipment operated off-road in SEZs or floodplains; and
 - Discharge or threatened discharge, attributable to human activities, of solid or liquid waste materials including soil, silt, clay, sand, and other organic or earthen materials to lands within the highwater rim of Lake Tahoe or 100-year floodplains of any tributary (including the Truckee River and Little Truckee River and tributaries) to Lake Tahoe and to SEZs in the Lake Tahoe Basin is prohibited.
- ▶ **SPR AQ-3 Create Burn Plan:** The project proponent or project implementer will create a burn plan using the CAL FIRE burn plan template for all prescribed burns. The burn plan will include a fire behavior model output of First Order Fire Effects Model and BEHAVE or other fire behavior modeling simulation and that is performed by a qualified fire behavior technical specialist that predicts fire behavior, calculates consumption of fuels, tree mortality, predicted emissions, greenhouse gas emissions, and soil heating. The project implementer will minimize soil burn severity from understory burning to reduce the potential for runoff and soil erosion. The burn plan will be created with input from a qualified technician or certified State burn boss. This SPR applies to pile and understory burning.
- ▶ **SPR AQ-4 Minimize Dust:** To minimize dust that has the potential to transport fine sediment to waterbodies during treatment activities, the project implementer will implement the following measures:
 - Limit the speed of vehicles and equipment traveling on unpaved areas to 15 miles per hour to reduce fugitive dust emissions, in accordance with the California Air Resources Board (CARB) Fugitive Dust protocol.

- If road use creates excessive dust, the project implementer will wet appurtenant, unpaved, dirt roads using water trucks or treat roads with a non-toxic chemical dust suppressant (e.g., emulsion polymers, organic material) during dry, dusty conditions. Any dust suppressant product used will be environmentally benign (i.e., non-toxic to plants and will not negatively impact water quality) and its use will not be prohibited by CARB, U.S. Environmental Protection Agency (EPA), or the State Water Resources Control Board (SWRCB). The project implementer will not over-water exposed areas such that the water results in runoff. The type of dust suppression method will be selected by the project implementer based on soil, traffic, site-specific conditions, and air quality regulations.
 - Remove visible dust, silt, or mud tracked-out on to public paved roadways where sufficient water supplies and access to water is available. The project implementer will remove dust, silt, and mud from vehicles at the conclusion of each workday, or at a minimum of every 24 hours for continuous treatment activities, in accordance with Vehicle Code Section 23113.
 - Suspend ground-disturbing treatment activities, including land clearing and bulldozer lines, when there is visible dust transport (particulate pollution) outside the treatment boundary, if the particulate emissions may "cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any of those persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property," per Health and Safety Code Section 41700.
- ▶ **SPR GEO-1 Suspend Disturbance during Heavy Precipitation:** The project implementer will suspend mechanical treatments if the National Weather Service forecast is a "chance" (30 percent or more) of rain within the next 24 hours. Activities that cause mechanical soil disturbance may resume when precipitation stops and soils are no longer saturated (i.e., when soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur). Indicators of saturated soil conditions may include, but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials. This SPR applies only to mechanical treatment methods.
- ▶ **SPR GEO-3 Stabilize Disturbed Soil Areas:** The project implementer will stabilize soil disturbed during mechanical treatments with mulch or equivalent immediately after treatment activities, to the maximum extent practicable, to minimize the potential for substantial sediment discharge. If mechanical treatment activities could result in substantial sediment discharge from soil disturbed by machinery or animal hooves, organic material from mastication or mulch will be incorporated onto at least 75 percent of the disturbed soil surface where the soil erosion hazard is moderate or high, and 50 percent of the disturbed soil surface where soil erosion hazard is low to help prevent erosion. Where slash mulch is used, it will be packed into the ground surface with heavy equipment so that it is sufficiently in contact with the soil surface. This SPR applies only to mechanical treatment activities to disrupt overland flow but does not compact the soil.
- ▶ **SPR GEO-4 Erosion Monitoring:** The project proponent will inspect treatment areas for the proper implementation of erosion control SPRs and mitigations prior to the rainy season. Additionally, the project proponent will inspect for evidence of erosion a sufficient number of times during the extended wet weather period, particularly after large winter storm events (i.e., ≥ 1.5 inches in 24 hours) and at least once annually, to evaluate the function of drainage facilities and structures. Any area of erosion that will result in substantial sediment discharge will be remediated. This SPR applies only to mechanical and understory burning treatment methods.
- ▶ **SPR GEO-5 Drain Stormwater via Water Breaks:** The project proponent will drain compacted and/or bare linear treatment areas capable of generating storm runoff (i.e., roads and skid trails) via water breaks using the spacing and erosion control guidelines contained in Section 954.6(c) of the CFPR. Where waterbreaks cannot effectively disperse surface runoff, including where waterbreaks cause surface runoff to be concentrated on downslopes, other erosion controls will be installed as needed to comply with 14 CCR Sections 954 et seq.].

- ▶ **SPR GEO-7 Minimize Erosion on Steep Slopes:** To minimize erosion, the project proponent will limit mechanical treatments on steep slopes. If TRPA regulations are not changed, mechanical treatments as described will not occur in slopes exceeding 30 percent. If TRPA regulations are changed, mechanical treatments will not occur in slopes exceeding the new threshold, or the CFPR for the Southern District, whichever is lower.

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. Applicable TRPA threshold standards and biological resources criteria from the TRPA Initial Environmental Checklist were also considered in developing thresholds of significance.

An impact on biological resources is considered significant if implementation of later activities under the Tahoe PTEIR would:

- ▶ have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- ▶ have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS;
- ▶ have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means;
- ▶ interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- ▶ cause the introduction or spread of new or invasive species of animals; or
- ▶ substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare, or threatened species.

IMPACTS AND MITIGATION MEASURES

Impact 3.6-1: Potential to Substantially Affect Special-Status Plant Species Either Directly or Through Habitat Modifications

Later treatment activities could result in direct removal or destruction, or indirect death or reduced vigor of special-status plants through habitat modifications. Implementation of SPRs BIO-1, BIO-2, BIO-6, and BIO-7 requires special-status plants to be identified prior to treatment activities, Worker Environmental Awareness Program (WEAP) training for workers, and actions to prevent the spread of invasive plants that could threaten special-status plant populations. While SPRs would minimize impacts, treatment activities could inadvertently damage or destroy special-status plants and adversely modify their habitat resulting in reduced growth and reproduction or death and loss of special-status plant occurrences. This would be a **potentially significant** impact.

The proposed treatment activities could result in death, altered growth, or reduced seed set through physically breaking, crushing, burning, scorching, trampling, or uprooting special-status plants. A total of 18 special-status plants known or with moderate to high potential to occur in the program area are identified in Section 3.6.2, "Environmental Setting," and listed in Table E-1 in Appendix E. Any of the treatment activities have the potential to kill or damage special-status plants, if present within a treatment area.

Treatment activities could also alter growth and reproduction of special-status plants through habitat modifications. An indirect impact would occur if ground disturbance during treatment activities altered habitat or site conditions in a manner that later resulted in the death or lack of regeneration of special-status plants. Treatment activities could disrupt ecosystem, community, or population structure or processes in ways that reduce growth, survival, and

reproduction of special-status plants. Habitat alteration could make the habitat conditions unsuitable to support special-status plants in the long term. Indirect beneficial effects could result from improved habitat conditions by restoring the normal fire return interval, removing invasive plant infestations and unnatural buildup of litter and debris, and thinning live trees and shrubs and removing dead or dying trees and shrubs. This would open the canopy where tree or shrub densities are uncharacteristic of healthy or desired examples of the vegetation type and result in both immediate and long-term benefits to special-status plants.

Aspen, meadow, riparian, and wet-area restoration is a special prescription intended to restore, retain, or enhance such areas for their ecological value. Degraded conditions of the target aspen, meadow, riparian, and/or wet area would be identified, which often includes encroachment and shading by conifers and other vegetation. Treatment goals and measures of success would be based on the site-specific conditions. Treatments would be designed specifically to restore or enhance habitat elements that are currently impaired or degraded, such as through the removal of encroaching conifers. Because the locations, site-specific objectives, and treatment prescription specifications for specific treatment activities have not been identified, the magnitude of potential benefits to special-status plants associated with mesic habitats is unknown. However, this analysis assumes that these restoration treatments would result in improved ecosystem functions and habitat quality for some special-status plants to varying degrees within the program area.

SPRs BIO-1, BIO-2, and BIO-6 require special-status plants to be identified prior to treatment activities and WEAP training for workers. SPR BIO-7 requires implementation of actions to prevent the spread of invasive plants and noxious weeds that could compete with special-status plants for water, light, and nutrients, so indirect impacts on special-status plants from invasive plants as a result of the program would be minimized. Additionally, SPRs AQ-3, AQ-4, GEO-1, GEO-3, GEO-4, GEO-5, and GEO-7 require implementation of measures to minimize soil erosion and fugitive dust thereby reducing potential indirect impacts on special-status plants from soil destabilization and dusting.

As explained above, relevant SPRs would be integrated into the design of later treatment activities under the Tahoe PTEIR to avoid and minimize impacts. While SPRs would minimize impacts, treatment activities could still adversely affect special-status plant species. The following sections describe impact mechanisms that are unique to each treatment activity. Most treatment activities would be implemented in combination with other treatment activities to achieve the objectives of a treatment type. For example, mechanical and manual treatments could be used together to remove vegetation, which could then be piled and burned. Understory burning also involves establishing a containment line around the burn perimeter, typically using mechanical and manual treatment activities prior to burning.

Prescribed Burning

Prescribed burns could consume special-status plants completely or could scorch, singe, or wilt parts of plants, adversely affecting their growth and reproduction but not immediately killing or consuming them. In addition, prescribed burning could destroy or reduce the viability of seedbanks of special-status plant species if they are not adapted to fire or if the fire burns too hot for the seedbank to tolerate. Residual chemicals from accelerants used to ignite prescribed burns have potential to reduce plant regeneration, survivorship, growth, and vigor; however, accelerants would be applied sparingly, in limited and carefully targeted locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and accelerant residuals are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), which further reduces their availability for plant uptake during and after vegetative growth (USFS 2002).

Mechanical Treatment

In comparison to other treatment activities, mechanical treatments have the highest potential to harm special-status plants. Mastication can disturb soil several inches below the surface affecting roots, rhizomes, bulbs and other underground parts of special-status plants, as well as the seedbed, and affecting soil stability. In addition, the removal of vegetation using mechanical treatments is less precise (in comparison to manual treatments); therefore, this treatment activity is used at sites where precision removal is not necessary. Mechanical treatments in areas occupied by special-status plants would likely directly kill or damage these plants. This treatment activity would also have the

highest potential to adversely modify habitat in a way that reduces survivorship, growth, and reestablishment of special-status plant populations because of the large-scale vegetation removal and soil disturbance.

Manual Treatment

Manual treatments typically result in less ground disturbance than mechanical treatments and therefore have a lower risk of damaging or removing special-status plants that may be present in treatment areas. Special-status plants may be trampled by workers, damaged if beneath debris piles, or inadvertently removed if not identified for avoidance prior to treatment.

Conclusion

Adverse effects on special-status plant species as a result of program implementation could occur from direct removal or from habitat modification. For special-status plants that are already listed, or candidates for listing under ESA or CESA, loss of a single population or occurrence could reduce their population below self-sustaining numbers, or substantially reduce their numbers or restrict their range. One plant species that is listed as endangered under CESA – Tahoe yellow cress (*Rorippa subumbellata*) – occurs in the program area; however, this species is endemic only to certain beaches along Lake Tahoe and would not be affected by later treatment activities under the PTEIR.

There are 19 special-status plant taxa that are not listed, or candidates for listing under ESA or CESA, that have potential to occur in the program area. The threshold of significance may be higher for these taxa because they are generally not as rare as those protected under CESA and ESA. However, some of these plant taxa have narrow ranges or limited distribution, and loss of occurrences could substantially reduce regional population numbers or further reduce their range and contribute to a trend toward listing as threatened or endangered. Other special-status species have more widespread distributions but are not abundant anywhere they occur. For these species, loss of individual occurrences or populations could substantially reduce local or regional population numbers, thereby resulting in a reduction of species range and potentially contributing to a trend toward listing as threatened or endangered. Furthermore, because of the geographic scale of the Tahoe PTEIR, it has potential to remove or reduce the size of multiple occurrences of special-status plant taxa.

SPR BIO-1 requires data review and reconnaissance surveys to identify potential habitat for and previously documented occurrences of special-status plants. SPR BIO-6 requires surveys for special-status plants be conducted if they have potential to occur in a treatment area. SPR BIO-2 requires biological resource training for workers to make them aware of the presence of special-status plants and the mitigation measures, work practices, and laws and regulations that protect these plants. SPR BIO-7 requires BMPs to be implemented to prevent the spread of invasive plants and noxious weeds that could have indirect adverse effects on special-status plants through competition for resources and habitat degradation. SPRs BIO-1 and BIO-6 would avoid and minimize impacts to special-status plants by identifying them before treatment activities are implemented so they can be avoided, and appropriate mitigation measures can be implemented to protect them. Implementation of these SPRs would avoid and minimize direct and indirect impacts on special-status plants from treatment and most later treatment activities implemented under the Tahoe PTEIR could implement SPRs to avoid substantial adverse effects on special-status plants. However, even with implementation of SPRs, some proposed treatments at specific sites where special-status plants may occur could result in direct removal of special-status plants or habitat modifications that leads to reduced growth and reproduction or death and loss of special-status plant occurrences as a result of treatment activities. This would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.6-1a: Avoid Loss of Special-Status Plants

If special-status plant species are determined to be present through application of SPR BIO-1 and SPR BIO-6, the project proponent will implement the following measures to avoid loss of individuals and maintain habitat function of occupied habitat:

- ▶ Physically avoid the area occupied by the special-status plants by establishing a no-disturbance buffer around the area occupied by species and marking the buffer boundary with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway). The no-disturbance buffers will generally be a minimum

of 50 feet from special-status plants, but the size and shape of the buffer zone may be adjusted if a qualified RPF or botanist determines that a smaller buffer will be sufficient to avoid loss of or damaging to special-status plants or that a larger buffer is necessary to sufficiently protect plants from the treatment activity. The appropriate size and shape of the buffer zone will be determined by a qualified RPF or botanist and will depend on plant phenology at the time of treatment (e.g., whether the plants are in a dormant, vegetative, or flowering state), the individual species' vulnerability to the treatment method being used, and environmental conditions and terrain. Consideration of factors such as site hydrology, changes in light, edge effects, and potential introduction of invasive plants and noxious weeds may inform an appropriate buffer size and shape.

- ▶ Treatments may be conducted within this buffer if the potentially affected special-status plant species is a geophytic, stump-sprouting, or annual species, and the treatment can be conducted outside of the growing season (e.g., after it has completed its annual life cycle) or during the dormant season using only treatment activities that would not damage the stump, root system or other underground parts of special-status plants or destroy the seedbank.
- ▶ Treatments will be designed to maintain the function of special-status plant habitat. For example, for treatments proposed in locations occupied by special-status plants, if the removal of shade cover would degrade the special-status plant habitat despite the requirement to physically or seasonally avoid the special-status plant itself, habitat function would be diminished and the treatment would need to be modified or precluded from implementation.
- ▶ No fire ignition (and associated use of accelerants) will occur within the special-status plant buffer.

A qualified RPF or botanist with knowledge of the special-status plant species habitat and life history will review the treatment design and applicable impact minimization measures (potentially including others not listed above) to determine if the anticipated residual effects of the treatment would be significant under CEQA because implementation of the treatment would not maintain habitat function of the special-status plant habitat (i.e., the habitat would be rendered unsuitable) or because the loss of special-status plants would substantially reduce the number or restrict the range of a special-status plant species. If the project proponent determines the impact on special-status plants would be less than significant, no further mitigation will be required. If the project proponent determines that the loss of special-status plants or degradation of occupied habitat would be significant under CEQA after implementing feasible treatment design alternatives and impact minimization measures, then Mitigation Measure 3.6-1b will be implemented.

The only exception to this mitigation approach is in cases where it is determined by a qualified RPF or botanist that the special-status plants would benefit from treatment in the occupied habitat area even though some of the non-listed special-status plants may be killed during treatment activities. For a treatment to be considered beneficial to non-listed special-status plants, the qualified RPF or botanist will demonstrate with substantial evidence that habitat function is reasonably expected to improve with implementation of the treatment (e.g., by citing scientific studies demonstrating that the species (or similar species) has benefitted from increased sunlight due to canopy opening, eradication of invasive species, or otherwise reduced competition for resources), and the substantial evidence will be included in the Project Consistency Checklist. If it is determined that treatment activities would be beneficial to special-status plants, no compensatory mitigation will be required.

Mitigation Measure 3.6-1b: Compensate for Unavoidable Loss of Special-Status Plants

If significant impacts on special-status plants cannot feasibly be avoided as specified under the circumstances described under Mitigation Measure 3.6-1a, the project proponent will prepare a Compensatory Mitigation Plan that identifies the residual significant impacts that require compensatory mitigation and describes the compensatory mitigation strategy being implemented and how unavoidable losses of special-status plants will be compensated. The project proponent will consult with CDFW and/or any other applicable responsible agency prior to finalizing the Compensatory Mitigation Plan to satisfy that responsible agency's requirements (e.g., permits, approvals) within the plan. If the special-status plant taxa are listed under ESA or CESA, the plan will be submitted to CDFW and/or USFWS (as appropriate) for review and comment.

The first priority for compensatory mitigation will be preserving and enhancing existing populations outside of the treatment area in perpetuity, or if that is not an option because existing populations that can be preserved in perpetuity are not available, one of the following mitigation options will be implemented by the project proponent instead:

- ▶ creating populations on mitigation sites outside of the treatment area through seed collection and dispersal (annual species) or transplantation (perennial species);
- ▶ purchasing mitigation credits from a CDFW- or USFWS-approved conservation or mitigation bank in sufficient quantities to offset the loss of occupied habitat; and
- ▶ if the affected special-status plants are not listed under ESA or CESA, compensatory mitigation may include restoring or enhancing degraded habitats so that they are made suitable to support special-status plant species in the future.

If relocation efforts are part of the Compensatory Mitigation Plan, the plan will include details on the methods to be used, including collection, storage, propagation, receptor site preparation, installation, long-term protection and management, monitoring and reporting requirements, success criteria, and remedial action responsibilities should the initial effort fail to meet long-term monitoring requirements. The following performance standards will be applied for relocation:

- ▶ the extent of occupied area will be substantially similar to the affected occupied habitat and will be suitable for self-producing populations. Re-located/re-established populations will be considered suitable for self-producing when:
 - habitat conditions allow for plants to reestablish annually for a minimum of 5 years with no human intervention, such as supplemental seeding; and
 - reestablished habitats contain an occupied area comparable to existing occupied habitat areas in similar habitat types in the region.

If preservation of existing populations or creation of new populations is part of the mitigation plan, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands and actions (e.g., the number and type of credits, location of mitigation bank or easement, restoration or enhancement actions), parties responsible for the long-term management of the land, and the legal and funding mechanisms (e.g., holder of conservation easement or fee title). The project proponent will submit evidence that the necessary mitigation has been implemented or that the project proponent has entered into a legal agreement to implement it and that compensatory plant populations will be preserved in perpetuity.

If mitigation includes dedication of conservation easements, purchase of mitigation credits, or other offsite conservation measures, the details of these measures will be included in the mitigation plan, including information on responsible parties for long-term management, conservation easement holders, long-term management requirements, funding assurances, and success criteria such as those listed above and other details, as appropriate to target the preservation of long term viable populations.

If mitigation includes restoring or enhancing habitat within the treatment area or outside of the treatment area, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored habitat.

If the loss of occupied habitat cannot be offset (e.g., if preservation of existing populations or creation of new populations through relocation efforts are not available for a certain species), and as a result treatment activities would substantially reduce the number or restrict the range of listed plant species, then the treatment will not qualify as within the scope of this PTEIR.

Compensatory mitigation may be satisfied through compliance with permit conditions, or other authorizations obtained by the project proponent (e.g., incidental take permit for state-listed plants), if these requirements are equally or more effective than the mitigation identified above.

Significance after Mitigation

Implementing Mitigation Measures 3.6-1a and 3.6-1b would reduce potentially significant impacts on special-status plants because it would require avoidance of special-status plant occurrences, which would be identified and delineated under SPRs BIO-1 and BIO-7, with physical buffers or seasonal restrictions, and would require

compensation for unavoidable losses of special-status plants. Mitigation Measures 3.6-1a and 3.6-1b would reduce significant impacts because placing a no-disturbance buffer around the area occupied by special-status plants would keep workers from implementing treatment activities that could damage or destroy special-status plants to be retained within the area where the special-status plants are living so these populations would be retained and their population numbers would not be reduced, they would not be eliminated from an area, and their range would not be reduced. In instances where treatments would be allowed in areas occupied by special-status plants, under the specific conditions described under Mitigation Measures 3.6-1a and 3.6-1b, additional impact minimization and avoidance measures or design alternatives to reduce impacts to less than significant would be identified in consultation with the resource agencies, as appropriate. The project proponent would then determine if the impact on special-status plants has been reduced below the level of significance and if not, Mitigation Measure 3.6-1b would compensate for unavoidable losses by creating, enhancing, or preserving populations to offset plants killed by treatment activities such that no special-status plant population would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. With implementation of mitigation, this impact would be **less than significant**.

There is a potential long-term benefit to special-status plants from implementation of the Tahoe PTEIR because it would reduce the risk of catastrophic wildfires that can eliminate special-status plant populations. Given the unpredictability of wildfire, in terms of location and severity, evaluating the specific benefits to biological resources is not feasible and is not considered in determining the significance of this impact under CEQA. There could also be long-term benefits to fire-adapted special-status plants through the introduction of low-intensity prescribed fire. Additionally, the proposed aspen, meadow, riparian, and wet-area restoration prescription involving the removal of conifers in these areas could result in improved ecosystem functions and habitat quality for some special-status plants associated with these mesic habitats to varying degrees within the program area.

Impact 3.6-2: Substantially Affect Special-Status Wildlife Species Either Directly or Through Habitat Modifications

Later treatment activities implemented under the proposed Tahoe PTEIR, including prescribed burning, mechanical treatment, and manual treatment could result in direct or indirect adverse effects to special-status wildlife species. SPRs require pre-treatment surveys to identify special-status wildlife and habitats and avoidance and protection of certain sensitive habitats. While implementation of SPRs would minimize impacts, later treatment activities would still remove vegetation and disturb the ground surface, which could result in the disturbance to or loss of individuals, reduced breeding productivity of affected species, or loss of habitat function. The loss of special-status wildlife species and habitat function would be a **potentially significant** impact.

Twelve special-status wildlife species are known or assumed to occur in the program area: northern goshawk, California spotted owl, osprey, bald eagle, peregrine falcon, willow flycatcher, yellow-headed blackbird, olive-sided flycatcher, yellow warbler, Sierra Nevada mountain beaver, Sierra Nevada snowshoe hare, and mule deer. Additionally, three special-status wildlife species were determined to have a moderate or high likelihood to occur: southern long-toed salamander, western red bat, and pallid bat (Table E-1 in Appendix E). Potential impacts are discussed below for these species, except mule deer. Impacts related to mule deer are discussed in Impact 3.6-6, which addresses effects on wildlife movement corridors and nursery sites. Level of significance and a discussion of any impacts that would be considered significant are provided at the end of each species discussion and under "Impact Summary," below.

One federally listed species that is not expected to occur in the program area, Sierra Nevada yellow-legged frog, is addressed in this analysis. The program area does not contain optimal habitat for this species, and, although historic records exist, there are no known extant occurrences documented in the program area. However, due to some remaining uncertainty regarding the likelihood of Sierra Nevada yellow-legged frog to use the program area in the future for breeding or movement, this species is discussed here due to the presence of potential habitat in the program area and regional connectivity to more suitable and/or occupied habitats outside the program area, and the high level of vulnerability and severe population declines of this species across its range.

Forest Nesting Birds: Northern Goshawk, California Spotted Owl, Olive-Sided Flycatcher, Long-eared Owl, Bald Eagle, and Osprey

This section addresses potential proposed program-related effects on special-status bird species that nest in trees within conifer forest habitats.

Northern goshawk is designated as a species of special concern by CDFW and a special interest species by TRPA. In the Sierra Nevada, northern goshawks breed at elevations from approximately 2,500 feet in the ponderosa pine/mixed-conifer vegetation types through approximately 10,000 feet in the red fir and lodgepole pine vegetation types, and throughout eastside pine forests on the east slope (Bloom et al. 1986). Additionally, northern goshawks nest in aspen stands occurring in shrub vegetation types on the eastern slope of the Sierra Nevada (Bloom et al. 1986). Northern goshawks are year-round residents in the Truckee and Lake Tahoe regions and are suspected to be year-round residents throughout the Sierra Nevada, although some limited seasonal altitudinal movements may occur. TRPA maintains a non-degradation standard for habitat within a 0.25-mile buffer zone ("disturbance zone") around each goshawk nest site.

California spotted owl is designated as a species of special concern by CDFW. California spotted owl occurs in several forest vegetation types: mixed conifer, ponderosa pine, red fir, and montane hardwood. In the Sierra Nevada, approximately 80 percent of known spotted-owl sites occur in mixed conifer forest, 10 percent are in red fir, 7 percent are in ponderosa pine/hardwood forest, and 3 percent occur in foothill riparian/hardwood forest and eastside pine (USFS 2001). Nesting habitat is generally characterized by dense canopy closure (i.e., 70 percent or greater) with medium to large trees and multistoried stands (i.e., at least two canopy layers). Foraging habitat can include intermediate to late-successional forest with greater than 40 percent canopy cover (Verner et al. 1992).

Suitable foraging and nesting habitat for northern goshawk and California spotted owl is present throughout conifer forest in the program area; and, multiple detections of both species and nesting have been documented. Additionally, portions of the program area are located within TRPA goshawk disturbance zones.

Olive-sided flycatcher is designated by CDFW as a species of special concern. In general, this species breeds in open canopy, late-succession forest. Open conifer forests are used within the Sierra Nevada, and forest edges are important for foraging. Tree species used for nesting vary throughout the species' range; snags provide valuable habitat and nesting features throughout the range. Olive-sided flycatcher uses lofty perches for foraging and singing, and can often be found perched on the apical tip of trees, above the surrounding canopy (Shuford and Gardali 2008). This species is not uncommon in the Tahoe region and is known to occur in open canopy conifer forests within the Tahoe Basin. Olive-sided flycatcher occurs in the program area and forest habitat conditions there could support all life stages of this species. Specifically, mixed-conifer forests with ample edge habitat dominated by Jeffrey pine or lodgepole pine provides foraging and nesting habitat for olive-sided flycatcher.

Long-eared owl is designated by CDFW as a species of special concern. Specific habitat associations of long-eared owl vary over the species' range. Long-eared owls nest in woodland, forest, and open settings (e.g., grassland, shrub-steppe, and desert). Wooded and non-wooded areas that are occupied by long-eared owls often support relatively dense vegetation (e.g., trees, shrubs) adjacent to or within larger open areas such as grassland or meadows (e.g., habitat edges) (Bloom 1994; Marks et al. 1994). However, this species also has been documented as breeding in contiguous conifer forest habitat with heavy mistletoe infestation (Bull et al. 1989). In California, this species occurs in medium-aged and mature live oak and riparian woodlands. Long-eared owls also breed in oak thickets and conifer forests at higher elevations (CDFG 2005). Although long-eared owls have been documented in the Tahoe Basin, its breeding status and distribution in the program area and most of the Tahoe region are unknown; and habitat use has not been well studied. Conifer forest and riparian habitat in the program area provide potential foraging and nesting habitat for long-eared owl.

Osprey is designated by TRPA as a special interest species. Osprey is associated with large fish-bearing waters. In the Tahoe Basin, osprey nests are distributed primarily along the northern portion of the east shore and the southern portion of the west shore of Lake Tahoe. Other osprey nests in the Tahoe Basin are located along the shorelines of smaller lakes (such as Fallen Leaf Lake) and in forest uplands up to 1.5 miles from water. Ospreys forage in Lake Tahoe as well as several other fish-bearing lakes, streams, and rivers within the Tahoe Basin. The osprey population in

the Tahoe Basin has increased over the last several years. For example, between 1997 and 2015, the number of active nests increased steadily from 12 to 31 (TRPA 2016). The status of the Tahoe Basin's osprey population has been in attainment with respect to TRPA's threshold standard for this species during the last six threshold evaluation periods (1991, 1996, 2001, 2006, 2011, 2016). The TRPA threshold standard for osprey includes maintaining a minimum of four population sites (i.e., four nests). TRPA maintains a non-degradation standard for habitat within a 0.25-mile disturbance zone around each osprey nest site. The number of nesting pairs, active nests, and associated disturbance zones in the shorezone vary annually, and the locations of nest sites have shifted over the last several years. For example, some trees along Lake Tahoe that were historically used by osprey for nesting have fallen down in recent years. The program area contains osprey nest sites and overlaps with several TRPA osprey disturbance zones.

Bald eagle is listed as endangered under CESA and designated as a special-interest species by TRPA; it also is fully protected under the California Fish and Game Code and federally protected by USFWS under the Bald and Golden Eagle Protection Act. Bald eagles require large bodies of water or free-flowing streams with abundant fish and adjacent snags or other perches for hunting. They generally nest in undisturbed coniferous forests, usually within one mile of a lake or reservoir. Bald eagle habitat typically consists of several components, most significantly, proximity to large bodies of water and wetlands associated with lakes, mature coniferous stands with presence of dominant trees, and adequate protection from human disturbance. Over the past several years, bald eagles have nested consistently in two areas of the Tahoe Basin – Marlette Lake and Emerald Bay. More recently, a third bald eagle nest site was documented at Sugar Pine Point along the west shore; this nest was active in 2013, 2014, and 2015 (TRPA data), and possibly more recently. TRPA maintains a non-degradation standard for habitat within a 0.5-mile disturbance zone around each bald eagle nest site. The Tahoe Basin is also a wintering area for bald eagles, and the wintering population is considerably greater than during the breeding season. A small portion of the program area overlaps with a TRPA bald eagle disturbance zone near Sugar Pine Point

Design of later treatment activities under the proposed program would integrate several SPRs designed to avoid and minimize disturbances to special-status wildlife species and their habitats. SPR BIO-1 requires a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife to occur. If it is determined that special-status wildlife may occur, then SPR BIO-8 requires focused or protocol-level survey for special-status wildlife to identify these species prior to treatment so that they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3) and retain the habitat function of riparian habitat (SPRs BIO-4, HYD-3, HYD-4) reduce the likelihood and magnitude of impacts to tree-nesting species within these habitats. However, many of these special-status species would be present outside of these habitats and therefore would not be protected by these SPRs. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects on special-status wildlife if these species and their habitat are not sufficiently avoided after identification and if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential residual impacts to special-status tree-nesting species are described for each treatment activity below.

Prescribed Burning

Prescribed burning treatment activities would include pile burning and understory burning. If prescribed burning occurs during the breeding season (varies by species), active nests present in the program area could be burned directly, removed or damaged by falling, or otherwise damaged by fire (e.g., heat scorch, smoke damage). This could result in the direct mortality of adults or young, if present. These potential adverse effects would be more likely due to understory burning than pile burning, because pile burning would occur in a discrete location rather than throughout the understory. Additionally, special-status birds could be alarmed by the visual, auditory, and olfactory cues of prescribed burns (e.g., flames, smoke) and by the presence of associated personnel and equipment (e.g., vehicles). This could result in nest abandonment, and potential mortality of young or loss of eggs.

Residual chemicals from accelerants used to ignite prescribed burns would not substantially adversely affect tree-nesting species because accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate

in the soil, and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and any remaining accelerant residuals, located primarily in the soil or water, are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), further reducing their potential for exposure to wildlife (USFS 2002). A USFS (2002) risk assessment report summarized the estimated risk to wildlife from use of a range of accelerants and analyzed risks from residues of multiple fire accelerants. The report considered extensive toxicity and exposure information generated by dozens of studies on the toxicity of the chemical constituents in commercially available accelerants. The study found that managed use of the accelerants did not result in a substantial risk to terrestrial wildlife, including sensitive species. Additionally, although tree- and cavity-nesting predator species could consume prey species (e.g., terrestrial invertebrates) that were previously exposed to these residual chemicals, potentially constituting a partial exposure, substantial risk of exposure would not occur because the accelerant applications are not a substantial risk to prey species and would be limited in their application (USFS 2002).

Depending on severity, prescribed burning treatment activities could result in reduced understory complexity if understory trees, shrubs, and downed woody debris are burned. Removal of these understory features may benefit some prey species for northern goshawk, California spotted owl, and long-eared owl by facilitating movement in the forest floor (McIver et al. 2013). However, because these understory features also provide refuge for prey, changes to understory complexity may result in some loss of habitat function and exclusion of these species from an individual treatment site.

Mechanical Treatment

Mechanical treatment activities would include cutting, masticating, crushing/compacting, or chopping of existing vegetation. If mechanical treatment occurs during the breeding season, these activities could result in the direct loss of nests if present within trees that are subject to cutting or other removal methods. This could result in the direct mortality of adults or young, if present. Additionally, tree-nesting species could be alarmed by the presence of personnel or heavy equipment (e.g., masticators, skidders) that may cause noise, vibration, and dust, which could result in nest abandonment, and potential mortality of young or loss of eggs.

Mechanical treatment activities could result in reduced canopy cover and reduced overstory and understory complexity if canopy trees, understory trees, shrubs, snags, and downed woody debris are removed (e.g., cut, masticated, chopped). Overstory thinning may result in increased light penetration and increased growth of herbaceous plant and shrub species, which may benefit populations of prey for special-status forest birds. For species such as northern goshawk and California spotted owl, which have very specific habitat-structure requirements (e.g., dense canopy closure, complex overstory structure, presence of large trees), major changes to the character of forest habitat could result in loss of habitat function and exclusion of these species from a treatment site.

Manual Treatment

Manual treatment activities would include the use of hand tools (e.g., loppers) and hand-operated power tools (e.g., chainsaws) to prune, thin, or remove vegetation. If manual treatment, including manual removal of trees or tree limbs, occurs during the breeding season, these activities could result in the direct loss of nests if present within the trees that are subject to cutting or other removal methods. This could result in the direct mortality of adults or young, if present. Additionally, nesting birds could be alarmed by the presence of personnel, which could result in nest abandonment and potential mortality of young or loss of eggs.

Manual treatment activities could result in reduced canopy cover and reduced understory complexity if canopy trees, understory trees, shrubs, snags, and downed woody debris are removed (e.g., cut, masticated, chopped). For species such as northern goshawk and California spotted owl, which have very specific habitat-structure requirements (e.g., dense canopy closure, complex overstory structure, presence of large trees), major changes to the character of forest habitat could result in loss of habitat function and exclusion of these species from a treatment site.

Conclusion

Relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status forest bird species (northern goshawk California spotted owl, olive-sided flycatcher, long-eared owl,

bald eagle, osprey). SPR BIO-1 requires data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife to occur. If it is determined that special-status wildlife may occur, then SPR BIO-8 requires focused or protocol-level survey for special-status wildlife to determine whether the species is present. Several tree-nesting special-status wildlife species require specific protocol-level surveys to determine occupancy, including northern goshawk and California spotted owl. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3) and retain the habitat function of riparian habitat (SPRs BIO-4, HYD-3, HYD-4) reduce the likelihood of impacts to species within these habitats. While SPRs would minimize impacts, treatment activities could still result in the direct or indirect adverse effects described above if these species occur within areas or habitats that are not avoided by implementation of the SPRs. As described above, potential direct adverse effects include mortality or injury of special-status species or their nests. Indirect adverse effects would include disturbance to nests or dens due to the presence of crews or heavy machinery, or loss of habitat function as a result of treatment activities (e.g., prescribed burning, mechanical treatment). Substantial adverse effects on northern goshawk California spotted owl, olive-sided flycatcher, long-eared owl, bald eagle, or osprey due to direct injury or mortality or habitat modifications would be a *potentially significant* impact.

American Peregrine Falcon

American peregrine falcon is listed as a fully protected species by CDFW and a special interest species by TRPA. Peregrine falcons nest almost exclusively on protected ledges of high cliffs, primarily in woodland, forest, and coastal habitats. A number of reintroduced pairs also nest on tall buildings and other artificial structures (e.g., towers) in urban or suburban environments. Peregrine falcons are also known to occasionally use tree or snag cavities, old nests of other raptors, and small outcrops. Cliffs that provide ledges, potholes, or small caves, usually with an overhang, and that are relatively inaccessible to mammalian predators are important components of nesting habitat. Nest sites usually provide a panoramic view of open country, are near water, and are associated with a local abundance of passerine, waterfowl, or shorebird prey. In the Tahoe Basin, five active peregrine falcon nests have been documented in recent years, including one located within the program area at Eagle Rock near Blackwood Creek. A TRPA 0.25-mile disturbance zone for peregrine falcon is associated with this nest site.

If implemented near the peregrine falcon nest site at Eagle Rock, the proposed treatment activities are not expected to remove the nest site itself or substantially affect the quality or availability of foraging habitat in the vicinity. Additionally, as discussed above for forest nesting birds, relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status bird species. However, prescribed burning, mechanical treatment, or manual treatment activities could still disturb active nesting attempts if implemented near a peregrine falcon nest site (i.e., near Eagle Rock) during the breeding season. Nesting birds could be alarmed by the presence of personnel and operation of heavy equipment (e.g., masticators, skidders) that may cause noise, vibration, dust, and other physical and audible disturbances, which could result in nest abandonment, and potential mortality of young or loss of eggs. The potential disruption of breeding attempts and reproductive failure of peregrine falcon would be a *potentially significant* impact.

Riparian/Wet Meadow Nesting Birds and Burrowing Mammals: Yellow Warbler, Willow Flycatcher, Yellow-headed Blackbird, and Sierra Nevada Mountain Beaver

Yellow warbler and yellow-headed blackbird are designated as species of special concern by CDFW. In the Sierra Nevada, yellow warblers typically breed in wet areas with dense riparian vegetation. Breeding habitats primarily are willow patches in montane meadows, and riparian scrub and woodland dominated by willow, cottonwood, aspen, or alder with dense understory cover. Localized breeding has been documented in more xeric (dry) sites, including chaparral, wild rose (*Rosa* spp.) thickets, and young conifer stands (Siegel and DeSante 1999, RHJV 2004). Yellow-headed blackbird typically breeds in marshes that have tall emergent vegetation such as cattails or tules, in open areas near and over relatively deep water. Although not common, yellow warbler occurs in suitable riparian/meadow habitat in the Lake Tahoe Basin, including the program area (e.g., Upper Truckee Marsh). Yellow-headed blackbird, which is rare in the Lake Tahoe Basin, has also been documented in the program area at the Upper Truckee Marsh.

Willow flycatcher is listed as endangered under CESA. In the Sierra Nevada, suitable habitat typically consists of montane meadows that support riparian deciduous shrubs (particularly willows) and remain wet through the nesting season (i.e., midsummer). Important characteristics of suitable meadows include a high water table that results in standing or slow-moving water, or saturated soils (e.g., "swampy" conditions) during the breeding season; abundant riparian deciduous shrub cover (particularly willow); and riparian shrub structure with moderate to high foliar density that is uniform from the ground to the shrub canopy. Most breeding occurrences are in meadows larger than 19 acres, but the average size of occupied meadows is approximately 80 acres (USFS 2001). Although less common in the Sierra Nevada, riparian habitat along streams also can function as suitable habitat for willow flycatcher. However, those areas must support the hydrologic and vegetation characteristics described for suitable meadows (e.g., standing or slow-moving water, and abundant and dense riparian vegetation). Willow flycatcher is rare in the Lake Tahoe Basin; however, this species has been documented in the program area at the Upper Truckee Marsh.

Sierra Nevada mountain beaver is designated by CDFW as a species of special concern. This species is associated with riparian habitats with soft, deep soils for burrowing, lush growth of preferred food sources such as willow and alder, and a variety of herbaceous species for bedding material. Vegetation types preferred by mountain beaver include wet meadows and willow-alder-dominated riparian corridors typically along perennial water sources. Suitable riparian habitats are characterized by dense growth of small deciduous trees and shrubs near permanent water. Mountain beaver is generally solitary, except during its short breeding season; mountain beavers spend a high portion of their time in extensive underground burrow systems with multiple openings, tunnels, and food caches. CNDDDB records indicate the presence of Sierra Nevada mountain beaver within and adjacent to the program area. Known occurrences of this species have been increasing in the Tahoe region in recent years because of increased survey efforts.

Potential impacts of program implementation on riparian and wet meadow habitats in treatment areas, which could potentially support nesting yellow warbler, willow flycatcher, yellow-headed blackbird, and Sierra Nevada mountain beaver, are analyzed and described in detail in Impact 3.6-3, below. For the reasons discussed in Impact 3.6-3, potential disturbances to potential breeding habitat for these species as a result of later treatment activities would not be substantial. Design of later treatment activities under the proposed program would comply with CFPRs and integrate several SPRs designed to avoid and minimize disturbances to aquatic, riparian, and wet meadow habitats and associated special-status wildlife species such as Sierra Nevada yellow-legged frog (14 CCR Sections 956.3, 956.4, 956.5, 956.7, 963, 963.6, 963.7, and 963.9). SPR HYD-1 requires compliance with water quality regulations and SPR HYD-3 requires WLPZs to be established on each side of watercourses, which would: minimize disturbance to amphibians within aquatic and riparian habitat by limiting treatment activities within WLPZs; and protect aquatic and riparian habitat by avoiding erosion and associated sedimentation that could degrade breeding/overwintering habitat or riparian vegetation. SPR HYD-4 and TRPA Code requires delineation and protection of SEZs.

Additionally, SPR BIO-1 requires data review and reconnaissance surveys of proposed treatment sites to identify potential riparian, wet meadow, or other aquatic habitats, and to determine whether there is potential for special-status wildlife (including yellow warbler, yellow-headed blackbird, willow flycatcher, and Sierra Nevada mountain beaver) to occur. If it is determined that special-status wildlife may occur, then SPR BIO-8 requires focused or protocol-level surveys to identify these species prior to treatment so they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPR BIO-3 requires site-specific surveys to identify and map the limits of these sensitive habitats using standard field protocols. SPR BIO-4 requires the design of treatments to avoid loss or degradation of riparian and SEZ habitat functions and values, such as riparian vegetation removal that could reduce stream shading and result in increased temperatures. SPR BIO-7 requires BMPs to prevent the spread of invasive plants, noxious weeds, and plant pathogens that could degrade the quality of sensitive habitats communities.

While SPRs and compliance with CFPRs would substantially reduce potential direct and indirect impacts on montane riparian and wet meadow habitats that may support yellow warbler, willow flycatcher, yellow-headed blackbird, and Sierra Nevada mountain beaver, treatment activities could still result in the direct or indirect adverse effects if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential residual impacts on special-status birds associated with riparian/wet meadow habitats for each treatment activity would be similar to those

described above for forest nesting birds. As described above, potential direct adverse effects include mortality or injury of special-status species or their nests. For Sierra Nevada mountain beaver, treatments within or adjacent to suitable montane riparian habitat could disturb or result in injury or mortality of mountain beavers if present. Because Sierra Nevada mountain beavers generally dig large burrow complexes hidden beneath dense brush, potential treatment-related impacts would result primarily from site preparation and vegetation removal, soil disturbance or compaction, or other treatment-related disturbances that may occur in or near dense riparian areas during treatments. These activities could cause the collapse or fill of burrows, including active breeding sites. In addition, noise from mechanical treatment methods may disrupt Sierra Nevada mountain beaver breeding activities. Indirect adverse effects on these species could include disturbance to nests or burrows due to the presence of crews or heavy machinery, or loss of habitat function as a result of treatment activities. Substantial adverse effects on yellow warbler, willow flycatcher, yellow-headed blackbird, and Sierra Nevada mountain beaver due to direct injury, mortality or disruption of breeding attempts and reproductive failure, or loss of habitat functions would be a *potentially significant* impact.

Sierra Nevada Yellow-legged Frog

Sierra Nevada yellow-legged frog is listed as endangered under ESA and endangered under CESA. This species is highly aquatic (almost always found within a few feet of water) and associated with high mountain lakes, ponds, tarns, streams, montane riparian, and wet meadow habitats (USFS 2014). Alpine lakes used by this species often have grassy or muddy margins and are typically greater than 8 feet in depth (USFS 2014). Less frequently, Sierra Nevada yellow-legged frogs are also known to occur in stream habitats, including high-gradient channels with pools and rapids, and streams with marshy edges and sod banks (USFS 2014). Although Sierra Nevada yellow-legged frogs have been observed successfully breeding in shallow locations (less than 8 feet in depth), typically depth is an important factor for breeding locations because adults and larvae require overwintering habitat in perennial waters. For up to nine months, adults and larvae will live/hibernate below ice, or in nonfrozen portions of ponds or lakes; therefore, perennial waters with depths that are sufficient to prevent complete freezing of the aquatic habitat (e.g., deep perennial lakes, ponds, pools, or similar features) are required for breeding/overwintering populations to persist. Threats to Sierra Nevada yellow-legged frog include introduced fish and other predators, disease (e.g., chytridiomycosis), habitat loss and fragmentation, fire suppression, habitat restoration, livestock grazing, locally applied pesticides, mining, recreational activities (e.g., packstock), research activities, roads, vegetation and fuels management, water development and diversion, acid deposition, airborne contaminants (e.g., pesticides), climate change, and UV-B radiation (USFS 2014).

The only known population of Sierra Nevada yellow-legged frog in the Lake Tahoe Basin occurs at Hell Hole bog, in the southern end of the Lake Tahoe Basin, outside the program area. The closest known populations are west of the Tahoe Basin in Desolation Wilderness and the vicinity of Five Lakes near Squaw Valley. There are also limited records of the species on the Tahoe National Forest, with the largest known population in the Soda Springs area more than 12 miles northwest of the program area. The program area is not known to contain optimal habitat for this species; most lake and stream habitat likely does not provide the specific ecological conditions required for various life stages of this species (e.g., sufficient water depth, low abundance or absence of nonnative fish predators). Although historic records exist, there are no known extant occurrences of Sierra Nevada yellow-legged frog documented in the program area. However, due to some remaining uncertainty regarding the likelihood of Sierra Nevada yellow-legged frog to use the program area in the future for breeding or movement, this species is discussed here due to the presence of potential habitat in the program area and regional connectivity to more suitable and/or occupied habitats outside the program area, and the high level of vulnerability and severe population declines of this species across its range.

Under the proposed program, treatments would not be implemented within aquatic habitat types but could occur within riparian zones and other areas adjacent to perennial aquatic features. Potential impacts of program implementation on riparian, wet meadow, and aquatic habitats in treatment areas, which could potentially support Sierra Nevada yellow-legged frog, are analyzed and described in detail in Impact 3.6-3 and Impact 3.6-5, below. For the reasons discussed in Impact 3.6-3 and Impact 3.6-5, potential disturbances to potential habitat for Sierra Nevada yellow-legged frog as a result of later treatment activities would not be substantial. Treatment design of later projects under the proposed program would integrate several SPRs designed to avoid and minimize disturbances to aquatic, riparian, and wet meadow habitats and associated special-status wildlife species such as Sierra Nevada yellow-legged frog. SPR HYD-1 requires compliance with water quality regulations and SPR HYD-3 requires WLPZs to be established

on each side of watercourses, which would: minimize disturbance to amphibians within aquatic and riparian habitat by limiting treatment activities within WLPZs; and protect aquatic and riparian habitat by avoiding erosion and associated sedimentation that could degrade breeding/overwintering habitat or riparian vegetation. SPR HYD-4 and TRPA Code requires delineation and protection of SEZs.

Additionally, SPR BIO-1 requires data review and reconnaissance surveys of proposed treatment sites to identify potential riparian, wet meadow, or other aquatic habitats, and to determine whether there is potential for Sierra Nevada yellow-legged frog and other special-status wildlife to occur. If it is determined that special-status wildlife may occur, then SPR BIO-8 requires focused or protocol-level surveys to identify these species prior to treatment so they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPR BIO-3 requires site-specific surveys to identify and map the limits of these sensitive habitats using standard field protocols. SPR BIO-4 requires the design of treatments to avoid loss or degradation of riparian and SEZ habitat functions and values, such as riparian vegetation removal that could reduce stream shading and result in increased temperatures. SPR BIO-7 requires BMPs to prevent the spread of invasive plants, noxious weeds, and plant pathogens that could degrade the quality of sensitive habitats communities.

While SPRs would substantially reduce potential direct and indirect impacts to aquatic, montane riparian, and wet meadow habitats that may support Sierra Nevada yellow-legged frog, treatment activities could still result in the direct or indirect adverse effects if this species occurs within areas or habitats that are not avoided by implementation of the SPRs. Potential residual impacts on Sierra Nevada yellow-legged frog would occur if treatment activities are implemented within occupied habitat and individuals, young, or eggs are injured or killed through direct crushing (e.g., by personnel) or burning (e.g., during prescribed burning activities) during implementation. All treatment activities would involve varying degrees of heavy machinery use and presence of fire and other personnel. Noise and other disturbance from operation of heavy machinery, chainsaws, or other vehicles during treatment activities could cause displacement of Sierra Nevada yellow-legged frog. Displacement would be temporary and could cause an increase in predation risk if individuals are unable to locate proper cover. Indirect adverse effects would occur if treatment activities altered habitat or site conditions in a manner that later resulted in a loss or degradation of suitable aquatic or adjacent upland habitat for Sierra Nevada yellow-legged frog or resulted in indirect water quality impacts (e.g., introduction of sediment to a perennial stream or other aquatic feature).

While the treatment activities described above could result in injury or death of Sierra Nevada yellow-legged frog or temporary degradation of habitat, the overall risk to this species as a result of implementation of the proposed program is considered low due to the lack of documented occurrences of the species within the program area, the scarcity of high-quality breeding habitat (e.g., perennial aquatic features with sufficient depth and absence of nonnative fish predators), and the geographic position of the program area relative to the species' current elevation range in the region (i.e., most extant occurrences of the species in the region are located above the elevation range of the program area). Although the risk to Sierra Nevada yellow-legged frog is likely low, comprehensive surveys for the species have not been conducted within the program area, and this analysis assumes that the species may be present within potentially suitable habitat. Adverse effects on Sierra Nevada yellow-legged frog due to direct injury or mortality or habitat modifications would be a *potentially significant* impact.

Southern Long-toed Salamander

Southern long-toed salamander is a CDFW species of special concern that occurs within forests associated with meadows where snowmelt provides temporary ponds for breeding. Breeding typically occurs in late May or June, and migration may occur within approximately 0.6 mile of breeding habitat. In upland habitats, the species spends most of the year underground or under rocks, logs, and other similar locations. CNDDDB records indicate the presence of southern long-toed salamanders at in or adjacent to the program area (CDFW 2019). If water is present for long enough to allow for completion of the aquatic portion of the species' lifecycle, ponds and wet meadows that may occur within the program area are potentially suitable breeding habitat for this species. In addition, suitable upland habitat may be present within 0.6 mile of breeding habitat.

As described previously, SPRs including requirements for limiting water drafting, delineating and protecting WLPZs and SEZs, and maintaining riparian habitat function would minimize potential effects of project implementation in suitable aquatic breeding habitats. However, if southern long-toed salamander occurs within treatment units, felling of trees, use of mechanical equipment, and other treatment activities involving ground disturbances could result in the death or injury of individuals above ground, and the potential fill or collapse of burrows resulting in entombment and death. This would be a *potentially significant* impact.

Western Red Bat and Pallid Bat

Western red bat is designated as a species of special concern by CDFW and High Priority by the Western Bat Working Group. Red bats are found primarily in dense riparian woodland habitats containing willow, cottonwood, and sycamore trees. Red bats appear to differentially select relatively wide, well-developed riparian habitats with large trees for breeding roosts; however, roosting has also been documented in orchards adjacent to riparian areas (Pierson et al. 2006). Western red bats typically forage within or near riparian zones, along stream banks and gravel bars (Pierson et al. 2006) or at high altitudes over the tree canopy (Tahoe National Forest 2009). Foraging typically begins 1 to 2 hours after sunset (Tahoe National Forest 2009). In the Lake Tahoe Basin, western red bat is not common but has been detected occasionally. In the program area, a western red bat was detected along the northeast boundary of the Conservancy's Griff Creek property and in Blackwood Canyon during acoustic surveys in July and August 2015. The acoustical data (bat echolocation calls) were collected by the Nevada Department of Wildlife for the Conservancy and analyzed by West Ecosystems Analysis (2016). At the Griff Creek property, the acoustic survey location where the detection was made was approximately 300 feet west of a prominent riparian corridor, which the species was likely associated with. The survey location in Blackwood Canyon where red bat was detected was along the bank of Blackwood Creek. In June 2019, during acoustic bat surveys conducted by the Tahoe Resource Conservation District, western red bat was also detected on the Conservancy's Dollar property northwest of Dollar Point and northeast of North Tahoe High School near Tahoe City.

Pallid bat is designated as a species of special concern by CDFW and High Priority by the Western Bat Working Group. Throughout California, pallid bat is usually found in arid habitats below 6,000 feet elevation; however, the species has been found up to 10,000 feet in the Sierra Nevada. Pallid bats use a variety of habitats including grasslands, shrublands, woodlands, and coniferous forests. Pallid bats are most common in open, dry habitats that contain rocky areas for roosting. Day roosts may vary but are commonly found in rock crevices, tree hollows, mines, caves and a variety of human-made structures. Night roosts are usually more open sites and may include open buildings, porches, mines, caves, and under bridges. Tree roosting has been documented in large conifer snags, inside basal hollows of redwoods and giant sequoias, and bole cavities in oaks (Sherwin 1998). Pallid bats are yearlong residents in most of their range and hibernate in winter near their summer roost (CDFG 1990). In June 2019, during acoustic bat surveys conducted by the Tahoe Resource Conservation District, pallid bat was detected on the Conservancy's Dollar property. Though no other documented occurrences of pallid bat are known from the program area, the coniferous forest present in the program area and vicinity may provide suitable foraging habitat as well as roosting habitat in large trees and snags and in more open areas.

Treatment design of later activities under the PTEIR would integrate the SPRs identified above. SPR BIO-1 requires a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for special-status wildlife, including special-status bats, to occur. If it is determined that special-status wildlife may occur, then SPR BIO-8 requires focused or protocol-level survey for special-status wildlife to identify these species prior to treatment so that they can be avoided under other measures. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), delineate and protect WLPZs and SEZs (SPRs HYD-3 and HYD-4), and retain the habitat function of riparian habitat (SPR BIO-4) reduce the likelihood of impacts to special-status bats within these habitats. However, pallid bat and western red bat could be present outside of these habitats and would not be protected by these SPRs. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects on special-status bats if these species and their habitat are not

sufficiently avoided after identification and if these species occur within areas or habitats that are not avoided by implementation of the SPRs. Potential impacts to special-status bats are described for each treatment activity below.

Prescribed Burning

Prescribed burning treatment activities would include pile burning and understory burning. These activities are not anticipated to directly remove suitable roost or colony sites for special-status bats such as rock crevices, buildings, caves, mines, or bridges. However, if prescribed burning occurs within the vicinity of special-status bat roosts in trees (e.g., sloughing tree bark, tree cavities, leaves), these activities could result in the direct mortality or injury of special-status bats within roosts or maternity colonies. These potential adverse effects would be more likely due to understory burning than pile burning, because pile burning would occur in a discrete location rather than throughout the understory. In rare instances, western red bat, a tree foliage-roosting species, may roost in leaf litter on the forest floor and would be at risk for injury or death from understory burning. Further, prescribed burning treatment activities during the spring to early fall may have greater potential to adversely affect special-status bats, because female bats and their young are present within maternity colonies during this time and young bats may be unable to fly, thus unable to escape. Additionally, special-status bats within tree habitat and other habitats (e.g., bridges, caves, mines, rock crevices) could be alarmed by the visual, auditory, and olfactory cues of prescribed burns (e.g., flames, smoke) and by the presence of associated personnel and equipment (e.g., vehicles, helicopters) if these activities are in the vicinity of the roost or maternity colony. This could result in abandonment of the colony and potential mortality of young.

Residual chemicals from accelerants used to ignite prescribed burns would not substantially adversely affect special-status bat species because accelerants would be applied sparingly, in limited locations along a burn unit perimeter or in planned strips through a burn unit, generally dispersed over the application area so that they would not concentrate in the soil and the residual amount of accelerant post-burn at a given location would be minimal. Accelerants are degraded during combustion and any remaining accelerant residuals, located primarily in the soil or water, are degraded through chemical and biological processes (e.g., microbial activity, adherence to minerals in the soil), further reducing their potential for exposure to wildlife (USFS 2002). A USFS (2002) risk assessment report summarized the estimated risk to wildlife from use of a range of accelerants and analyzed risks from residues of multiple fire accelerants. The report considered extensive toxicity and exposure information generated by dozens of studies on the toxicity of the chemical constituents in commercially available accelerants. The study found that managed use of the accelerants did not result in a substantial risk to terrestrial wildlife, including sensitive species. Additionally, although special-status bat species could consume prey species (e.g., terrestrial invertebrates) that were previously exposed to these residual chemicals, potentially constituting a partial exposure, substantial risk of exposure would not occur because the accelerant applications are not a substantial risk to prey species and would be limited in their application (USFS 2002).

Mechanical Treatment

Mechanical treatment activities would include cutting, uprooting, crushing/compacting, or chopping of existing vegetation. It is not anticipated that these activities would result in direct impacts to special-status bat habitat such as rock crevices, buildings, caves, mines, or bridges. However, mechanical treatment could result in the direct removal of trees potentially being used by special-status bat species as roosts or maternity colonies. Removal of this habitat could result in mortality of special-status bats if present within the trees. Further, mechanical treatment activities during the spring to early fall may have greater potential to adversely affect special-status bats, because female bats and their young are present within maternity colonies during this time and young bats may be unable to fly, thus unable to escape. Additionally, special-status bats within tree habitat and other habitats (e.g., bridges, rock crevices) could be alarmed by the presence of heavy equipment (e.g., masticators, trucks) and personnel, which could result in abandonment of the colony, and potential mortality of young.

Manual Treatment

Manual treatment activities would include the use of hand tools (e.g., loppers) and hand-operated power tools (e.g., chainsaws) to prune, thin, or remove vegetation. It is not anticipated that these activities would result in direct impacts to special-status bat habitat such as rock crevices, buildings, or bridges. However, manual treatment could result in the direct removal of trees potentially being used by special-status bat species as roosts or maternity

colonies. Removal of this habitat could result in mortality of special-status bats if present within the trees. Further, manual treatment activities during the spring to early fall may have greater potential to adversely affect special-status bats, because female bats and their young are present within maternity colonies during this time and young bats may be unable to fly, thus unable to escape. Additionally, special-status bats within tree habitat and other habitats (e.g., bridges, rock crevices) could be alarmed by the presence of personnel which could result in abandonment of the colony, and potential mortality of young.

Conclusion

Relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and long-term habitat loss for special-status bats. SPR BIO-1 requires data review (e.g., vegetation mapping, databases with existing special-status wildlife and plant occurrences) and a reconnaissance-level survey (e.g., visual inspection of habitat features that may provide roosting habitat for special-status bats, acoustic surveys) of the proposed treatment site to determine whether there is potential for special-status wildlife to occur. If it is determined that special-status wildlife may occur, then SPR BIO-8 requires focused or protocol-level survey for special-status wildlife to determine whether the species is present. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified RPF or biologist familiar with the life history of the species so crews are aware of potential special-status wildlife in the treatment area and measures to reduce adverse effects. SPRs designed to identify sensitive natural communities (SPR BIO-3), identify and protect WLPZs and SEZs (SPRs HYD-3 and HYD-4), and retain the habitat function of riparian habitat (SPR BIO-4) reduce the likelihood of impacts (e.g., habitat loss) on special-status bats within these habitats. While SPRs would minimize impacts, treatment activities could still result in direct or indirect adverse effects described above on pallid bat or western red bat if these species occur within areas or habitats that are not avoided by implementation of the SPRs. As described above, potential direct adverse effects include mortality or injury to special-status bats. Indirect adverse effects would include disturbance to roosts due to the presence of crews or heavy machinery, or loss of habitat function as a result of treatment activities (e.g., prescribed burning, mechanical treatment). Substantial adverse effects on special-status bats due to direct injury or mortality or habitat modifications would be a *potentially significant* impact.

Sierra Nevada Snowshoe Hare

Sierra Nevada snowshoe hare is designated by CDFW as a species of special concern. This species is found within middle to high elevations in the Sierra Nevada. Snowshoe hare most frequently occupies riparian areas and other densely vegetated deciduous habitats. For shelter, snowshoe hares typically do not dig or occupy burrows; rather, they use scrapes or shallow depressions on the ground. Sierra Nevada snowshoe hare has been detected in or adjacent to the program area (CDFW 2019); and, the program area contains suitable habitat for this species. Therefore, snowshoe hare could potentially occur within riparian and other densely vegetated habitats in the program area. Mechanical treatment, manual treatment, and prescribed burning could occur within suitable habitat for Sierra Nevada snowshoe hare. These activities could result in the temporary disturbance of foraging and breeding behaviors. However, snowshoe hare does not use burrows where they may be trapped or crushed by later treatment activities; and, for the same reasons described above for riparian nesting birds and burrowing mammals (including incorporation of applicable SPRs to protect and limit treatment activities within riparian habitats, WLPZs, and SEZs), program implementation would not substantially remove or disturb high-quality habitat for snowshoe hare.

While activities that occur within or adjacent to riparian zones may still temporarily disturb snowshoe hare breeding and foraging behaviors, with the implementation of applicable SPRs the project would not substantially affect the distribution, breeding productivity, viability, or the regional population of Sierra Nevada snowshoe hare. Therefore, the potential impact to this species would be *less than significant*.

Impact Summary and Conclusion

As described in detail above, relevant SPRs would be implemented to avoid and minimize treatment-related disturbances and substantial long-term habitat loss for special-status wildlife species. However, implementation of later treatment activities under the PTEIR could potentially result in the loss of individuals or nests, or disruptions to nesting attempts, of northern goshawk, California spotted owl, long-eared owl, osprey, bald eagle, peregrine falcon, olive-sided flycatcher, yellow warbler, willow flycatcher, and yellow-headed blackbird; the removal of an active roost

site for, or injury to, pallid bat and western red bat; and removal of occupied burrows, injury or mortality of individuals, and loss of reproductive success of Sierra Nevada mountain beaver and southern long-toed salamander. Additionally, later treatment activities could alter the composition and structure of suitable habitat for these species, particularly for special-status forest birds and bats (northern goshawk, California spotted owl, long-eared owl, olive-sided flycatcher, western red bat, and pallid bat). Although the risk of program-related disturbances to Sierra Nevada yellow-legged frog is likely low, this analysis assumes that the species may be present within potentially suitable habitat and subject to adverse effects. This impact on special-status wildlife species would be **potentially significant**. For other special-status species, although program implementation could disturb suitable habitats and adversely affect individuals locally, the magnitude and intensity of potential adverse effects would not affect the species' distribution, active breeding sites, breeding productivity, viability, or regional populations.

Mitigation Measures

Mitigation Measure 3.6-2a: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Federally and State-Listed Wildlife Species

If wildlife species listed under ESA or CESA (e.g., willow flycatcher, Sierra Nevada yellow-legged frog) are observed during reconnaissance surveys (conducted pursuant to SPR BIO-1) or focused or protocol-level surveys (conducted pursuant to SPR BIO-8), the project proponent will avoid adverse effects on the species by implementing the following.

Avoid Mortality, Injury, or Disturbance of Individuals

- ▶ The project proponent will implement one of the following two measures to avoid mortality, injury, or disturbance of individuals:
 1. Treatment will not be implemented within the occupied habitat. Any treatment activities outside occupied habitat will be a sufficient distance from the occupied habitat such that mortality, injury, or disturbance of the species will not occur, as determined by a qualified RPF or biologist, in consultation with CDFW and/or TRPA (depending on the potentially affected species), using current and commonly-accepted science and considering published agency guidance; OR
 2. Treatment will be implemented outside the sensitive period of the species' life history (e.g., outside the breeding or nesting season) during which the species may be more susceptible to disturbance, or disturbance could result in loss of eggs or young. For species present year-round, CDFW and/or USFWS will be consulted to determine if there is a period of time within which treatment could occur that would avoid mortality, injury, or disturbance of the species.
- ▶ For species listed under ESA or CESA, if the project proponent cannot avoid mortality, injury or disturbance by implementing one of the two options listed above, the project proponent will implement Mitigation Measure 3.6-2c.

Maintain Habitat Function

- ▶ The project proponent will design treatment activities to maintain the habitat function, by implementing the following:
 - While performing review and surveys for SPR BIO-1 and SPR BIO-8, a qualified RPF or biologist will identify any habitat features that are necessary for survival (e.g., habitat necessary for breeding, foraging, shelter, movement) of the affected wildlife species. These habitat features will be marked and treatments applied to the features will be designed to minimize or avoid the loss or degradation of suitable habitat for listed species during treatments. Identification and treatment of these features will be based on the life history and habitat requirements of the affected species and the most current, commonly accepted science.
 - If it is determined during implementation of SPR BIO-1 and SPR BIO-8 that federally or state-listed wildlife with specific requirements for dense vegetation cover (e.g., willow flycatcher) are present within a treatment area, then vegetation cover within existing suitable areas will be retained at the percentage preferred by the species (as determined by expert opinion, published habitat association information, or other documented standards that are commonly accepted) such that habitat function is maintained.

- ▶ A qualified RPF or biologist will determine if, after implementation of the impact avoidance measures listed above, the habitat function will remain for the affected species after implementation of the treatment. Because this measure pertains to species listed under CESA or ESA, the qualified RPF or biologist will consult with CDFW and/or USFWS regarding the determination that habitat function is maintained. If consultation determines that the treatment will not maintain habitat function for the special-status species, the project proponent will implement Mitigation Measure 3.6-2c.

Mitigation Measure 3.6-2b: Avoid Mortality, Injury, or Disturbance and Maintain Habitat Function for Other Special-Status Wildlife Species

If other special-status wildlife species (i.e., species not listed under CESA or ESA, but meeting the definition of special status as stated in Section 3.6.3 of the PTEIR) are observed during reconnaissance surveys (conducted pursuant to SPR BIO-1) or focused or protocol-level surveys (conducted pursuant to SPR BIO-8), the project proponent will avoid or minimize adverse effects to the species by implementing the following.

Avoid Mortality, Injury, or Disturbance of Individuals

The project proponent will implement the following to avoid mortality, injury, or disturbance of individuals:

- ▶ For all treatment activities except prescribed burning, the project proponent will establish a no-disturbance buffer around occupied sites (e.g., nests, dens, bat roosts, burrows). Buffer size will be determined by a qualified RPF or biologist, in consultation with CDFW and/or TRPA (depending on the potentially affected species), using the most current, commonly accepted science and will consider published agency guidance; however, buffers will generally be a minimum of 500 feet for special-status birds and 100 feet for other special-status wildlife species, unless site conditions indicate a smaller buffer would be sufficient for protection or a larger buffer would be needed. Factors to be considered in determining buffer size will include, but not be limited to, the species' tolerance to disturbance; the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; baseline levels of noise and human activity; and treatment activity. Buffer size may be adjusted if the qualified RPF or biologist determines that such an adjustment would not be likely to adversely affect (i.e., cause mortality, injury, or disturbance to) the species within the nest, den, burrow, or other occupied site. If a no-disturbance buffer is reduced below these minimum standards around an occupied site, a qualified RPF or biologist will provide the project proponent with a site- and/or treatment activity-specific explanation for the buffer reduction, which will be included in the Project Consistency Checklist.
- ▶ No-disturbance buffers will be marked with high-visibility flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway). No activity will occur within the buffer areas until the qualified RPF or biologist has determined that the young have fledged or dispersed; the nest, den, roost, or other occurrence is no longer active; or reducing the buffer would not likely result in disturbance, mortality, or injury. A qualified RPF, biologist, or biological technician will be required to monitor the effectiveness of the no-disturbance buffer around the nest, den, burrow, or other occurrence during treatment. If treatment activities cause agitated behavior of the individual(s), the buffer distance will be increased, or treatment activities modified until the agitated behavior stops. The qualified RPF, biologist, or biological technician will have the authority to stop any treatment activities that could result in mortality, injury or disturbance to special-status species.
- ▶ For prescribed burning, the project proponent will implement the treatment outside the sensitive period of the species' life history (e.g., outside the breeding or nesting season) during which the species may be more susceptible to disturbance, or disturbance could result in loss of eggs or young. For species present year-round, the qualified RPF or biologist will determine the period of time within which prescribed burning could occur that will avoid or minimize mortality, injury, or disturbance of the species. The project proponent may consult with CDFW and/or USFWS for technical information regarding appropriate limited operating periods.

Maintain Habitat Function

For all treatment activities, the project proponent will design treatment activities to maintain the habitat function by implementing the following:

- ▶ While performing review and surveys for SPR BIO-1 and SPR BIO-8, a qualified RPF or biologist will identify any habitat features that are necessary for survival (e.g., habitat necessary for breeding, foraging, shelter, movement) of the affected wildlife species (e.g., trees with complex structure, trees with large cavities, trees with nesting platforms; tree snags; large raptor nests [including inactive nests]; downed woody debris). These habitat features will be marked and treatments applied to the features will be designed to minimize or avoid the loss or degradation of suitable habitat for listed species during treatments. Identification and treatment of these features will be based on the life history and habitat requirements of the affected species and the most current, commonly accepted science.
- ▶ If it is determined during implementation of SPR BIO-1 and SPR BIO-8 that special-status wildlife with specific requirements for dense canopy or vegetation cover (e.g., northern goshawk, California spotted owl, Sierra Nevada mountain beaver) are present within a treatment area, then tree or shrub canopy cover within existing suitable areas will be retained at the percentage preferred by the species (as determined by expert opinion, published habitat association information, or other documented standards that are commonly accepted) such that the habitat function is maintained.
- ▶ A qualified RPF or biologist will determine if, after implementation of the impact avoidance measures listed above, the habitat function will remain for the affected species after implementation of the treatment. The qualified RPF or biologist may consult with CDFW and/or USFWS for technical information regarding habitat function.

A qualified RPF or biologist with knowledge of the special-status wildlife species habitat and life history will review the treatment design and applicable impact minimization measures (potentially including others not listed above) to determine if the anticipated residual effects of the treatment would be significant under CEQA because implementation of the treatment will not maintain habitat function of the special-status wildlife species' habitat or because the loss of special-status wildlife would substantially reduce the number or restrict the range of a special-status wildlife species. If the project proponent determines the impact on special-status wildlife would be less than significant, no further mitigation will be required. If the project proponent determines that the loss of special-status wildlife or degradation of occupied habitat would be significant under CEQA or may conflict with the TRPA Code after implementing feasible treatment design alternatives and impact minimization measures, then Mitigation Measure 3.6-2c will be implemented.

The only exception to this mitigation approach is in cases where it is determined by a qualified RPF or biologist that the non-listed special-status wildlife would benefit from treatment in the occupied habitat area even though some of the non-listed special-status wildlife may be killed, injured, or disturbed during treatment activities. For a treatment to be considered beneficial to non-listed special-status wildlife, the qualified RPF or biologist will demonstrate with substantial evidence that habitat function is reasonably expected to improve with implementation of the treatment (e.g., by citing scientific studies demonstrating that the species (or similar species) has benefitted from increased sunlight due to canopy opening, eradication of invasive species, or otherwise reduced competition for resources), and the substantial evidence will be included in the Project Consistency Checklist. If it is determined that treatment activities would be beneficial to special-status wildlife, no compensatory mitigation will be required. The qualified RPF or biologist may consult with CDFW and/or USFWS for technical information regarding the determination that a non-listed special-status species would benefit from the treatment.

Mitigation Measure 3.6-2c: Compensate for Mortality, Injury, or Disturbance and Loss of Habitat Function for Special-Status Wildlife if Applicable

If the provisions of Mitigation Measure 3.6-2a or 3.6-2b cannot be implemented and the project proponent determines that additional mitigation is necessary to reduce significant impacts, the project proponent will compensate for such impacts to species or habitat by acquiring and/or protecting land that provides (or will provide in the case of restoration) habitat function for affected species that is at least equivalent to the habitat function removed or degraded as a result of the treatment.

Compensation may include:

1. Preserving existing habitat outside of the treatment area in perpetuity; this may entail purchasing mitigation credits and/or lands from a CDFW- or USFWS-approved entity in sufficient quantity to offset the residual significant impacts, generally at a ratio of 1:1 for habitat; and

2. Restoring or enhancing existing habitat within the treatment area or outside of the treatment area (including decommissioning roads, adding perching structures, removing existing perching structures, or removing existing movement barriers or other existing features that are adversely affecting the species).

The project proponent will prepare a Compensatory Mitigation Plan that identifies the residual significant effects that require compensatory mitigation and describes the compensatory mitigation strategy being implemented to reduce residual effects, and:

1. For preserving existing habitat outside of the treatment area in perpetuity, the Compensatory Mitigation Plan will include a summary of the proposed compensation lands (e.g., the number and type of credits, location of mitigation bank or easement), parties responsible for the long-term management of the land, and the legal and funding mechanisms for long-term conservation (e.g., holder of conservation easement or fee title). The project proponent will submit evidence that the necessary mitigation has been implemented or that the project proponent has entered into a legal agreement to implement it and that compensatory habitat will be preserved in perpetuity.
2. For restoring or enhancing habitat within the treatment area or outside of the treatment area, the Compensatory Mitigation Plan will include a description of the proposed habitat improvements, success criteria that demonstrate the performance standard of maintained habitat function has been met, legal and funding mechanisms, and parties responsible for long-term management and monitoring of the restored habitat.

Review requirements are as follows:

- ▶ The project proponent will consult with CDFW and/or any other applicable responsible agency prior to finalizing the Compensatory Mitigation Plan in order to satisfy that responsible agency's requirements (e.g., permits, approvals) within the plan.
- ▶ For species listed under ESA or CESA, the project proponent will submit the mitigation plan to CDFW and/or USFWS for review and comment.
- ▶ For other special-status wildlife species the project proponent may consult with CDFW and/or USFWS regarding the availability and applicability of compensatory mitigation and other related technical information.

Compensatory mitigation may be satisfied through compliance with permit conditions, or other authorizations obtained by the project proponent (e.g., incidental take permit, if required), if these requirements are equally or more effective than the mitigation identified above.

Significance after Mitigation

Mitigation Measures 3.6-2a, 3.6-2b, and 3.6-2c would reduce potential impacts on special-status wildlife species by requiring avoidance and protection of these species from injury, mortality, and other disturbance; maintenance of habitat function through retention of important habitat features such that there would be no substantial long-term loss or degradation of habitat; and compensation for impacts if these impacts cannot be avoided. Implementation of these mitigation measures would reduce impacts to special-status wildlife species such that no populations of these species would be reduced below self-sustaining levels and treatment activities would not contribute to a trend toward a species not already listed becoming listed as threatened or endangered, or substantially reduce the number or restrict the range of a species that is already listed as endangered, rare, or threatened. Additionally, TRPA's non-degradation standard for wildlife disturbance zones would be maintained. Impacts would be reduced to **less than significant**.

Impact 3.6-3: Potential to Substantially Affect Riparian Habitat or Other Sensitive Habitats Through Direct Loss or Degradation that Leads to Loss of Habitat Function

Later treatment activities could potentially result in loss or degradation of montane riparian, wet meadow, and other sensitive habitats. Implementation of SPRs BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-7, HYD-3, and HYD-4 require that potential sensitive natural communities and other sensitive habitats be identified and protected prior to implementing treatments. With implementation of applicable SPRs and compliance with existing CFPRs and TRPA, federal, and state regulations and permitting requirements that protect SEZs, wetlands, and other sensitive habitats, the potential loss or degradation of montane riparian, wet meadow, or other sensitive habitats from later treatment activities would be **less than significant**.

As described in Section 3.6.2, "Environmental Setting," sensitive habitats in the program area include montane riparian, wet meadow, and aquatic (including riverine, open water/lacustrine) habitats. Potential effects of implementing the PTEIR on aquatic habitats and fisheries specifically are discussed separately in Impact BIO-3.6-5. The following describes potential project-related effects on riparian/wet meadow habitats.

The PTEIR proposes a range of treatment activities to reduce the risk of wildfire including mechanical thinning, manual/hand thinning, prescribed understory burning, pile burning, sale and transport of merchantable timber, and the transport and use of biomass for energy generation and wood pulp products. Specific locations of specific treatment activities under the PTEIR have not yet been identified for this program-level analysis. However, to the extent that treatments would be implemented within or adjacent to riparian or wet meadow habitats, project implementation could directly or indirectly disturb or remove some of these areas unless effective and comprehensive protection measures are implemented. Conversely, treatments designed specifically to enhance riparian, aspen, and wet areas, including removal of encroaching conifers, are expected to improve habitat functions. The discussion below first summarizes how SPRs would be incorporated into later treatment activities to identify and protect sensitive habitats for each treatment project under the PTEIR, followed by a summary of potential residual effects on sensitive habitats after SPRs have been applied.

Riparian/Wet Meadow Protection Requirements and Enhancement Projects

SPR BIO-1 requires data review and a reconnaissance-level survey of proposed treatment sites to determine the potential for sensitive habitats to occur or be affected by treatment activities. If sensitive habitats may be present, SPR BIO-1 requires those resources to be avoided if possible while meeting high-priority treatment objectives. SPR BIO-2 requires crew members and contractors to receive training regarding biological resources from a qualified biologist so crews are aware of potential sensitive habitats in the treatment area and requirements to reduce or avoid disturbances. If treatment in areas that may support sensitive habitats cannot be avoided, SPR BIO-3 requires site-specific surveys to identify and map the limits of these sensitive habitats using standard field protocols prior to treatment so that appropriate avoidance and minimization measures can be implemented. SPR BIO-4 requires that treatments in riparian habitat be designed to avoid loss or degradation of riparian habitat function. SPRs designed to identify sensitive habitats (SPR BIO-3), identify and protect WLPZs and SEZs (SPRs HYD-3 and HYD-4), and retain the habitat functions of riparian habitat (SPR BIO-4) would avoid and minimize the disturbance or loss of these sensitive habitats. Additionally, SPR BIO-7 requires BMPs to prevent the spread of invasive plants, noxious weeds, and plant pathogens that could degrade the quality of sensitive habitats. These SPRs would substantially reduce potential direct and indirect impacts to sensitive habitats, including montane riparian and wet meadow. Design of later treatment activities under the proposed program would comply with CFPRs designed to avoid and minimize disturbances to aquatic, riparian, and wet meadow habitats (14 CCR Sections 956.3, 956.4, 956.5, and 956.7). However, because specific treatment locations or prescription details in relation to high-quality sensitive habitats have not been identified, this analysis assumes that some treatment activities could still result in direct or indirect degradation or loss of riparian/wet meadow habitats. These potential residual impacts are discussed for each sensitive natural community/sensitive habitat category in the sections that follow.

Aspen, meadow, riparian, and wet-area restoration is a special prescription intended to restore, retain, or enhance such areas for their ecological value. Degraded conditions of the target aspen, meadow, riparian, and/or wet area would be identified, which often includes encroachment and shading by conifers and other vegetation. Treatment

goals and measures of success would be based on the site-specific conditions. Treatments would be designed specifically to restore or enhance habitat elements that are currently impaired or degraded, such as through the removal of encroaching conifers. These restoration treatments would result in improved ecosystem functions to varying degrees within the program area.

Potential Residual Effects on Riparian/Wet Meadow Habitats

Implementing treatment activities under the PTEIR may result in temporary disturbance or direct removal of native riparian vegetation resulting in a loss of riparian habitat acreage or function. While treatments in or adjacent to riparian habitats would primarily focus on removal of uncharacteristic fuel loads, it may be determined necessary in some instances to remove native riparian shrubs and trees to reduce fire-hazard risks to human lives and property. Additionally, when prescribed fire is used, a burn perimeter would be established around the treatment area, including possibly in riparian and wet meadow areas. Removal of native understory vegetation could reduce habitat functions for wildlife species that use the shrub layer or require structural complexity, and removal of woody vegetation could leave stream banks more susceptible to erosion and reduce stormwater filtration. SPR BIO-4 would reduce some of the potential indirect impacts on riparian habitat, such as avoiding removing vegetation that shades streams or contributes large woody debris for fish and amphibians, but indirect impacts could still occur from removal of native riparian vegetation. Not all species benefit from an open understory free of shrubs. Many species that use riparian habitats for cover, nesting, denning, and roosting are dependent on a well-developed shrub layer. Riparian habitats that are diverse in both the composition of vegetation species and physical habitat structure are likely to support a wider variety of wildlife; and, reducing structural complexity and species diversity can reduce habitat functions for many species. Removal of dead and dying trees, encroaching upland species, invasive plants, and excess understory vegetation growth can also have beneficial effects through increased water and nutrient availability for native riparian vegetation. While both beneficial and adverse impacts could occur, any permanent removal of native riparian vegetation could result in a net loss of riparian habitat area and function in treatment areas.

The following sections describe potential impact mechanisms that are unique to each treatment activity. Most treatment activities would be implemented in combination with other treatment activities to achieve the objectives of a treatment type (i.e., WUI fuel reduction, ecological restoration). For example, mechanical and manual treatments could be used together to remove vegetation, which could then be piled and burned. Understory burning also involves establishing a containment line around the burn perimeter, typically using mechanical and manual treatment activities prior to burning.

Prescribed Burning

Prescribed burning could result in directly burning and consuming vegetation that characterizes sensitive natural communities or sensitive habitats. Prescribed burns could consume vegetation completely or could reduce the viability of seedbanks of dominant vegetation if they are not adapted to fire or if the fire burns too hot. Prescribed burning has potential to reduce regeneration of sensitive habitats that are not adapted to fire.

Mechanical Treatment

Mechanical treatments in riparian areas, wet meadows, and other SEZs are limited by TRPA Code Section 61.1.6.C. This code section restricts vehicles to outside of SEZs, except in limited cases where over-snow tree removal or innovative technology is proposed and where the project proponent can demonstrate that these approaches will not result in significant soil disturbance or vegetation damage. Thus, mechanical treatments would have little potential to degrade riparian/wet meadow habitats.

Manual Treatment

Manual treatments typically result in less ground disturbance than mechanical treatments; nonetheless, there is still a risk of trampling, breaking, cutting nontarget vegetation, including species that characterize sensitive habitats. Temporary ground disturbance could occur during treatment implementation, including turning soil where roots of invasive plants are pulled out; driving motorized vehicles, such as off-highway vehicles, to access treatment sites and haul treated material off-site; and ground crews walking over vegetation. However, because manual treatments are implemented on a relatively small scale by trained individuals selectively treating targeted vegetation by hand, there is

limited risk of removing non-targeted vegetation and this treatment type would generally not substantially alter or result in a loss of sensitive habitats unless designed to do so.

Conclusion

SPR BIO-1 requires data review and reconnaissance surveys to identify potential riparian or other sensitive habitats and sensitive natural communities and SPR BIO-2 requires biological resource training for workers so they would learn to recognize sensitive natural communities and habitats and the SPRs, mitigation measures, BMPs, and laws and regulations that protect these resources. SPR BIO-3 requires site-specific surveys to identify and map the limits of sensitive natural communities and other sensitive habitats using standard field protocols. SPR BIO-4 requires the design of treatments to avoid loss or degradation of riparian habitat functions and values, and SPRs HYD-3 and HYD 4 require the identification and protection of WLPZs and SEZs. SPR BIO-7 requires BMPs to prevent the spread of invasive plants, noxious weeds, and plant pathogens that could degrade the quality of sensitive habitats communities. These SPRs would substantially reduce potential direct and indirect impacts to sensitive habitats, including montane riparian and wet meadow.

Although there would still be potential for direct removal of sensitive vegetation or habitat modifications that degrade the quality or amounts of sensitive habitats, the magnitude of these potential effects is expected to be minor with implementation of the applicable SPRs. Furthermore, later treatment activities under the PTEIR would be required to comply with existing TRPA, federal, and state regulations and permitting requirements that protect SEZs, wetlands, and other sensitive habitats. TRPA's existing policies and Code provisions address potential project-related impacts to SEZs and other sensitive habitats Basin. Specifically, the TRPA Goals and Policies and the Code require protection of riparian habitats and SEZs through limitations on vegetation removal in SEZs, restrictions on the use of mechanical equipment in SEZs and other measures. Impacts to riparian, wetland, and other sensitive habitats would also be minimized, avoided, or mitigated, as needed, through the permitting processes required by CWA Section 401 and CDFW Code Section 1600 et seq. Depending on the type and magnitude of a potential impact to SEZ or other sensitive habitat, permit requirements can include BMPs or setbacks specifically designed to protect those resources.

In addition to incorporation of applicable SPRs designed for the PTEIR, project-level planning and compliance with existing regulations would minimize or avoid potential impacts through the design, siting and permitting process; and require site-specific measures as a condition of permitting. Therefore, potential disturbances or loss of montane riparian, wet meadow, or other sensitive habitats from later treatment activities under the PTEIR would be **less-than-significant**.

Mitigation Measures

No mitigation is required.

Impact 3.6-4: Potential to Substantially Affect State or Federally Protected Wetlands

Limited treatment activities including aspen and meadow restoration (i.e., removal of conifers in these areas) and watercourse crossings could occur on lands that contain state or federally protected wetlands. These activities have the potential to remove wetland vegetation and alter wetland hydrology or topography resulting in loss or degradation of wetland function. Implementation of SPRs BIO-1 and HYD-4 require that potential wetlands be identified and protected prior to implementing treatments. Compliance with the CFPRs would require the site-specific mapping and identification of protection measures, which would avoid substantial effects on state and federal wetlands. This would be a **less than significant** impact.

The proposed program does not specifically propose treatment activities in state and federally protected wetlands, or other aquatic habitats. However, manual treatments for the proposed aspen, meadow, riparian, and wet-area restoration prescriptions may be implemented in wetland habitats under this program. Additionally, later treatment activities in upland habitats adjacent to wetlands could inadvertently directly or indirectly disturb or degrade wetlands. SPR BIO-1 requires data review and reconnaissance surveys to identify potential sensitive biological resources, SPRs HYD-1 and HYD-3 require water quality protections, and SPR HYD-4 requires identification and protection of WLPZs. In addition, TRPA Code Section 61.1.6.C restricts vehicles to outside of SEZs (which include all state and federally protected wetlands), except in limited cases where over-snow tree removal or innovative

technology is proposed and where the project proponent can demonstrate that these approaches will not result in significant soil disturbance or vegetation damage.

Furthermore, all later treatment activities would comply with applicable requirements of the CFPRs intended to protect federal and state wetlands (see Appendix B). The CFPRs protect watercourses, WLPZ, marshes, wet meadows, and other wet areas by restricting the placement of roads and landings (14 CCR 963), prohibiting the discharge of sediment or other materials, restricting vegetation removal, maintaining large woody debris (LWD) recruitment (14 CCR 956.3), and requiring a site-specific assessment by an RPF and development of site-specific measures to protect and restore the following conditions: water temperature, streambed and flow modification by LWD, filtration of organic and inorganic material, upslope stability, bank and channel stabilization, spawning and rearing habitat for salmonids, and vegetation structure diversity for fish and wildlife habitat (14 CCR 956.4). These CFPR requirements are applied to each later treatment activity by an RPF and are included as requirements in each Program Timber Harvest Plan.

These SPRs and compliance with CFPRs would substantially reduce potential direct and indirect impacts to wetlands and aquatic habitats. This would be a **less than significant** impact.

Mitigation Measures

No mitigation is required.

Impact 3.6-5: Potential to Substantially Affect Distribution, Abundance, or Viability of Special-Status Fish, Other Native Fish, or Game Fish Species Either Directly or Through Habitat Modifications

Later treatment activities implemented under the Tahoe PTEIR may cause short-term indirect impacts to fish through temporary disturbance or degradation of stream and riparian habitat. Direct impacts are also possible if heavy equipment or toxic substances enter waterbodies and cause injury or mortality of fish eggs or larvae or if fish are harmed during water drafting activities. Incorporation of SPRs and adherence to the CFPRs and other applicable measures would protect riparian and aquatic habitats in watercourse and lake protection zones (WLPZs) and SEZs, minimize erosion, limit stream crossings, protect water quality, and minimize the risk of injury and mortality of fish, thus avoiding or minimizing the magnitude and extent of any impacts to vulnerable fish life stages or sensitive fish habitat. As a result, habitat disturbance and the risk of fish injury or mortality would be minor and fish distribution, abundance, and viability would not be substantially reduced. Impacts are therefore considered **less than significant**.

Indirect Impacts

Minor, short-term degradation of some stream habitats and minor, short-term loss of riparian function may result from vegetation removal in riparian areas, inputs of fine sediment at stream crossings, and erosion and delivery of fine sediment to streams due to ground disturbance or burning, but these effects would be temporary and, with riparian, stream, and upland protections provided by SPRs and applicable CFPRs, would be of limited extent and magnitude. Later treatment activities would include selected removal of vegetation throughout the program area but effects on fish from alteration of riparian habitat would be limited to areas where treatment (e.g., tree thinning) adjacent to streams and lakes causes short-term reductions in riparian functions such as stream shading, inputs of nutrients and woody material, and the provision of cover for fish. Adverse impacts on riparian function are expected to be minor because later treatment activities in riparian areas (WLPZs and SEZs) would be relatively limited in extent and subject to restrictions and protections afforded by SPRs, the CFPRs and the TRPA Code, which would avoid or minimize degradation of functions and processes affecting fish habitat. Implementation of SPRs BIO-1 through BIO-4 and HYD-3 would identify and delineate riparian areas (WLPZs and SEZs) and other sensitive habitats prior to treatment, incorporate measures to protect riparian function into treatment designs, and provide training for workers to comply with applicable environmental laws and regulations including CFPR measures that pertain to operations in the WLPZ (14 CCR Sections 956.3, 956.4, 956.5, 956.7, 963, 963.6, 963.7, and 963.9). Later treatment activities in degraded riparian areas may include restoration intended to restore, retain, or enhance such areas for their ecological value, resulting in long-term benefits to fish and aquatic habitat.

Short-term physical disturbance or alteration of fish habitat would primarily result from minor delivery of fine sediment to watercourses and, in limited cases, disturbance of stream beds, stream banks, and lakeshores during treatment activities. Heavy equipment would be used in some areas to access treatment sites and for yarding and transport of trees and slash. Disturbance of the bed or banks of fish-bearing streams or lakeshores by yarding or heavy equipment, including driving of equipment through streams at low-water crossings, could increase erosion and sediment delivery that temporarily degrades water quality, temporarily reduces instream shelter habitat, and temporarily reduces prey availability or feeding success by fish. Leaks or spills of petroleum or other toxic substances from equipment or staging/fueling areas would cause similar short-term effects on water quality and fish habitat suitability if they were to occur. Impacts caused by erosion from soil disturbance or toxic substances entering waterbodies would be most likely in Planned CWPP Projects areas, which encompass 11,714 acres (66 percent) of the program area and consist primarily of larger-acreage parcels of public land subject to mechanical and other treatment methods. With incorporation of SPR BIO-4 and HYD-3 to avoid riparian disturbance and maintain riparian function, SPR HYD-1 to maintain water quality, and applicable CFPRs and TRPA Code requirements that limit heavy equipment use in WLPZs and at watercourse crossings, project-related sedimentation, water quality degradation, and aquatic habitat alterations would be minimized and the severity and extent of any effects on fish habitat would be minor.

Fish could be disturbed and temporarily stressed by treatment activities occurring in close proximity to watercourses, but effects are expected to be minor and temporary, occurring only occasionally and for short periods (minutes to hours) during typical treatment activities. While operation of equipment and other treatment activities adjacent to streams and lakeshores could disturb and temporarily displace fish from preferred habitat and interrupt essential behaviors (e.g., migration, spawning, foraging, sheltering), projects implemented under the PTEIR would incorporate SPRs BIO-1 through BIO-4, SPR HYD-3, and applicable CFPRs to identify and avoid sensitive habitats, restrict heavy equipment use, and limit disturbance in and near watercourses, thus minimizing the frequency and extent of fish disturbance (14 CCR Sections 954.1, 956.3, 956.4, 956.5, and 956.7). Temporary disturbance of fish and minor alteration of fish habitat may also occur during water drafting activities, but water drafting is expected to be infrequent and would be subject to protection measures included in SPR BIO-5 and other applicable regulations, thus minimizing the likelihood and severity of any potential impacts.

Treatment activities occurring away from streams and riparian areas may also cause soil disturbance, including ground compaction, erosion from burned areas, and landsliding, but the likelihood of sediment delivery to aquatic habitats would be minimized through incorporation of SPRs GEO-1 through GEO-9 and applicable CFPRs (14 CCR Sections 952.5, 963, 963.6, 963.7, and 963.9) that would restrict wet weather operations, limit soil compaction, stabilize disturbed soil, limit operations on steep and unstable slopes, and limit the intensity of prescribed burns. Some erosion would result from reconstruction or grading of existing forest roads used to access treatment sites, but later projects under the PTEIR would not include construction of new temporary or permanent roads.

Direct Impacts

Direct impacts to fish are possible if fish are unable to avoid heavy equipment at low-flow watercourse crossings and pump intakes at water drafting locations, or if fish are exposed to great enough concentrations or durations of toxic substances that leak or spill into waterbodies. While injury or mortality of fish by crushing at watercourse crossings, impingement at drafting pump intakes, or exposure to toxic substances is possible, free-swimming fish life stages are extremely unlikely to experience these effects because they are adept at moving away from disturbance and unsuitable habitat conditions. Fish eggs and non-motile larvae could be subject to these effects if heavy equipment, water drafting intakes, or toxic substances enter streams when eggs or newly hatched larvae are present in the substrate. Special-status fishes known or with potential to occur in the program area (Lahontan cutthroat trout, mountain sucker, mountain whitefish, and Lahontan tui chub) spawn from spring through summer, primarily in gravel riffles of streams. Non-special-status native fishes occurring in the program area (e.g., Lahontan redband shiner, Lahontan speckled dace, Tahoe sucker, Paiute sculpin) and some non-native game fish (e.g., rainbow trout) also spawn in spring or summer in similar stream habitats. Other non-native game fish (e.g., brown and brook trout, Kokanee salmon) use similar habitat but spawn in fall or early winter.

While direct impacts to some fish species are possible if later treatment activities affect vulnerable life stages during these time periods and where these species occur, incorporation of SPRs BIO-1, HYD-3, and BIO-5 as well as applicable CFRs (14 CCR Sections 956.3, 956.4, 956.5, 956.7, 963, 963.6, 963.7, and 963.9), would identify and avoid fish spawning habitat, minimize watercourse crossings by heavy equipment, and limit the intake velocity at pumps used for water drafting, largely avoiding or minimizing the likelihood of direct impacts. The severity and likelihood of spills or leaks of toxic substances would be minimized by implementation of best management practices included in SPR HYD-1, which requires compliance with applicable water quality regulations. With incorporation of the aforementioned SPRs and other protection measures, direct impacts to fish, including populations of special-status species, other native fish, and non-native game fish, would be unlikely and would not reduce their distribution, abundance, or viability. As discussed in Impact 3.6-6, below, later projects under the PTEIR would not impede upstream or downstream movement of fish during or after project implementation, thus avoiding effects on fish distribution and movement. As a result, later treatment activities would not impede or prevent access to habitat required to support reproduction and maintain population viability. Adverse impacts on special-status or other native fish and non-native game fish that could result from introduction or spread of aquatic invasive species (AIS) are addressed in Impact 3.6-7.

For the reasons discussed above, potential program-related indirect and direct impacts on special-status and common fish species would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.6-6: Potential to Interfere Substantially with Fish and Wildlife Movement Corridors or Impede Use of Nurseries

Later treatment activities implemented under the proposed program could be located in areas used as fish and wildlife movement corridors or nurseries. Treatment-related noise and disturbance could lead to temporary changes in migration or movement patterns. Wildlife nursery sites could be disturbed or essential nursery habitat components could be degraded by later treatment activities. SPRs BIO-1, BIO-3, BIO-4, BIO-8, HYD-1, HYD-3, and HYD-4 require identification of nursery sites prior to treatment activities and actions to prevent degradation of aquatic and riparian corridors. Temporary shifts in wildlife movements to avoid or navigate around active treatment sites and associated disturbances would not substantially interfere with movement requirements or migration patterns; and program implementation would not create long-term barriers to local or landscape-level movements. While implementation of SPRs would minimize impacts, nursery sites could still be removed, degraded, or disturbed during treatment activities. This would be a **potentially significant** impact.

Definitions and summaries of fish and wildlife movement corridors and nursery sites in the program area are provided in Section 3.6.2, "Environmental Setting."

Prescribed fire, mechanical treatment, and manual treatment could occur within areas used by wildlife for movement corridors or nurseries. Examples of wildlife nurseries potentially present in the program area include bat maternity roosts and deer fawning areas. The following discussion considers the potential for short-term disturbance to wildlife movement and nurseries during later treatment activities and for longer-term effects following treatment due to habitat modification and reduced habitat function. Except for mule deer, this analysis primarily considers impacts on native species that do not meet the definition of special-status species (refer to Impact 3.6-2 for further discussion of impacts on special-status wildlife species).

Short-Term Effects during Treatment Activities

Noise or visual disturbance due to the presence of equipment, personnel, or fire could cause resident or migratory wildlife to temporarily avoid or move out of the areas immediately surrounding treatment areas. These disturbances could temporarily disrupt the movement patterns of some wildlife species that may use treatment areas or adjacent lands for regular movements locally or for seasonal migrations. Additionally, access or use of any wildlife nursery sites (e.g., bat maternity roosts, deer fawning areas) present within or adjacent to active treatment areas could be disturbed or impeded temporarily by treatment activities, as explained further below.

Some treatment activities in the WUI would occur in close proximity to human development. The general types and levels of disturbances (e.g., equipment noise, visual disturbance, human activity) from treatment activities near developed areas (e.g., communities, existing structures, and public roads with consistent traffic) would likely be similar to existing disturbance levels in these areas. Wildlife near human development is likely accustomed to human presence and motorized vehicles (e.g., mule deer); therefore, any temporary incremental increases in noise and human disturbances from treatment activities in these areas are unlikely to disrupt current movement patterns substantially above existing levels.

In areas further from human development, the treatment areas would typically be surrounded by natural open space accessible to terrestrial wildlife; and, individuals would likely move out of active treatment areas and into adjacent habitats temporarily to avoid fire, noise, and personnel (Monteith et al. 2018, Shaffer et al. 2018). Treatment sites containing historic migratory corridors or other important movement routes (e.g., for mule deer) would likely not span entire core areas available for movement, thereby allowing migratory or mobile species to move around areas of treatment activities through adjacent open space temporarily. Additionally, treatment activities would not create any temporary barriers to movement that would redirect migration during non-working hours. Therefore, treatment-related disturbances to local or regional wildlife movements would be temporary and relatively minor.

Treatments would not occur within aquatic habitat types, but treatment could occur adjacent to aquatic wildlife movement corridors and nursery sites. Treatments could occur within riparian corridors and other terrestrial movement corridors, such as ridgelines or valleys. SPR HYD-1 requires compliance with water quality regulations and SPR HYD-3 requires WLPZs to be established on each side of watercourses which would: minimize disturbance to wildlife movement and nursery sites within aquatic and riparian habitat by limiting treatment activities within WLPZs; and protect aquatic and riparian habitat by avoiding erosion and associated sedimentation that could degrade aquatic nursery sites or sensitive riparian habitat. SPR HYD-4 and TRPA Code require delineation and protection of SEZs. In addition, SPR BIO-4 and CFPRs (14 CCR Sections 956.3, 956.4, 956.5, and 956.7) would prevent riparian vegetation removal that could reduce stream shading and result in increased temperatures that could be harmful to some nurseries (e.g., developing salmonid eggs). SPR BIO-1 requires data review and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for wildlife nurseries to occur. If it is determined that wildlife nurseries may occur, then SPR BIO-8 would require surveys for nursery sites. SPR BIO-8 would minimize impacts to nursery sites by ensuring they are identified before treatment activities are implemented so they can be avoided under further measures. If nursery sites identified in surveys conducted pursuant to SPR BIO-8 occur within areas or habitats that are not avoided or protected in implementation of the SPRs, treatment of vegetation containing an active nursery site could potentially cause the removal or abandonment of a wildlife nursery. For example, treatment activities could remove or burn trees containing a bat maternity roost. In addition, treatment-related noise and human disturbance near nursery sites could result in temporary avoidance, changes in behavior, separation of adults and young, or, if the disturbance is severe, abandonment of the nursery site. These disturbances and behavioral responses could decrease the reproductive success of the affected population.

Long-Term Effects of Treatment Types

Treatments would remove vegetation and change habitat structure (e.g., cover, size-class distribution) locally but would not cause substantial permanent habitat loss or degradation that would interfere substantially with movement corridors over the long term. Although the long-term effects of fuel reduction treatments on wildlife species and habitat are not fully understood (Collins et al. 2014), a large experimental study designed to evaluate how fuel treatments influenced a multitude of ecological variables in numerous forests found that wildlife and wildlife habitats were not substantially affected several years post-treatment and included variables such as species abundance, community structure, and diversity (McIver et al. 2013). Furthermore, for some species, habitat quality is likely to improve with certain treatments (e.g., treatments designed specifically to enhance riparian, aspen, and wet areas).

Later treatment activities would not create substantial barriers to the movement of resident or migrating wildlife that utilize native habitats because treated areas would remain permeable to wildlife. Additionally, although treatment could result in some gaps in vegetation, treated areas would generally retain some of the pre-treatment vegetation that provides protection and foraging during movement. During prescribed fire treatments some existing vegetation would be retained in a mosaic pattern in forest or shrub communities. Overall, treated areas would typically be small compared

to migration corridors and likely span only a portion of a corridor or movement area such that wildlife could move through or near treated areas without substantially changing migration patterns. Although individual responses to later treatment activities would vary, some species could benefit from treatment; for example, openings in post-fire forests were found to allow pronghorn (which does not occur in the Lake Tahoe Basin) different routes to foraging areas (Franke 2000, Shaffer et al. 2018). Mule deer in the program area would likely benefit from a mosaic of burned and unburned habitat due to increased foraging opportunities, easier movement, and enhanced ability to detect predators within these environments (CDFW 2015, Holl et al. 2012). SPR BIO-4 and CFPRs (14 CCR Sections 956.3, 956.4, 956.5, and 956.7) would require that treatments are designed to avoid loss or degradation of riparian habitat function, such as preventing the removal of trees and large woody debris that provide stream shading, cover, and bank stability. Implementation of this requirement would avoid long-term increases in stream temperature and minimize loss of riparian vegetation cover, erosion, and sedimentation that could degrade movement corridors or nursery sites within aquatic and riparian habitat.

Treatment activities could modify, degrade, or remove important habitat features of a nursery site. Examples of important habitat requirements for nursery sites that could be affected include hollow trees for bat maternity roosts and meadow and riparian areas that provide hiding cover and forage for mule deer fawning. Some wildlife populations return to the same nursery site every year (e.g., some bats and other species) and degradation or loss of important habitat features at these locations could impede the use of the nursery site for multiple breeding seasons.

Conclusion

SPR HYD-1 would require compliance with water quality regulations, SPR HYD-3 and CFPRs would require WLPZs to be established on each side of watercourses, and SPR HYD-4 and TRPA Code would require delineation and protection of SEZs. In addition, SPR BIO-4 and CFPRs would prevent vegetation removal that could reduce stream shading and require that treatments are designed to avoid loss of riparian habitat function. SPR BIO-1 would require data review and a reconnaissance-level survey of the proposed treatment site to determine whether there is potential for wildlife nurseries to occur. If it is determined that wildlife nurseries may occur, then SPR BIO-8 would require surveys for nursery sites. With the implementation of SPRs, treatment activities would not substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors. However, while compliance with regulations and implementation of SPRs would minimize impacts, treatment activities could still result in adverse effects on wildlife nurseries if these sites occur within areas or habitats that are not avoided or retained in implementation of the SPRs. Important nursery sites could be removed, degraded, or disturbed by treatment activities. Some nursery sites may contain a large number of individuals and disturbance or loss of these nurseries could have a substantial effect on reproductive success and the local or regional population. This would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.6-6: Retain Nursery Habitat and Implement Buffers to Avoid Nursery Sites

The project proponent will implement the following measures while working in treatment areas that contain nursery sites identified in surveys conducted pursuant to SPR BIO-8:

- ▶ **Retain Known Nursery Sites.** A qualified RPF or biologist will identify the important habitat features of the wildlife nursery and, prior to treatment activities, will mark these features for avoidance and retention during treatment.
- ▶ **Establish Avoidance Buffers.** The project proponent, in consultation with CDFW and/or TRPA (depending on species), will establish a non-disturbance buffer around the nursery site if activities are required while the nursery site is active/occupied. The appropriate size and shape of the buffer will be determined by a qualified RPF or biologist, based on potential effects of project-related habitat disturbance, noise, visual disturbance, and other factors. No treatment activity will commence within the buffer area until a qualified RPF or biologist confirms that the nursery site is no longer active/occupied. Monitoring of the effectiveness of the non-disturbance buffer around the nursery site by a qualified RPF, biologist, or biological technician during and after treatment activities will be required. If treatment activities cause agitated behavior of the individual(s), the buffer distance will be increased, or treatment activities

modified until the agitated behavior stops. The qualified RPF, biologist, or biological technician will have the authority to stop any treatment activities that could result in potential adverse effects to special-status species.

Significance after Mitigation

Implementation of Mitigation Measure 3.6-6 would reduce potentially significant impacts to wildlife nursery sites because it would avoid removal of important habitat features and avoid or minimize disturbance from noise and human presence. This would retain the value and function of the nursery site such that its use by native wildlife would not be substantially impeded, thereby reducing this impact to **less than significant**.

Impact 3.6-7: Cause the Introduction or Spread of New or Invasive Species of Animals

Treatment activities have the potential to introduce or spread aquatic invasive species (AIS) to waterbodies in the program area as well as elsewhere within and outside the Tahoe Basin if contaminated equipment comes into contact with waterbodies in which habitat conditions are suitable for AIS. Treatment activities also have the potential to introduce or spread terrestrial invasive plant species (TIS) by creating soil disturbance that is conducive to TIS recruitment and by introducing or spreading TIS seeds or propagules. Incorporation of SPRs requiring the removal of existing TIS infestations and proper inspection and decontamination of all equipment would minimize the risk of AIS and TIS introduction or spread. With these requirements, this impact would be **less than significant**.

Invasive species are plants and animals that are not native to an area and spread quickly, replacing habitat for native species, once they have been introduced and established. They can come to dominate certain habitats by attacking or outcompeting native species for nutrients, water, space, and breeding sites. They can also indirectly affect native plants and change ecosystems by altering soil stability; promoting erosion; colonizing open areas; affecting the accumulation of litter, salt, or other soil resources; and promoting or suppressing fire (Brooks et al. 2004).

Aquatic Invasive Species

Numerous AIS including aquatic plants, fishes, and invertebrates have also become established in the Lake Tahoe Region (TRPA 2014). Most AIS occur in Lake Tahoe and other lakes in the Tahoe Basin, including some within the program area, but AIS are also present in some streams. AIS including Eurasian watermilfoil (*Myriophyllum spicatum*; an aquatic plant), curlyleaf pondweed (*Potamogeton crispus*; another aquatic plant), and several warmwater fish species are present in the Upper Truckee River and in Taylor Creek, which flows from Fallen Leaf Lake to Lake Tahoe (Wittman and Chandra 2015). Other AIS present in the Tahoe Basin and portions of the program area include the Asian clam (*Corbicula fluminea*), signal crayfish (*Pacifastacus leniusculus*), and American bullfrog (*Rana catesbeiana*) (TRPA 2014). AIS not present in the Tahoe Basin but considered to be potential invaders include zebra and quagga mussels (*Dreissena* spp.) and New Zealand mud snail (*Potamopyrgus antipodarum*).

AIS adversely affect native species and ecosystems, water quality, recreation, and other values and resources. AIS are commonly spread by activities such as boating and fishing but may also be spread by any equipment or other object that comes into contact with infested waters and is capable of transporting AIS to another waterbody. Threats include new introductions of AIS to the Lake Tahoe Region from other waterbodies, as well as the expansion of existing populations within the Region and the spread of AIS to waterbodies outside the Region (TRPA 2014). The risk of AIS introduction or spread by means of treatment activities is likely greatest for aquatic plants (e.g., Eurasian watermilfoil, curlyleaf pondweed) and invertebrates including Asian clam, zebra and quagga mussels, and New Zealand mud snail, as these species are most likely to become attached to equipment used in later treatment activities. The introduction of mussels and mud snail, which are not currently known to have invaded the Tahoe Basin, is of particular concern. Preventing the introduction of AIS to new water bodies is the preferred approach to AIS control, as eradication of AIS is unlikely once populations are established and such efforts are more costly than prevention (TRPA 2014).

The likelihood of equipment used in later treatment activities becoming a vector for AIS introduction or spread is considered low because of the low frequency and duration that such equipment is typically in contact with waterbodies. Nevertheless, it is possible that equipment could be contaminated by AIS through contact with infested waterbodies within or outside the Tahoe Basin. Initial contamination may occur during activities conducted under the Tahoe PTEIR or other unrelated activities. Hoses, screens and tires of trucks used for water drafting are the most likely

vector of AIS introduction and spread, but other equipment used for later treatment activities can also become contaminated following contact with infested waterbodies and introduce AIS when crossing streams and drainage ditches or entering other waterbodies in the program area during treatment activities.

The risk of AIS introduction by equipment used for water drafting as part of later treatment activities under the PTEIR would be minimized by incorporation of SPR BIO-5, which includes a requirement to inspect and properly decontaminate equipment before and after drafting activities. Other equipment that may come into contact with water during later treatment activities such as trucks, skidders, and harvesters would also be inspected for AIS and decontaminated as required by SPR BIO-1, similarly minimizing the risk of AIS introduction or spread.

Terrestrial Invasive Species

Terrestrial invasive plant species (TIS) are non-aquatic plants with invasive characteristics that allow them to quickly become established and spread. They can impact landscapes by displacing native plants, reducing biodiversity, and by altering nutrient and water cycling processes that help maintain functioning ecosystems. They can also reduce the quality of forage and habitat for wildlife. In 2011, the Lake Tahoe Basin Weeds Coordinating Group developed a list of priority TIS, which classified TIS species by their presence in the Lake Tahoe Basin (Basin) and the potential for eradication or control (LTBWCG 2011). Class 1 weeds are those that are present in the Basin but exist in small infestations that can be eradicated with aggressive action. Some Class 1 species include: Canada thistle (*Cirsium arvense*), sulfur cinquefoil (*Potentilla recta*), hoary cress (*Cardaria draba*), yellow starthistle (*Centaurea solstitialis*), teasel (*Dipsacus foliolosus*), musk thistle (*Carduus nutans*) and scotch thistle (*Onopordum acanthium*). Class 2 species are weeds that are known to occur in the Basin and are managed to prevent further spread. Common Class 2 species include: bull thistle (*Cirsium vulgare*), perennial pepperweed (*Lepidium latifolium*), Dalmatian toadflax (*Linaria dalmatica*), St. Johnswort (*Hypericum perforatum*), and yellow toadflax (*Linaria vulgaris*).

Common traits of invasive plant species include rapid growth and reproduction, high levels of seed production and dispersal, the ability to alter growth form to suit conditions, and tolerance of a wide range of environmental conditions. The same characteristics that make plants invasive also allow these species to tolerate disturbances and rapidly colonize disturbed areas. Invasive species are especially successful in areas of intensive or repeated disturbance (ERI 2004). Ground disturbance associated with mechanical treatments and other treatment activities make treatment sites vulnerable to invasive species infestation. However, all treatment activities would comply with SPR BIO-7, which reduces the potential for the introduction of new invasive species to a treatment site by requiring the inspection and decontamination of equipment, vehicles, and clothing prior to entering a treatment site and by implementing other Best Management Practices for fire and fuel management. SPR BIO-7 also reduces the potential for the spread of existing invasive species within a treatment site, by requiring the identification and removal of invasive species prior to initiating treatment activities.

Conclusion

Treatment activities have the potential to introduce or spread TIS and AIS. However, with incorporation of the SPRs described above, there would be very little risk of introducing or causing the spread of TIS or AIS as a result of later treatment activities implemented under the PTEIR. This potential impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.6-8: Substantially Reduce Habitat or Abundance of Common Wildlife, Including Nesting Birds

Later treatment activities conducted under the proposed program would occur in habitats that support common native bird, mammal, reptile, amphibian, and invertebrate species. Treatment activities could disturb breeding; remove or damage active nests, dens, and other breeding sites; kill or injure individuals; and temporarily reduce breeding productivity of these species. Because treatments would be implemented within relatively small proportions of the extensive ranges of common species, and suitable habitat would remain available to these species across the broader landscape surrounding treatment areas, the magnitude of these potential losses would not substantially reduce the overall abundance of any common wildlife species. Additionally, implementation of SPRs BIO-1, BIO-2, BIO-3, and BIO-4 would limit the loss or degradation of high-quality breeding habitats for special-status wildlife that would also benefit common species, and implementation of SPR BIO-9 would protect common nesting birds, including raptors. Therefore, treatment activities would not substantially reduce the population size of or availability of suitable breeding habitat for any common wildlife species, including nesting birds. This impact would be **less than significant**.

Suitable foraging, breeding, and sheltering habitat for common native bird, mammal, amphibian, reptile, and other animal species is ubiquitous throughout the program area. These common species do not meet the criteria for special-status species as defined in this PTEIR; however, mandatory findings of significance pursuant to the CEQA Guidelines require consideration of whether a project would “substantially degrade the quality of the environment, reduce habitat of wildlife species, cause wildlife populations to drop below self-sustaining levels, or threaten to eliminate a plant or animal community.” Because of the large geographic scope of the program area and numerous common wildlife species distributed throughout the program area, later treatment activities implemented under the proposed program have the potential to disturb or otherwise affect many common native species.

The impact mechanisms, effects on individual animals, and short- and long-term effects on habitat composition, function, and structure associated with prescribed burning, mechanical treatment, and manual treatment described previously for Impact 3.6-2 (for special-status wildlife) and Impact 3.6-6 (for wildlife movement and nursery sites of common species) would also generally apply to common wildlife species. Temporary disturbances to foraging patterns, local movements, and reproductive activities of common bird, mammal, reptile, and amphibian species resulting from treatment activities would occur in some locations. However, common wildlife species are generally well-distributed, abundant, and adapted to varying levels of natural and anthropogenic disturbances. Temporary disturbances and displacement of animals associated with treatment activities would occur locally over short periods of time in any one area, and are not expected to affect significant portions of an individual’s foraging or breeding range, or the overall distribution of a common species.

If treatments are implemented during the breeding season (which varies by species), active nests, dens, or other breeding sites present in the program area could be removed or damaged during manual and mechanical treatment activities, or burned directly or otherwise damaged by prescribed burning (e.g., heat scorch, smoke). These disturbances could result in reproductive failure and the direct mortality or injury of adults or young, if present. For example, common birds use essentially all terrestrial habitats and a wide variety of substrates for nesting in the program area, including trees, tree and snag cavities, shrubs, burrows, ground substrate, and grasses/herbaceous vegetation. Treatment activities that occur outside the nesting season for common birds and raptors would not remove or disturb active nests. Additionally, some common wildlife species are subject to state or federal regulatory protections. For example, native nesting birds are protected under California Fish and Game Code sections 3503 and 3503.5 and the federal MBTA. As discussed in Section 3.6.1, “Regulatory Setting,” compliance with these statutes is typically achieved by implementing avoidance and minimization measures to prevent project-related loss of active nests (e.g., conducting activities outside of the nesting bird season; identifying and avoiding disturbance by limiting treatment activities near an active nest; or monitoring active nests and delaying treatment activities near the nest until after young have fledged or the nest otherwise becomes inactive). If implementation of prescribed burning or other treatment activities during the nesting season resulted in the removal, damage, and disturbance of nests such that nest abandonment and injury or mortality of adults, young, or eggs occurred, the magnitude of potential treatment-related reproductive failure or mortality of common birds and other wildlife taxa would depend on several factors. These

factors include the types and quality of habitats affected, the timing of vegetation removal relative to the most sensitive or vulnerable periods of a species breeding chronology (e.g., when fidelity to a breeding site is highest due to the presence of developing or immobile young), and the density of common species breeding within a treatment site.

As discussed previously, treatment activities would remove vegetation and alter habitat structure (e.g., amount of cover, size-class distribution) locally, but would not cause permanent habitat degradation or conversion to a different habitat type that would substantially reduce habitat for common wildlife species over the long term. During prescribed burning treatments, some existing vegetation would be retained in a mosaic pattern in forest or shrub communities. In some cases, habitat quality, particularly within areas treated with the proposed aspen, meadow, riparian, and wet-area restoration prescriptions, may improve over the long term with treatment. Although responses to vegetation changes are likely to vary and some changes to species composition could occur locally, overall abundance and diversity of common birds and other wildlife are not expected to substantially change post-treatment, based on several large experimental studies and meta-analyses (Verschuyl et al. 2011, Stephens et al. 2012, McIver et al. 2013, Newman et al. 2018). Furthermore, suitable breeding and foraging habitats for common wildlife species in the treatable landscape are generally abundant, widely distributed, and would remain available to these species across the broader landscape surrounding treatment areas.

Implementation of SPRs would reduce potential treatment-related disturbances or loss of common wildlife and would limit the loss or degradation of some high-quality habitats. SPR BIO-2 would require crew members and contractors to receive training regarding minimizing disturbances to wildlife. Additionally, SPRs designed to identify special-status species habitat (SPR BIO-1) and sensitive natural communities (SPR BIO-3), and retain the habitat function and value of riparian habitat (SPR BIO-4), as well as compliance with protective statutes (e.g., California Fish and Game Code Sections 3503 and 3503.5 and the federal MBTA), would reduce the likelihood of impacts on common species using these important habitats. If a treatment must occur during the nesting season of common native bird species, including raptors, SPR BIO-9 would require nesting bird surveys prior to treatment activities and implementation of feasible impact avoidance strategies (e.g., protective buffers, treatment modifications, raptor nest monitoring).

Conclusion

Common wildlife species in the program area are relatively abundant locally and regionally, and habitat subject to treatment activities is not considered critical or limiting to the presence or viability of common wildlife populations. Treatment activities implemented during the breeding season could cause reproductive failure and the direct mortality or injury of adults or young present within active treatment areas. However, because treatments would be implemented within relatively small proportions of the extensive ranges of common species, and suitable habitat would remain available to these species across the broader landscape surrounding treatment areas, the magnitude of these potential losses is not expected to substantially reduce the overall abundance of any common wildlife species. Therefore, implementation of the proposed program would not substantially reduce the habitat, population abundance, or viability of common wildlife species, including nesting birds. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

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3.7 ARCHAEOLOGICAL, HISTORICAL, AND TRIBAL CULTURAL RESOURCES

This section analyzes and evaluates the potential impacts of the project on known and unknown cultural resources. Cultural resources include districts, sites, buildings, structures, or objects generally older than 50 years and considered to be important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. They also include archeological resources and “tribal cultural resources” (the latter as defined by Assembly Bill (AB) 52, Statutes of 2014, in Public Resources Code [PRC] Section 21074).

Archaeological resources are locations where human activity has measurably altered the earth or left deposits of prehistoric or historic-era physical remains (e.g., stone tools, bottles, former roads, house foundations). Historic-era built-environment resources include standing buildings (e.g., houses, barns, outbuildings, cabins) and intact structures (e.g., dams, bridges, roads, districts), or landscapes. A cultural landscape is defined as a geographic area (including both cultural and natural resources and the wildlife therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. Tribal cultural resources include sites, features, places, cultural landscapes, sacred places or objects, which are of cultural value to a tribe.

No comment letters regarding cultural resources were received in response to the Notice of Preparation (see Appendix C).

3.7.1 Regulatory Setting

FEDERAL

National Register of Historic Places

The National Register of Historic Places (NRHP) is the nation’s master inventory of known historic properties. It is administered by the National Park Service and includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, and cultural districts that are considered significant at the national, state, or local level.

The formal criteria (36 CFR 60.4) for determining NRHP eligibility are as follows:

1. The property is at least 50 years old (however, properties under 50 years of age that are of exceptional importance or are contributors to a district can also be included in the NRHP);
2. It retains integrity of location, design, setting, materials, workmanship, feeling, and associations; and
3. It possesses at least one of the following characteristics:
 - Criterion A Association with events that have made a significant contribution to the broad patterns of history (events).
 - Criterion B Association with the lives of persons significant in the past (persons).
 - Criterion C Distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant, distinguishable entity whose components may lack individual distinction (architecture).
 - Criterion D Has yielded, or may be likely to yield, information important to prehistory or history (information potential).

Listing in the NRHP does not entail specific protection or assistance for a property but it does guarantee recognition in planning for federal or federally-assisted projects, eligibility for federal tax benefits, and qualification for federal historic preservation assistance. Additionally, project effects on properties listed in the NRHP must be evaluated under CEQA.

The National Register Bulletin also provides guidance in the evaluation of archaeological site significance. If a heritage property cannot be placed within a particular theme or time period, and thereby lacks “focus,” it is considered not eligible for the NRHP. In further expanding upon the generalized NRHP criteria, evaluation standards for linear features (such as roads, trails, fence lines, railroads, ditches, flumes, etc.) are considered in terms of four related criteria that account for specific elements that define engineering and construction methods of linear features: (1) size and length; (2) presence of distinctive engineering features and associated properties; (3) structural integrity; and (4) setting. The highest probability for NRHP eligibility exists within the intact, longer segments, where multiple criteria coincide.

TAHOE REGIONAL PLANNING AGENCY

Article V(c)(3) of the Tahoe Regional Planning Compact (Public Law 96-551) required the development of a conservation plan for the preservation, development, utilization and management of scenic and other natural resources within the Tahoe Basin, including historic resources. The Tahoe Regional Planning Agency (TRPA) accomplishes historic resource protection through implementation of its goals and policies and code provisions as described below.

Tahoe Regional Plan

TRPA regulates growth and development in the Lake Tahoe Region through the Regional Plan, which includes the Goals and Policies document, Code of Ordinances, and other guidance documents.

The Goals and Policies document establishes guiding policies for each resource element. The Conservation Element (Chapter 4) of the Goals and Policies document (TRPA 2012) includes a Cultural Sub-element, with applicable goals as follows:

GOAL C-1: Identify and preserve sites of historical, cultural and architectural significance within the region.

- ▶ **Policy C-1.1:** Historical or culturally significant landmarks in the region shall be identified and protected from indiscriminate damage or alteration.
- ▶ **Policy C-1.2:** sites and structures designated as historically, culturally, or archaeologically significant shall be given special incentives and exemptions to promote the preservation and restoration of such structures and sites.

Thresholds

TRPA has not established any threshold standards related to cultural resources.

Code of Ordinances

The TRPA Code is a compilation of the rules, regulations, and standards to implement the Regional Plan Goals and Policies. Chapter 67, “Historic Resource Protection,” provides for the identification, recognition, protection, and preservation of the region’s significant cultural resources. Resources are evaluated for significance before a project or activity that could cause an adverse impact to that resource. To be designated as a historic resource or determined eligible, the resource must meet at least one of the criteria summarized below (TRPA 2019). Chapter 67 also provides for consultation with the California and Nevada SHPOs as well as the Washoe Tribe.

- ▶ **Resources Associated with Historically-Significant Events and Sites.** Such resources shall meet one or more of the following: (a) association with an important community function in the past, (b) association with a memorable happening in the past, or (c) contain outstanding qualities reminiscent of an early stage of development in the region.
- ▶ **Resources Associated with Significant Persons.** Such resources include: (a) buildings or structures associated with a locally, regionally, or nationally known person; (b) notable example or best surviving works or a pioneer architect, designer, or master builder; or (c) structures associated with the life or work of significant persons.
- ▶ **Resources Embodying Distinctive Characteristics.** Resources that embody the distinctive characteristics of a type, period, or method of construction that possess high artistic values or that represent a significant and distinguishable entity but whose components may lack individual distinction. Works of a master builder, designer, or architect also are eligible. Resources may be classified as significant if they are a prototype of, or a

representative example of, a period style, architectural movement, or method of construction unique in the region, the states, or the nation.

- ▶ **State and Federal Guidelines.** Archaeological or paleontological resources protected or eligible for protection under state or federal guidelines.
- ▶ **Prehistoric Sites.** Sites where prehistoric archaeological or paleontological resources that may contribute to the basic understanding of early cultural or biological development in the region.

Additionally, Sections 32.3.1 "[Paved Road] Waiver," 33.3, "Grading Standards," 33.4.1 "Subsurface Investigations and Reports," 61.1.6 "Minimum Standards for Tree Removal," 66.3.1 "Applicability" for Scenic Quality Review in the Shoreland addresses the discovery and/or treatment of cultural resources.

STATE

California Register of Historical Resources

All properties in California that are listed in or formally determined eligible for listing in the NRHP are eligible for the California Register of Historical Resources (CRHR). The CRHR is a listing of State of California resources that are significant within the context of California's history. The CRHR is a statewide program of similar scope and with similar criteria for inclusion as those used for the NRHP. In addition, properties designated under municipal or county ordinances are also eligible for listing in the CRHR.

A historic resource must be significant at the local, state, or national level under one or more of the criteria defined in the California Code of Regulations Title 15, Chapter 11.5, Section 4850 to be included in the CRHR. The CRHR criteria are similar to the NRHP criteria and are tied to CEQA because any resource that meets the criteria below is considered a significant historical resource under CEQA. As noted above, all resources listed in or formally determined eligible for the NRHP are automatically listed in the CRHR.

The CRHR uses four evaluation criteria:

1. Is associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
2. Is associated with the lives of persons important to local, California, or national history.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values.
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

Similar to the NRHP, a resource must meet one of the above criteria and retain integrity. The CRHR uses the same seven aspects of integrity as the NRHP.

California Environmental Quality Act

CEQA requires public agencies to consider the effects of their actions on "historical resources," "unique archaeological resources," and "tribal cultural resources." Pursuant to PRC Section 21084.1, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." PRC Section 21083.2 requires agencies to determine whether projects would have effects on unique archaeological resources. PRC Section 21084.2 establishes that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment."

Historical Resources

"Historical resource" is a term with a defined statutory meaning (PRC Section 21084.1; determining significant impacts to historical and archaeological resources is described in the State CEQA Guidelines, Sections 15064.5[a] and [b]). Under State CEQA Guidelines Section 15064.5(a), historical resources include the following:

1. A resource listed, or determined to be eligible by the State Historical Resources Commission for listing, in the California Register of Historical Resources (PRC Section 5024.1).
2. A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, will be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be historically significant if the resource meets the criteria for listing in the California Register of Historical Resources (PRC Section 5024.1).
4. The fact that a resource is not listed in or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to Section 5020.1(k) of the Public Resources Code), or identified in a historical resources survey (meeting the criteria in Section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in PRC Section 5020.1(j) or 5024.1.

Unique Archaeological Resources

CEQA also requires lead agencies to consider whether projects will impact unique archaeological resources. PRC Section 21083.2(g) states that unique archaeological resource means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Tribal Cultural Resources

CEQA also requires lead agencies to consider whether projects will impact tribal cultural resources. PRC Section 21074 states the following:

- a) "Tribal cultural resources" are either of the following:
 - 1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
 - A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.
 - B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.
 - 2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

- b) A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
- c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

California Native American Historical, Cultural, and Sacred Sites Act

The California Native American Historical, Cultural, and Sacred Sites Act applies to both state and private lands. The Act requires that upon discovery of human remains, construction or excavation activity cease and the County coroner be notified. If the remains are of a Native American, the coroner must notify NAHC, which notifies and has the authority to designate the most likely descendant (MLD) of the deceased. The Act stipulates the procedures the descendants may follow for treating or disposing of the remains and associated grave goods.

Health and Safety Code Sections 7050.5 and 7052

Section 7050.5 of the Health and Safety Code requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If determined to be Native American, the coroner must contact the NAHC. Section 7052 states that the disturbance of Native American cemeteries is a felony.

Public Resources Code Section 5097

PRC Section 5097 specifies the procedures to be followed in the event of the unexpected discovery of human remains on nonfederal land. The disposition of Native American burial falls within the jurisdiction of the NAHC. PRC Section 5097.5 states the following:

No person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

Public Resources Code Section 21080.3

AB 52, signed by the California Governor in September of 2014, established a new class of resources under CEQA: "tribal cultural resources," defined in PRC 21074. Pursuant to PRC Sections 21080.3.1, 21080.3.2, and 21082.3, lead agencies undertaking CEQA review must, upon written request of a California Native American Tribe, begin consultation before the release of an environmental impact report, negative declaration, or mitigated negative declaration.

PRC Section 21080.3.2 states:

Within 14 days of determining that a project application is complete, or to undertake a project, the lead agency must provide formal notification, in writing, to the tribes that have requested notification of proposed projects in the lead agency's jurisdiction. If it wishes to engage in consultation on the project, the tribe must respond to the lead agency within 30 days of receipt of the formal notification. The lead agency must begin the consultation process with the tribes that have requested consultation within 30 days of receiving the request for consultation. Consultation concludes when either: 1) the parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource, or 2) a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.

If the lead agency determines that a project may cause a substantial adverse change to a tribal cultural resource, and measures are not otherwise identified in the consultation process, provisions under PRC Section 21084.3(b) describe mitigation measures that may avoid or minimize the significant adverse impacts. Examples include:

- (1) Avoidance and preservation of the resources in place, including, but not limited to, planning and construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
- (2) Treating the resource with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
 - (A) Protecting the cultural character and integrity of the resource.
 - (B) Protecting the traditional use of the resource.
 - (C) Protecting the confidentiality of the resource.
- (3) Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
- (4) Protecting the resource.

LOCAL

El Dorado County General Plan

The El Dorado County General Plan (El Dorado County 2019) contains the following policies relevant to protection of archaeological, historic, and tribal cultural resources:

- ▶ **Policy 7.5.1.1:** The County shall establish a Cultural Resources Ordinance. This ordinance shall provide a broad regulatory framework for the mitigation of impacts on cultural resources (including historic, prehistoric and paleontological resources) by discretionary projects. This Ordinance should include (but not be limited to) and provide for the following:
 - A. Appropriate (as per guidance from the Native American Heritage Commission) Native American monitors to be notified regarding projects involving significant ground-disturbing activities that could affect significant resources.
 - B. A 100-foot development setback in sensitive areas as a study threshold when deemed appropriate.
 - C. Identification of appropriate buffers, given the nature of the resources within which ground-disturbing activities should be limited.
 - D. A definition of cultural resources that are significant to the County. This definition shall conform to (but not necessarily be limited to) the significance criteria used for the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) and Society of Vertebrate Paleontology.
 - E. Formulation of project review guidelines for all development projects.
 - F. Development of a cultural resources sensitivity map of the County.
- ▶ **Policy 7.5.1.2:** Reports and/or maps identifying specific locations of archaeological or historical sites shall be kept confidential in the Planning Department but shall be disclosed where applicable.
- ▶ **Policy 7.5.1.3:** Cultural resource studies (historic, prehistoric, and paleontological resources) shall be conducted prior to approval of discretionary projects. Studies may include, but are not limited to, record searches through the North Central Information Center at California State University, Sacramento, the Museum of Paleontology, University of California, Berkeley, field surveys, subsurface testing, and/or salvage excavations. The avoidance and protection of sites shall be encouraged.
- ▶ **Policy 7.5.1.4:** Promote the registration of historic districts, sites, buildings, structures, and objects in the National Register of Historic Places and inclusion in the California State Office of Historic Preservation's California Points of Historic Interest and California Inventory of Historic Resources.

- ▶ **Policy 7.5.1.5:** A Cultural Resources Preservation Commission shall be formed to aid in the protection and preservation of the County's important cultural resources. The Commission's duties shall include, but are not limited to:
 - A. Assisting in the formulation of policies for the identification, treatment, and protection of cultural resources (including historic cemeteries) and the curation of any artifacts collected during field collection/excavation;
 - B. Assisting in preparation of a cultural resources inventory (to include prehistoric sites and historic sites and structures of local importance);
 - C. Reviewing all projects with identified cultural resources and making recommendations on appropriate forms of protection and mitigation; and
 - D. Reviewing sites for possible inclusion in the National Register of Historic Places, California Register, and other State and local lists of cultural properties. The County shall request to become a Certified Local Government (CLG) through the State Office of Historic Preservation. Certification would qualify the County for grants to aid in historic preservation projects. The Cultural Resources Preservation Commission could serve as the Commission required for the CLG program.
- ▶ **Policy 7.5.1.6:** The County shall treat any significant cultural resources (i.e., those determined California Register of Historical Resources/National Register of Historic Places eligible and unique paleontological resources), documented as a result of a conformity review for ministerial development, in accordance with CEQA standards.

Placer County General Plan

The Placer County General Plan (Placer County 2013) contains the following policies relevant to protection of archaeological, historic, and tribal cultural resources:

- ▶ **Policy 5.D.1:** The County shall assist the citizens of Placer County in becoming active guardians of their community's cultural resources.
- ▶ **Policy 5.D.2:** The County shall solicit the cooperation of the owners of cultural and paleontological resources, encourage those owners to treat these resources as assets rather than liabilities, and encourage the support of the general public for the preservation and enhancement of these resources.
- ▶ **Policy 5.D.3:** The County shall solicit the views of the Native American Heritage Commission, State Office of Historic Preservation, North Central Information Center, and/or the local Native American community in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.
- ▶ **Policy 5.D.4:** The County shall coordinate with the cities and municipal advisory councils in the County to promote the preservation and maintenance of Placer County's paleontological and archaeological resources.
- ▶ **Policy 5.D.5:** The County shall use, where feasible, incentive programs to assist private property owners in preserving and enhancing cultural resources.
- ▶ **Policy 5.D.6:** The County shall require that discretionary development projects identify and protect from damage, destruction, and abuse, important historical, archaeological, paleontological, and cultural sites and their contributing environment. Such assessments shall be incorporated into a Countywide cultural resource data base, to be maintained by the Division of Museums.
- ▶ **Policy 5.D.7:** The County shall require that discretionary development projects are designed to avoid potential impacts to significant paleontological or cultural resources whenever possible. Unavoidable impacts, whenever possible, shall be reduced to a less than significant level and/or shall be mitigated by extracting maximum recoverable data. Determinations of impacts, significance, and mitigation shall be made by qualified archaeological (in consultation with recognized local Native American groups), historical, or paleontological consultants, depending on the type of resource in question.

- ▶ **Policy 5.D.8:** The County shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.
- ▶ **Policy 5.D.9:** The County shall use the State Historic Building Code to encourage the preservation of historic structures.
- ▶ **Policy 5.D.10:** The County will use existing legislation and propose local legislation for the identification and protection of cultural resources and their contributing environment.
- ▶ **Policy 5.D.11:** The County shall support the registration of cultural resources in appropriate landmark designations (i.e., National Register of Historic Places, California Historical Landmarks, Points of Historical Interest, or Local Landmark). The County shall assist private citizens seeking these designations for their property.
- ▶ **Policy 5.D.12:** The County shall consider acquisition programs (i.e., Placer Legacy Open Space and Agricultural Conservation Program) as a means of preserving significant cultural resources that are not suitable for private development. Organizations that could provide assistance in this area include, but are not limited to, the Archaeological Conservancy, the Native American community, and local land trusts.

City of South Lake Tahoe General Plan

The City of South Lake Tahoe General Plan (City of South Lake Tahoe 2011) contains the following policies relevant to protection of archaeological, historic, and tribal cultural resources:

- ▶ **Policy NCR-4.1: Significant Site Preservation.** The City shall preserve sites of historical, cultural and architectural significance within the city, consistent with the Secretary of the Interior Standards for Treatment of Historic Properties.
- ▶ **Policy NCR-4.2: Historic Landmark Designation.** The City shall designate structures or sites having special character or special historic, architectural, or aesthetic interest or value as local historic landmarks. The City shall protect local historic landmarks from demolition and inappropriate alterations, and develop criteria for evaluating the appropriateness for sites or structures to be designated as local historic landmarks, and provide incentives for preservation of local historic landmarks.
- ▶ **Policy NCR-4.3: Archeological Investigations.** The City shall require archeological investigations for all applicable discretionary projects, in accordance with CEQA regulations, for areas not previously surveyed and/or that are determined sensitive for cultural resources (e.g., undeveloped parcels near water features). The City shall require the preservation of discovered archeologically-significant resources (as determined based on TRPA, State, and Federal standards by a qualified professional) in place if feasible, or provide mitigation (avoidance, excavation, documentation, curation, data recovery, or other appropriate measures) prior to further disturbance.
- ▶ **Policy NCR-4.4: Paleontological Resource Evaluation.** The City shall require that a paleontological resources evaluation be prepared and measures to mitigate impacts to paleontological resources be identified (avoidance, preservation in place, excavation, documentation, and/or data recovery) when fossils are discovered during ground-disturbing activities.
- ▶ **Policy NCR-4.5: Human Remain Discovery.** The City shall require/condition projects and other ground disturbance activities to notify the City if human remains are discovered and halt work. The County Coroner will be notified according to Section 5097.98 of the State Public Resources Code and Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed.

3.7.2 Environmental Setting

REGIONAL PREHISTORY

The earliest evidence of human occupation at Lake Tahoe appears to date to the Early Holocene, when warming and drying climates caused Pleistocene lakes—including Lake Lahontan, which once flooded much of the Great Basin—to shrink. Native people living around those lakes now visited the relatively ice-free Tahoe basin as part of a highly mobile foraging pattern that included the hunting of large, migratory game. Archaeological sites dating to the Early Holocene have been identified on Taylor Creek on the south shore of Lake Tahoe and at several locations along the upper Truckee River. Many other early archaeological sites may lie submerged beneath the waters of Lake Tahoe or buried under alluvial sediments (Far Western 2020).

Much more archaeological evidence has been found for human occupation at Lake Tahoe after 7,000 years ago, during the Middle Holocene Period. This was a time of extreme drought, when the lake level dropped considerably, as indicated by the presence of now-submerged tree stumps. As lakes in the Great Basin dried up, Tahoe remained a sort of refugia, even in its lowered state. Human use of the Tahoe basin increased accordingly. The warmer and drier conditions may even have allowed for year-round occupation of the lake shore during snow-free winters. This also may have been when native people first began to quarry basalt toolstone at places like Alder Hill in Truckee and Watson Creek at Lake Tahoe (Far Western 2020).

About 4,000 years ago, at the beginning of the Late Holocene “Neoglacial,” increased moisture and cooler temperatures caused the rebirth of many lakes and the development of marshes—including Taylor Marsh—teeming with plant and animal life. Vegetation communities shifted from drought-tolerant species to the conifer forests that characterize the Tahoe basin today. These conditions lasted for about 2,000 years, with drier conditions returning from ca. 2200 to 1600 years before present (BP) and again at ca. 700 to 500 BP. These drought periods are marked by decreased flows in the Truckee River and by narrow tree rings and deeply submerged tree stumps at Donner and Independence Lakes. After 500 BP, the climate began to more closely resemble the conditions present when Euro-Americans entered the region (Far Western 2020).

ETHNOGRAPHY

Before historic contact in the early to mid-1800s, the shores of Lake Tahoe were part of the vast territory held by the Washoe people. Washoe territory extended north to Honey Lake and south to the headwaters of the Tuolumne River. To the east, the valleys at the base of the Sierra were also Washoe territory. The boundary to the west was more fluid, involving shared use of the upper and lower western slopes with the Nisenan and Miwok (TRPA 2012; Placer County and TRPA 2016).

The primary sociopolitical group among the Washoe was the small extended family over which presided a family headman. Permanent villages were inhabited year-round, but most able-bodied adults and older children shifted their residence throughout the warmer seasons. A winter settlement would be home to several of these families, who shared a group identity but acted independently in most matters. While areas of settlement were rich in resources, they were relatively small oases within less-usable lands. This “patchiness” of the Washoe environment was best utilized by changing residence often to exploit resources in different zones as they became available, and by keeping populations sufficiently low to assure ample food for all members of the group (TRPA 2012; Placer County and TRPA 2016).

The Washoe regularly convened throughout the year to participate in rabbit drives and large-scale fowling and fishing activities, as well as to maintain family contacts. The American River and Lake Tahoe were major year-round fisheries with good locations for villages and camps, and the Martis Valley was an important gathering place to obtain edible and medicinal roots, seeds, and marsh plants (TRPA 2012; Placer County and TRPA 2016).

Washoe lifeways were not directly affected by the earliest historic-era activities in California and Nevada. However, by the 1850s and 1860s Washoe culture was affected by thousands of outsiders who had moved through their territory. Ranchers and other settlers restricted Washoe use of lands and resources. Although traditional settlement and

subsistence practices were profoundly disrupted, many traditional customs persist among the Washoe people today (TRPA 2012; Placer County and TRPA 2016).

HISTORIC SETTING

Regional History

The non-native history of the Tahoe Basin began in the mid-nineteenth century, spurred by the discovery of gold at Coloma in El Dorado County in 1848 and the Comstock silver lode at Virginia City, Nevada in 1859. The construction in 1867–1868 of the Transcontinental Railroad through the Truckee River canyon linked the Tahoe Sierra with regions to the east and west and also brought thousands of overseas Chinese to the Tahoe/Truckee area, first as miners and then as railroad workers, colliers, and business owners. Their legacy can still be seen in the many Chinese camps, charcoal kilns, and other archaeological sites with Chinese artifacts (Far Western 2020).

Despite the intensive nineteenth-century mining on both sides of the Sierran crest, the real attraction of the Tahoe basin to Euro-Americans was for its old-growth forests and for the lake itself, which became a major tourist destination as early as the 1920s. The onset of lumbering on the California side of Tahoe's north shore was largely coincident with the building of the transcontinental railroad and the subsequent opening of new wood markets along its route. As early as 1859, a few individuals staked small timber claims in the Lake Tahoe Basin to supply the handful of sawmills established to outfit local needs. Smaller logging operations were soon swamped, however, by the arrival of large lumber and fluming companies that constructed large mills and established an elaborate network of logging barges, railroads, wagon roads, V-shaped flumes, water storage reservoirs, and associated wood camps and mills. Some of these companies hired large numbers of the overseas Chinese workers who had been brought to the area to help build the Transcontinental Railroad (Far Western 2020).

Soon large lumber companies such as the Sierra Nevada Wood and Lumber Company, the Truckee Lumber Company, and the Carson Tahoe Lumber and Fluming Company owned huge blocks of timberland and dominated the industry. One such company, the Donner Lumber and Booming Company (a subsidiary of the Central Pacific Railroad), was authorized by the State of California in 1870 to erect a dam at the outlet of Lake Tahoe and float logs down the Truckee River. By the turn of the twentieth century, lands in the Tahoe Basin were largely stripped of pine, but fir and other species remained. With the introduction of paper mills, stands were re-entered to harvest fir for use as pulpwood for paper mills (Far Western 2020).

Large-scale logging in the Tahoe basin decreased as the lake's importance as a tourist destination increased. The first hostelry at Tahoe City, the aptly-named Tahoe City Hotel, was built in 1864 by M. L. King; in 1871 it was reopened as a 3 1/2-story hotel and saloon complex renamed the Grand Central Hotel. In 1867, William Pomin converted his house on Main (Lake) Street as the Tahoe House and bar, at what would later be the location of the Tahoe Inn. The Tahoe Inn was destroyed by fire in 1934 but was reconstructed; it still stands today, now operated as a restaurant franchise (Far Western 2020).

It was not until the early 1900s that tourism began at Lake Tahoe on a large scale. As early as 1900, local lumber baron D. L. Bliss saw this potential and constructed the Lake Tahoe Railway and Transportation Company (LTR&TCo.) railroad as a critical link between Lake Tahoe and the main transcontinental line in Truckee. At the lake end of the line, Bliss built the grand Tahoe Tavern Hotel at Tahoe City and a railway-steamer pier south of the lake's inlet. The pier was intended to service Bliss's maritime fleet, based out of the Tahoe Tavern and used to carry passengers, mail, and freight around the lake. Today there is nothing left of the Tahoe Tavern or its hotel, although traces of the LTR&TCo. tourist railroad (purchased and upgraded by the Southern Pacific Railroad in 1926) are still visible in some places along the Truckee River. Today Lake Tahoe continues to be a major tourist attraction, drawing visitors from all over the country and many parts of the world. Logging and other extraction industries have been largely curtailed or are carefully regulated, to preserve as much of the basin's environmental health and beauty as possible (Far Western 2020).

The primary Euro-American land uses in the basin have been those associated with transportation (roads, railroad grades, bridges, waystations), logging and lumbering (work camps, sawmills, chutes and flumes, skid trails, logging railroads, fields of high-cut stumps), and recreation/tourism (motels/hotels, resorts, campgrounds, cabins, etc.). There was also a flourishing but short-lived fishing industry that threatened to wipe out the native fish until the California did State Legislature banned commercial fishing at the lake in 1917. Other types of sites that have been recorded

around the lake include the former estates of wealthy Euro-Americans, Basque sheepherders' camps and aspen carvings ("arborglyphs"), ranching features, utility lines, water supply/management structures, animal traps, and many refuse dumps or scatters (Far Western 2020).

RECORDS SEARCHES, SURVEYS, AND CONSULTATION

In February 2020, a *Cultural Resources Records Search and Sensitivity Study for the Tahoe Program Timberland Environmental Impact Report* was prepared by Far Western Anthropological Research Group (Cultural Resources Records Search and Sensitivity Study) (Far Western 2020).

As part of the Cultural Resources Records Search and Sensitivity Study, a records search of the program area and a 100-meter buffer was conducted at the North Central Information Center (NCIC), at California State University, Sacramento. The following information was reviewed as part of the records search:

- ▶ NRHP and CRHR,
- ▶ California Office of Historic Preservation Historic Property Directory,
- ▶ Archaeological Determinations of Eligibility listings for El Dorado and Placer Counties
- ▶ California Department of Transportation Historic Bridges Survey
- ▶ California Inventory of Historic Resources,
- ▶ California State Historic Landmarks,
- ▶ California Points of Historical Interest, and
- ▶ Historic properties reference map.

According to records searches conducted by the NCIC, previous surveys have identified 579 cultural resources (prehistoric and historic-era archaeological features and built-environment features) in or immediately adjacent to the program area. Of these, 351 are plotted as lying within the program area; the other 228 lie within the 100-meter-wide buffer zone and are therefore close enough to be of concern. Some of the features in the buffer zone are linear features (roads, trails, ditches, etc.) that are only partially recorded and may continue into the program area; others were recorded decades ago and may have been misplotted (i.e., they may actually fall within the program area).

Roughly 40 percent of the program area has been adequately surveyed, resulting in 351 features having been recorded; this equates to roughly one site every 20 acres. The 351 sites are comprised of 42 prehistoric archaeological sites, 133 historic-era archaeological sites, 158 built-environment features and 18 multi-component sites (containing both prehistoric and historic-era features).

Built-Environment Features

The majority of the 158 built-environment features identified in the NCIC records search have not been evaluated for NRHP or CRHR eligibility. Of the 53 that have been evaluated, 8 have been evaluated as eligible for either NRHP or CRHR eligibility. These include the Gate Keeper's Log Cabin (P-31-001976); the CT Bliss-CW Merrill House (P-31-002931); the Tahoe Meadows Historic District (P-09-005091); the Sugar Pine Point Historic District (P-09-005219); the Camp Richardson Historic District (P-09-005233), two Nordic Ski Trail Systems and a bridge near Emerald Bay. The 45 built-environment resources that have been evaluated as not eligible for listing are not considered historical resources under CEQA.

Archaeological Sensitivity

Areas of high or highest sensitivity for prehistoric or tribal cultural sites tend to cluster around the lake shores and wetlands and on streams flowing into the lakes, where fresh water and other resources (fish, marsh plants) would have been most plentiful. Archaeological sensitivity decreases as we move inland away from the lakes, and where slopes begin to steepen. It is important to account for local and regional landscape changes that caused the lake levels to fluctuate, altered the course of stream and river channels, and affected the type and distribution of the plant

and animal communities in the past. Because of the confidential nature of archaeological sites and the possibility of looting, specific archaeological site locations are not discussed.

The locations of historic-era archaeological sites are less dependent on landscape features than prehistoric archaeological sites. Slopes could be artificially leveled, water could be brought in via ditches and flumes, and food could be transported by railroad or wagon road. The remains of old roads, railroads, and trails often parallel modern features and many have been documented. However, structure foundations, cellars, refuse deposits, and other historic-era archaeological remains can be easily overlooked as they can be obscured by vegetation.

Tribal Cultural Resources

A Native American Consultation Program has been initiated by CAL FIRE for the Tahoe PTEIR. The specific details about tribal cultural resources locations and characteristics are confidential pursuant to California law. On October 14, 2019, five tribes were contacted by CAL FIRE for AB 52 consultation. Letters sent to the tribes included the location of the program area as well as specific information on elements of the proposed program. The following tribes were contacted:

- ▶ Washoe Tribe of Nevada and California, Serrell Smokey, Chairman
- ▶ Lone Band of Miwok Indians, Sara Dutschke Setshwaelo, Chairperson
- ▶ Shingle Springs Band of Miwok Indians, Nicholas Fonseca, Chairman
- ▶ Wilton Rancheria, Steven Hutchason, Executive Director
- ▶ United Auburn Indian Community of the Auburn Rancheria, Matthew Moore, Tribal Historic Preservation Officer

Two tribes responded to the consultation letters. Shingle Springs Band of Miwok Indians requested updates on the project and copies of all records searches, while United Auburn Indian Community (UAIC) requested consultation with CAL FIRE. As of May 2020, tribal consultation with UAIC and the Shingle Springs Band of Miwok Indians remains ongoing.

3.7.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The impact analysis for archaeological and historical resources is based on the findings and recommendations of the Cultural Resources Records Search and Sensitivity Study (Far Western 2020). The analysis is also informed by the provisions and requirements of federal, state, and local laws and regulations that apply to cultural resources.

Section 21083.2 of the State CEQA Guidelines defines "unique archaeological resource" as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one or more of the following CRHR-related criteria: 1) that it contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; 2) that it has a special and particular quality, such as being the oldest of its type or the best available example of its type; or 3) that it is directly associated with a scientifically recognized important prehistoric or historic event or person. An impact on a "nonunique resource" is not a significant environmental impact under CEQA (State CEQA Guidelines Section 15064.5[c][4]). If an archaeological resource qualifies as a resource under CRHR criteria, then the resource is treated as a unique archaeological resource for the purposes of CEQA.

PRC Section 21074 defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe" that are listed or determined eligible for CRHR listing, listed in a local register of historical resources, or otherwise determined by the lead agency to be a tribal cultural resource.

For the purposes of the impact discussion, "historical resource" is used to describe built-environment historic-era resources. Archaeological resources (both prehistoric and historic-era), which may qualify as "historical resources" pursuant to CEQA, are analyzed separately from built-environment historical resources.

Significance determinations account for the influence of relevant Standard Project Requirements (SPRs) and California Forest Practice Rules (CFPRs), which are incorporated into treatment design. Relevant SPRs include the following:

- ▶ **SPR CUL-1 Conduct Record Search:** For treatments led by CAL FIRE, an archaeological and historical resource record search will be conducted per the “Archaeological Review Procedures for CAL FIRE Projects” (current edition dated 2010). For treatments led by a project proponent other than CAL FIRE, an archaeological and historical resource record search will be conducted per the “Archaeological Review Procedures for CAL FIRE Projects” or equivalent state or local agency procedures. Instead of conducting a new search, the project proponent may use recent record searches (not more than 5 years old) containing the treatment area, including records searches completed in the preparation of this PTEIR, in accordance with the Archaeological Review Procedures for CAL FIRE Projects or equivalent agency guidance.
- ▶ **SPR CUL-2 Contact Geographically Affiliated Native American Tribes:** The project proponent will obtain the latest Native Americans Contact List, which may be obtained from the CAL FIRE website, as appropriate. Using the appropriate Native Americans Contact List, the project proponent will notify the California Native American Tribes in the counties where the treatment activity is located. The notification will contain the following:
 - A written description of the treatment location and boundaries.
 - Brief narrative of the treatment objectives.
 - A description of the activities used (e.g., prescribed burning, mastication) and associated acreages.
 - A map of the treatment area at a sufficient scale to indicate the spatial extent of activities.
 - A request for information regarding potential impacts to cultural resources from the proposed treatment.
 - A detailed description of the depth of excavation, if ground disturbance is expected.
 - A request for a response within 30 days.

In addition, the project proponent will contact the NAHC for a review of their Sacred Lands File.

- ▶ **SPR CUL-3 Pre-field Research:** The project proponent will conduct research prior to implementing treatments as part of the cultural resource investigation. The purpose of this research is to properly inform survey design, based on the types of resources likely to be encountered within the treatment area, and to be prepared to interpret, record, and evaluate these findings within the context of local history and prehistory. The qualified archaeologist, meeting the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation, Professional Qualification Standards, will review records, study maps, read pertinent ethnographic, archaeological, and historical literature specific to the area being studied, and conduct other tasks to maximize the effectiveness of the survey.
- ▶ **SPR CUL-4 Archaeological Surveys:** The project proponent will coordinate with a qualified archaeologist to conduct a site-specific survey of the treatment area. The survey methodology (e.g., pedestrian survey or subsurface investigation) depends on whether the area has a low, moderate, or high sensitivity for resources, which is based on whether the records search, pre-field research, and/or Native American consultation identifies archaeological, historical, or tribal cultural resources near or within the treatment area. The archaeological and built-environment resources sensitivity maps included with the Project Consistency Checklist would also inform the survey methodology needed for an individual project and help guide project proponents in project planning based on the sensitivity at individual later treatment activity sites. A survey report will be completed for every cultural resource survey completed. The specific requirements will comply with the current edition of “Archaeological Review Procedures for CAL FIRE Projects” or equivalent state or local agency procedures, as applicable.
- ▶ **SPR CUL-5 Treatment of Archaeological Resources:** If cultural resources are identified within a treatment, including tribal cultural resources, and cannot be avoided, a qualified archaeologist will notify the culturally affiliated tribe(s) based on information provided by NAHC and assess, whether an archaeological find qualifies as a unique archaeological resource, an historical resource, or in coordination with said tribe(s), as a tribal cultural

resource. The project proponent, in consultation with culturally affiliated tribe(s) when applicable, will develop effective protection measures for unique archaeological resources, historical resources, or tribal cultural resources located within treatment areas. These measures may include changing treatment activities so that damaging effects to cultural resources will not occur. These protection measures will be written in clear, actionable language, and will be included in the survey report in accordance with the "Archaeological Review Procedures for CAL FIRE Projects" or equivalent state or local agency procedures. If the resource is a tribal cultural resource, the project proponent will provide the tribe(s) the opportunity to submit comments and participate in consultation to resolve issues of concern.

- ▶ **SPR CUL-6 Avoid Built Historical Resources:** If the records search identifies built historical resources, as defined in Section 15064.5 of the State CEQA Guidelines, the project proponent will avoid these resources. Within a buffer of 100 feet of the built historical resource, there will be no prescribed burning or mechanical treatment activities. Buffers less than 100 feet for built historical resources will only be used after consultation with and receipt of written approval from a historian or architectural historian meeting the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, Professional Qualification Standards. If the records search does not identify known historical resources in the treatment area, but structures (i.e., buildings, bridges, roadways) over 50 years old that have not been evaluated for historic significance are present in the treatment area, they will similarly be avoided.
- ▶ **SPR CUL-7 Cultural Resource Training:** The project proponent will train all crew members and contractors implementing treatment activities on the protection of sensitive archaeological, historical, or tribal cultural resources. Workers will be trained to halt work if archaeological resources are encountered on a treatment site and the treatment method consists of physical disturbance of land surfaces (e.g., soil disturbance). The training will also include instructing crew members and contractors on the confidential nature of cultural resources, consistent with CCR Section 1427 and penalties for removing or intentionally disturbing cultural resources, such as those identified in the Archeological Resources Protection Act.

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, an impact on cultural resources is considered significant if implementation of later projects under the Tahoe PTEIR would:

- ▶ cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5 of the State CEQA Guidelines;
- ▶ cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the State CEQA Guidelines;
- ▶ cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe; or
- ▶ disturb any human remains, including those interred outside of dedicated cemeteries.

IMPACTS AND MITIGATION MEASURES

Impact 3.7-1: Cause a Substantial Adverse Change in the Significance of Historical Resources

Later treatment activities could occur in areas that contain known historic resources or currently unrecorded historic-era features, or result in adverse physical or aesthetic effects to a significant historical site, structure, object, or building. Implementation of SPRs CUL-1, CUL-6, and CUL-7, would avoid any substantial adverse change to any built historical resources. This impact would be **less than significant**.

The Lake Tahoe region contains various built-environment features, including federal, state, and locally recognized resources. As previously described, 158 built-environment features were identified in the NCIC records search, there are 8 properties in the program area that were evaluated as eligible for listing in the NRHP and/or the CRHR, 45 evaluated as not eligible, and approximately 100 have not yet been evaluated. Implementation of the program would result in forest treatment activities to reduce the risk of wildfire including mechanical thinning, manual/hand thinning, prescribed understory burning, pile burning, sale and transport of forest products. The demolition, alteration, or disturbance of existing sites, buildings, and structures that are designated historic resources, eligible for listing as historic resources, or that have not yet been evaluated, could result in the change in its historical significance.

As described in Chapter 2, "Program Description," standard protection measures (SPRs) would be incorporated into all proposed treatment activities under the Tahoe PTEIR as a standard part of treatment design and implementation (see Appendix B). SPR CUL-1 requires a recent records search (less than 5 years old) for historical resources. SPR CUL-6 requires the avoidance of known built historical resources and the avoidance of built-environment structures that have not yet been evaluated for historical significance. SPR CUL-7 requires that workers be trained regarding protection of historical resources.

Conducting record searches and avoiding historical resources would avoid or minimize the risk of disturbance, damage, or destruction of historical resources by identifying, then avoiding and protecting the resources from damage that could be caused by treatment activities. Conducting worker awareness training would avoid or minimize the risk of disturbance, damage, or destruction of historical resources by training workers on how to identify and avoid known resources that could be otherwise inadvertently be damaged by treatment activities. Commercial activities conducted as part of later treatment activities would also be required to comply with CFPRs (14 CCR Sections 969.1 through 969.7). The CFPRs include requirements for project proponents or project implementers to conduct records searches, determine significance of the archaeological or historical site, and implement protection measures and site recording for discovered resources.

Implementation of applicable SPRs and CFPRs would avoid damage or destruction that could result in a substantial adverse change in the significance of a built historic resource. Therefore, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.7-2: Cause a Substantial Adverse Change in the Significance of Unique Archaeological Resources

Later treatment activities could occur on lands that contain resources that may qualify as unique archaeological resources. It is possible that unique archaeological resources would be disturbed during treatment activities. SPRs CUL-1, CUL-2, CUL-3, CUL-4, CUL-5, and CUL-7 require a records search, pre-field research, an archaeological survey, coordination with Native American groups, worker training to recognize sensitive cultural resources, and avoiding or protecting known resources. Despite implementation of these SPRs, unknown unique archaeological resources could be inadvertently damaged during treatment activities. This would be a **potentially significant** impact.

Archaeological resources have been identified throughout the Lake Tahoe region; therefore, this analysis assumes that archaeological resources may be present within the program area. These resources may include, but are not limited to, village sites, milling sites, lithic scatters, rock art, building foundations, and refuse deposits.

Treatment activities such as mechanical thinning, manual/hand thinning, prescribed understory burning, pile burning, sale and transport of forest products could inadvertently damage unique archaeological resources.

As previously described, standard protection measures (SPRs) would be incorporated into all proposed treatment activities under the Tahoe PTEIR as a standard part of treatment design and implementation (see Appendix B). SPR CUL-1 requires a recent records search for archaeological resources. SPR CUL-2 requires coordination with geographically associated Native American tribe(s), which would identify locations of any known unique archaeological resources and areas where there is a high likelihood of finding these types of resources and require

avoidance of these resources. SPR CUL-3 requires pre-field research to become familiar with the area and potential resources, SPR CUL-4 requires an archaeological survey of the treatment area to identify archaeological resources and SPR CUL-5 requires working with the geographically affiliated tribe(s) to avoid and protect any resources identified. These SPRs would be implemented as part of each later treatment activity, as applicable. The lead agency or project proponent would be responsible for monitoring or ensuring the SPRs are implemented.

The Cultural Resources and Sensitivity Study prepared for the Tahoe PTEIR assessed where cultural resources are most likely to occur within or near the program area (Far Western 2020). This sensitivity analysis assessed basic environmental factors that are known to influence where prehistoric sites are located, and used a geoarchaeological landscape perspective (i.e., looking at the geologic and archaeological history) to evaluate the potential for prehistoric sites in a given area. Historical maps and photos showing 19th and early 20th century land use in the Lake Tahoe basin and an inventory of known historic-era resources were used to evaluate the potential for historic-era sites in a given area. The results of the sensitivity analysis were compiled to develop sensitivity maps that identifies areas that have low to high sensitivity for prehistoric and historic-era archaeological sites. These maps are included as an attachment to Appendix A, "Project Consistency Checklist," of this PTEIR (see Figures A2-1 through A2-10 in Attachment A3 of Appendix A). As required by SPR CUL-4, a pre-implementation survey would be conducted to identify previously unknown cultural resources. The survey intensity would be greatest in areas with a high sensitivity for prehistoric or historic-era archaeological sites, which are shown in Figures A2-1 through A2-10 in Appendix A.

Conducting record searches, contacting Native American groups, conducting cultural resource surveys, and avoiding known unique archaeological resources would avoid or minimize the risk of disturbance, damage, or destruction of these resources by identifying, avoiding, or protecting these sensitive subsurface resources from damage that could be caused by treatment activities.

Commercial activities conducted as part of later treatment activities would also be required to comply with CFPRs (14 CCR Sections 969.1 through 969.7). The CFPR includes requirements for project proponents or project implementers to conduct records searches, notify Native American groups regarding preparation of a PTHP or THP and if a cultural site is located, determine significance of the archaeological site, and implement protection measures and site recording for discovered resources.

Although known resources would be avoided through implementation of SPRs and CFPRs, ground disturbance during treatment activities could encounter unknown archaeological sites and materials, which may result in inadvertent damage to or destruction of these resources.

SPR CUL-7 requires worker awareness training and that treatment activities be halted if archaeological materials are discovered. Conducting worker awareness training would avoid or minimize the risk of disturbance, damage, or destruction of subsurface resources by training workers on how to identify resources that could be otherwise inadvertently be damaged by treatment activities and halting work in the event of any discoveries. Despite implementation of SPRs, unknown unique archaeological resources could be discovered during ground-disturbing activities and be inadvertently damaged or destroyed, if they are present in the treatment areas and affected. If this occurred, it could cause a substantial adverse change in the significance of unique archaeological resources, which would be a **potentially significant** impact.

Mitigation Measures

Mitigation Measure 3.7-2: Protect Inadvertent Discoveries of Unique Archaeological Resources or Subsurface Historical Resources

If any prehistoric or historic-era archaeological features or deposits, including locally darkened soil ("midden"), that could conceal cultural deposits, are discovered during ground-disturbing activities, all ground-disturbing activity within 100 feet of the resources will be halted and a qualified archaeologist will assess the significance of the find. The qualified archaeologist will prepare a survey report that will comply with the current Archaeological Resource Management Report (ARMR) format and content guidelines developed by the California Office of Historic Preservation or equivalent state or local agency procedures, if applicable. If the archaeologist determines that further information is needed to

evaluate significance, a data recovery plan will be prepared. If the find is determined to be significant by the qualified archaeologist (i.e., because the find constitutes a unique archaeological resource, subsurface historical resource, or tribal cultural resource), the archaeologist will work with the project proponent to develop appropriate procedures to protect the integrity of the resource. Procedures could include preservation in place (which is the preferred manner of mitigating impacts to archaeological sites), archival research, subsurface testing, or recovery of scientifically consequential information from and about the resource. Any find will be recorded on the appropriate DPR Primary Record forms (Form DPR 523) will be submitted to the appropriate regional information center.

Significance after Mitigation

Implementation of Mitigation Measure 3.7-2 would reduce potentially significant impacts to archaeological resources to less than significant because mitigation would be developed in coordination with the appropriate state, and/or local agency(ies) to avoid, move, record, or otherwise treat the archaeological resource appropriately, in accordance with pertinent laws and regulations. Therefore, the proposed program's impacts would be **less than significant**.

Impact 3.7-3: Cause a Substantial Adverse Change in the Significance of a Tribal Cultural Resource

Tribal consultation is ongoing and could result in the identification of tribal cultural resources as described under PRC Section 21074. Tribal cultural resources may be identified within program area during consultation and could be affected by treatments implemented under the proposed program. This would be a **potentially significant** impact.

CAL FIRE sent letters on October 14, 2019, notifying five Native American tribes that preparation of the PTEIR has begun, as required by PRC Section 21080.3.1. As previously discussed, two tribes responded to the consultation letters. Shingle Springs Band of Miwok Indians requested updates on the project and copies of all records searches and UAIC requested consultation with CAL FIRE. As of January 2020, tribal consultation with UAIC and Shingle Springs Band of Miwok Indians remains ongoing; the specific details of the consultations are confidential pursuant to California law.

As previously described, SPRs would be incorporated into later treatment activities under the Tahoe PTEIR as a standard part of treatment design and implementation (see Appendix B). SPR CUL-2 requires consultation with geographically affiliated tribes, SPR CUL-3 requires a survey of the treatment area for archaeological and tribal cultural resources, SPR CUL-5 requires consulting with the geographically affiliated tribes to avoid or protect any identified resources, and SPR CUL-7 requires worker awareness training and that treatment activities be halted if archaeological materials are discovered. Additionally, as discussed under Impact 3.7-2, commercial treatment activities would also be subject to requirements of the CFRs that would help protect tribal cultural resources.

In addition to the programmatic to tribal consultation that is underway and the project-level consultation for later treatment activities required by SPR CUL-2, the Washoe Tribe of Nevada and California is involved in the planning of later treatment activities as a member of the Tahoe Fire and Fuels Team (TFFT). The 21 partner organizations of the TFFT work within the Tahoe Basin to plan, prioritize, and implement forest management projects. They include fire agencies, land management agencies, resource conservation districts, and regulatory agencies. The Washoe Tribe joined the TFFT in 2019. The TFFT meets regularly to coordinate planning for forest management projects. This includes managing data on completed, planned, and potential projects, as well as compiling an annual plan of work for all reasonably foreseeable projects. The TFFT provides a forum for early coordination and collaboration with the Washoe Tribe to supplement the project-specific notification procedures for later activities. This coordination and collaboration provides an additional mechanism to identify and protect tribal cultural resources that could occur within the program area.

No tribal cultural resources have been identified within the program area; however, tribal consultation pursuant to PRC Section 21080.3.1 is still underway. Therefore, tribal cultural resources may be identified within the program area during consultation and could be affected by treatment activities implemented under the proposed PTEIR. This would be a **potentially significant** impact.

Mitigation Measure 3.7-3: Complete Tribal Consultation (PRC Section 21080.3.1) and Avoid Potential Effects on Tribal Cultural Resources, If Identified

CAL FIRE will complete tribal consultation pursuant to PRC Section 21080.3.1.

If no tribal cultural resource is identified during consultation, no further mitigation is required.

If the project proponent determines that a treatment may cause a substantial adverse change to a tribal cultural resource, and measures to protect the resource are not otherwise identified in the consultation process, provisions under PRC Section 21084.3(b) describe mitigation measures that may avoid or minimize the significant adverse impacts. Examples include:

1. Avoidance and preservation of the resources in place, including, but not limited to, designing the treatment to avoid the resources and protect the cultural and natural context.
2. Treating the resource with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
 - A. Protecting the cultural character and integrity of the resource.
 - B. Protecting the traditional use of the resource.
 - C. Protecting the confidentiality of the resource.
3. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
4. Protecting the resource.

Significance after Mitigation

Implementation of Mitigation Measure 3.7-3 would reduce impacts to tribal cultural resources because it would require completion of tribal consultation and identification of measures to protect identified resources, if any. CAL FIRE anticipates that through implementation of SPRs, mitigation measures, and completion of the tribal consultation process, all impacts to tribal cultural resources would be reduced to a less-than-significant level. Further, compliance with PRC Section 21080.3.2 and Section 21084.3 would provide an opportunity to avoid or minimize the disturbance of tribal cultural resources, and to appropriately treat any remains that are discovered. Therefore, this impact would **be less than significant**.

Impact 3.7-4: Disturb Human Remains

Based on documentary research, several portions of the program area are considered to be culturally sensitive, and therefore, it is possible that prehistoric or historic-era marked or unmarked human interments are present within the program area. Later treatment activities could uncover previously unknown human remains. Compliance with California Health and Safety Code Sections 7050.5 and 7052 and California Public Resources Code Section 5097 would make this impact **less than significant**.

The potential to uncover human remains within the program area exists in locations throughout the Tahoe Basin and there is a possibility that unmarked, previously unknown Native American or other graves, including those interred outside formal cemeteries, could be present within the program area. As previously described, treatment activities would involve mechanical thinning, manual/hand thinning, prescribed understory burning, pile burning, sale and transport of forest products. Therefore, there is a possibility that unmarked, previously unknown Native American or other graves could be present within the project site and could be uncovered by program-related treatment activities.

California law protects Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The procedures for the treatment of Native American human remains are contained in California Health and Safety Code Sections 7050.5 and 7052 and PRC Section 5097. These statutes require that, if human remains are discovered, potentially damaging ground-disturbing activities in the area of the remains would be halted immediately, and the county coroner would be notified immediately. If the remains

are determined by the coroner to be Native American, NAHC would be notified within 24 hours and the guidelines of the NAHC would be adhered to in the treatment and disposition of the remains. Following the coroner's findings, the archaeologist, the NAHC-designated MLD, and the landowner would determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments, if present, are not disturbed. If the NAHC is unable to identify the MLD, the MLD fails to make a recommendation, or the landowner rejects the MLD's recommendation and mediation by NAHC fails to provide acceptable measures, the landowner would rebury the Native American remains and associated grave goods with appropriate dignity on the property in an area not subject to further disturbance in accordance with State CEQA Guidelines Section 15064.5(e)(2). The responsibilities for acting upon notification of a discovery of Native American human remains are identified in PRC Section 5097.94.

Compliance with California Health and Safety Code Sections 7050.5 and 7052 and California Public Resources Code Section 5097 would provide an opportunity to avoid or minimize the disturbance of human remains, and to appropriately treat any remains that are discovered. Therefore, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

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3.8 ENERGY RESOURCES

This section evaluates energy-related impacts of the proposed program. The analysis considers whether implementation of the program would result in inefficient, wasteful, or unnecessary consumption of energy or if it would obstruct the deployment or use of renewable energy resources. The program would not include the construction or operation of any land use types that would require grid-sourced energy. Treatments conducted under the program would require the use of petroleum fuels to power passenger vehicles, trucks, and heavy-duty equipment, but would not involve the consumption of electricity from the grid.

No public comments related to energy resources were received in response to the Notice of Preparation.

3.8.1 Regulatory Setting

FEDERAL

Energy Policy and Conservation Act, and CAFE Standards

The Energy Policy and Conservation Act of 1975 established nationwide fuel economy standards to conserve oil. Pursuant to this Act, the National Highway Traffic and Safety Administration (NHTSA), part of the U.S. Department of Transportation (DOT), is responsible for revising existing fuel economy standards and establishing new vehicle economy standards.

The Corporate Average Fuel Economy (CAFE) program was established to determine vehicle manufacturer compliance with the government's fuel economy standards. Compliance with the CAFE standards is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the country. The U. S. Environmental Protection Agency (EPA) calculates a CAFE value for each manufacturer based on the city and highway fuel economy test results and vehicle sales. The CAFE values are a weighted harmonic average of the EPA city and highway fuel economy test results. Based on information generated under the CAFE program, DOT is authorized to assess penalties for noncompliance. The Energy Independence and Security Act of 2007 (described below) identifies the current CAFE standards.

Energy Policy Act of 1992 and 2005

The Energy Policy Act of 1992 was passed to reduce the country's dependence on foreign petroleum and improve air quality. The Act includes several parts intended to build an inventory of alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. The Act requires certain federal, state, and local government and private fleets to purchase a percentage of light-duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are also included in the Act. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs. The Energy Policy Act of 2005 does the following: provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act was designed to improve vehicle fuel economy and help reduce U.S. dependence on oil. The act increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022, which represented a nearly five-fold increase; and reduces U.S. demand for oil by originally setting a CAFE standard of 35 miles per gallon (mpg) by 2020—an increase in fuel economy standards of 40 percent. In 2012, the NHTSA amended the CAFE standard to achieve 54.5 mpg by 2025.

By addressing renewable fuels and the CAFE standards, the Energy Independence and Security Act of 2007 builds upon progress made by the Energy Policy Act of 2005 in setting out a comprehensive national energy strategy for the 21st century; however, in August of 2018, the NHTSA and EPA proposed the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks, which, if adopted, would decrease the stringency of CAFE standards. The Proposed Rule would maintain the existing standards until 2020 with a zero percent increase in fuel efficiency until 2026. The Proposed Rule is undergoing public and environmental review and has not been formally adopted (EPA 2019).

STATE

Warren-Alquist Act

The 1974 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the California Energy Commission (CEC). The creation of the act occurred as a response to the State legislature's review of studies projecting an increase in statewide energy demand, which would potentially encourage the development of power plants in environmentally sensitive areas. The Act introduced state policy for siting power plants to reduce potential environmental impacts, and additionally sought to reduce demand for these facilities by directing CEC to develop statewide energy conservation measures to reduce wasteful, inefficient, and unnecessary uses of energy. Conservation measures recommended establishing design standards for energy conservation in buildings that ultimately resulted in the creation of the Title 24 Building Energy Efficiency Standards (California Energy Code), which have been updated regularly and remain in effect today. The Act additionally directed CEC to cooperate with the Office of Planning and Research, the California Natural Resources Agency (CNRA), and other interested parties in ensuring that a discussion of wasteful, inefficient, and unnecessary consumption of energy is included in all environmental impact reports required on local projects.

State of California Energy Action Plan

CEC is responsible for preparing the State Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The current plan is the 2003 California Energy Action Plan (2008 update). The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs; and encouragement of urban design that reduces vehicle miles traveled (VMT) and accommodates pedestrian and bicycle access.

Assembly Bill 2076: Reducing Dependence on Petroleum

Pursuant to Assembly Bill (AB) 2076 (Chapter 936, Statutes of 2000), CEC and the California Air Resources Board (CARB) prepared and adopted a joint agency report in 2003, *Reducing California's Petroleum Dependence*. This report includes recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita VMT (CEC and CARB 2003). Further, in response to CEC's 2003 and 2005 *Integrated Energy Policy Reports*, the Governor directed CEC to develop a long-term plan to increase alternative fuel use. A performance-based goal of AB 2076 was to reduce petroleum demand to 15 percent below 2003 demand by 2030.

Integrated Energy Policy Report

Senate Bill (SB) 1389 (Chapter 568, Statutes of 2002) required CEC to: "conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. CEC shall use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the State's economy, and protect public health and safety" (Public Resources Code Section 25301(a)). This work culminated in the Integrated Energy Policy Report (IEPR).

CEC adopts an IEPR every 2 years and an update every other year. The 2018 IEPR Update is the most recent IEPR document, which was adopted February 20, 2019 (CEC 2018a). The 2018 IEPR Update provides a summary of priority energy issues currently facing the state, outlining strategies and recommendations to further the State's goal of ensuring reliable, affordable, and environmentally responsible energy sources. Energy topics covered in the report include progress toward statewide renewable energy targets and issues facing future renewable development; efforts to increase energy efficiency in existing and new buildings; progress by utilities in achieving energy efficiency targets and potential; improving coordination among the state's energy agencies; streamlining power plant licensing processes; results of preliminary forecasts of electricity, natural gas, and transportation fuel supply and demand; future energy infrastructure needs; the need for research and development efforts to statewide energy policies; and issues facing California's nuclear power plants.

Assembly Bill 1007: State Alternative Fuels Plan

AB 1007 (Chapter 371, Statutes of 2005) required CEC to prepare a state plan to increase the use of alternative fuels in California. CEC prepared the State Alternative Fuels Plan (SAF Plan) in partnership with CARB and in consultation with other state, federal, and local agencies. The SAF Plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes the costs to California and maximizes the economic benefits of in-state production. The SAF Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuel use, reduce greenhouse gas (GHG) emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Executive Order S-06-06

Executive Order S-06-06, signed by the governor on April 25, 2006, establishes targets for the use and production of biofuels and biopower, and directs state agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The Executive Order establishes numerical targets to increase the production and use of bioenergy within California, including ethanol and biodiesel fuels made from renewable resources. These targets entail the in-state production of a minimum of 20 percent of total biofuels consumed within California by 2010, 40 percent by 2020, and 75 percent by 2050. The Executive Order also calls for the state to meet a target for use of biomass-based electricity. The 2011 Bioenergy Action Plan identifies those barriers and recommends actions to address them so that the state can meet its clean energy, waste reduction, and climate protection goals. The 2012 Bioenergy Action Plan updates the 2011 plan and provides a more detailed action plan to achieve the following goals:

- ▶ increase environmentally- and economically-sustainable energy production from organic waste;
- ▶ encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications;
- ▶ create jobs and stimulate economic development, especially in rural regions of the state; and
- ▶ reduce fire danger, improve air and water quality, and reduce waste.

As of 2018, 3.03 percent of the total electricity system power in California was derived from biomass (CEC 2018b). Today there are about 30 biomass plants in California with a total capacity of almost 640 megawatts. These plants typically combust biomass from forest (43 percent), urban wood (29 percent), agricultural or food waste (21 percent), and municipal solid waste (7 percent) sources (CEC 2019a).

Assembly Bill 32, Senate Bill 32, and Climate Change Scoping Plan and Update

California's 2017 Climate Change Scoping Plan (2017 Scoping Plan), prepared by CARB, outlines the main strategies California will implement to achieve the legislated GHG emission target for 2030 (i.e., 40 percent below 1990 levels) and "substantially advance toward our 2050 climate goals" (i.e., 80 percent below 1990 levels) (CARB 2017:1, 3, 5, 20, 25–26). The 2017 Scoping Plan identifies the reductions needed by each GHG emission sector (e.g., transportation, industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste). Many of the regulations contained in the 2017 Scoping Plan such as the Advanced Clean

Cars, Low Carbon Fuel Standard, and Renewable Portfolio Standard will reduce GHGs while simultaneously making the State as whole more energy efficient.

More details about the statewide GHG reduction goals and 2017 Scoping Plan measures are provided in the regulatory setting of Section 3.10, "Greenhouse Gas Emissions and Climate Change."

2030 Natural and Working Lands Climate Change Implementation Plan

In a joint, inter-agency effort, the California Environmental Protection Agency (CalEPA), California Department of Food and Agriculture (CDFA), CNRA, CARB, and California Strategic Growth Council (SGC) released the 2019 Draft California 2030 Natural and Working Lands Climate Change Implementation Plan (Plan) in January 2019. The Plan serves as a multi-disciplinary approach to conserve and maintain a resilient natural and working lands sector to provide the State with a natural carbon sink and improve air and water quality, wildlife habitat, recreation, and other benefits. The Plan sets goals for, at a minimum, increasing the rate of state-funded soil conservation practices by fivefold, doubling the rate of state-funded forest management and restoration efforts, tripling the rate of State-funded oak woodland and riparian reforestation, and doubling the rate of state-funded wetland and seagrass restoration above current practices (CalEPA, CNRA, CDFA, CARB, and SGC 2019).

Health and Safety Code Section 43870

Health and Safety Code (HSC) Section 43870 requires by January 1, 2024 that 10 percent of transportation fuels purchased by state agencies be very low carbon transportation fuels, which includes renewable diesel fuels. HSC Section 43870(b) defines "very low carbon transportation fuel" to mean a liquid or gaseous transportation fuel having no greater than 40 percent of the carbon intensity of the closest comparable petroleum fuel for that year as measured by the methodology in the Low Carbon Fuel Standard Regulation.

Senate Bill 100: California Renewables Portfolio Standard Program

SB 100 accelerated targets set by previously-enacted Renewable Portfolio Standard (RPS)-related legislation to require that all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, supply 44 percent of retail sales from renewable resources by December 31, 2024, 50 percent by December 31, 2026, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. The law requires that eligible renewable energy resources and zero-carbon resources supply 100 percent of retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Biomass is indicated as an eligible renewable energy source under the state's RPS guidelines.

2016 Mobile Source Strategy

In 2016, CARB released the updated Mobile Source Strategy, which addresses exhaust emissions from on-road light-duty and heavy-duty vehicles, off-road federal and international sources (i.e., aircraft, locomotives, and ocean-going vessels), and off-road equipment. The strategy demonstrates how the state can simultaneously meet air quality standards, achieve GHG emission targets, decrease health risk from transportation-related emissions, and reduce petroleum consumption over the next 15 years. The strategy identifies the mobile-source reductions necessary to reduce transportation-related petroleum use by up to 50 percent statewide by 2030.

Short-Lived Climate Pollutant Strategy

Short-lived climate pollutants (SLCPs) are powerful GHGs that remain in the atmosphere for a much shorter period of time than longer-lived pollutants such as carbon dioxide. They include methane, fluorinated gases, and black carbon (particulates). Their potency, as compared to carbon dioxide, can be tens, hundreds, and thousands of times greater. Senate Bill 605 (SB 605) of 2014 directed CARB to develop a comprehensive SLCP strategy. In coordination with other state agencies and local air districts, CARB adopted the SLCP Strategy in March 2017. The strategy identified the use of anaerobic digesters to convert organic waste such as mulch or wood chips to renewable electricity, biogas, clean transportation fuels, and others.

3.8.2 Environmental Setting

ENERGY CONSUMPTION FOR TRANSPORTATION

Gasoline and diesel fuel constitute 83 and 17 percent of petroleum-based fuels sold in California, respectively. According to the State Board of Equalization, 15.6 billion gallons of gasoline and 3.1 billion gallons of diesel were sold in 2017 (CEC 2019b). Passenger cars and light-duty trucks operated by CAL FIRE in 2016 consumed 1.59 million gallons of gasoline and 1.63 million gallons of petroleum-based diesel fuel. This segment of the agency's vehicle fleet additionally consumed 148,573 gallons of renewable diesel fuel in response to goals established in the state's Green Fleet alternative fuels program (DGS 2019).

Fuel Types

Petroleum

Gasoline and diesel fuel sold in California to power motor vehicles and equipment is refined in California to meet specific formulations required by CARB.

Alternative Fuels

A variety of alternative fuels are used to reduce demand for petroleum-based fuel. The use of these fuels is encouraged through various statewide regulations and plans, including the Low Carbon Fuel Standard and 2017 Scoping Plan. Conventional gasoline and diesel can be replaced (depending on the capability of the vehicle) with many transportation fuels, including:

- ▶ biodiesel,
- ▶ electricity,
- ▶ ethanol (E-10 and E-85),
- ▶ hydrogen,
- ▶ natural gas (methane in the form of compressed and liquefied natural gas),
- ▶ propane,
- ▶ renewable diesel (including biomass-to-liquid),
- ▶ synthetic fuels, and
- ▶ gas-to-liquid and coal-to-liquid fuels.

California has a growing number of alternative fuel vehicles due to the joint efforts of CEC, CARB, local air districts, federal government, transit agencies, utilities, and other public and private entities. As of March 2019, California contained over 20,000 alternative fueling stations (Alternative Fuels Data Center 2019).

Vehicle Miles Traveled and Gasoline Consumption

According to Caltrans, total gasoline purchased in 2015 totaled 6.5 million gallons (Caltrans 2018). Fuel consumption per capita in California decreased by nearly 11 percent from 2008 to 2011 (Bureau of Transportation Statistics 2015). Despite the progress in reducing per capita VMT and per capita fuel consumption, the continued projected increases in total fuel consumption and VMT can be attributed to the overall increase in population.

ENERGY CONSUMPTION FOR CURRENT VEGETATION TREATMENTS AND WILDFIRE

Ongoing forest treatments currently occur within the 17,490-acre program area at an average rate of 503 acres per year. Energy is consumed during these fuel reduction activities when gasoline and diesel fuel are combusted during operation of vehicles and equipment (e.g., chainsaws and masticators). As described in Chapter 2, "Program

Description,” forest management treatment currently occurs around the State under several other wildfire risk reduction programs implemented by various federal, state, and local agencies. In 2017–2018, CAL FIRE treated approximately 33,000 acres in California using the same treatment activities as proposed under the program.

Wildfires can occur throughout the state and require emergency response in the form of personnel and equipment. In cases where a wildfire exceeds the capacity of a local CAL FIRE unit, emergency resources may be diverted to a wildfire from elsewhere in the state requiring the consumption of fuels to transport personnel and equipment. At the peak of the Carr Fire in 2018, for instance, as many as 4,766 personnel worked to contain the 229,651-acre fire that ravaged forested areas in Shasta and Trinity Counties, including 50 firefighters dispatched from Australia and New Zealand. During the peak of the Camp Fire in 2018, which burned 153,336 acres in Butte County, nearly 6,000 firefighters, 622 engines, 75 water tenders, 103 bulldozers, and 24 helicopters from all over the Western United States were deployed. More recently, in late 2019 the Kincaid Fire burned more than 77,758 acres in the Mayacmas Mountains of Sonoma County, requiring more than 1,400 personnel to contain, and the Walker Fire burned 54,612 acres of the Plumas National Forest, requiring at least 468 firefighters to contain (InciWeb 2019). Although these catastrophic fires are atypical, emergency response to more “typical” wildfires also results in deployment of substantial human and equipment resources from distant locations. During catastrophic wildfire events, the main goal is containment and reducing impacts to human life and property. Efficient use of energy and fuels is not prioritized, and energy resources are consumed to reach that goal. Energy is also consumed to evacuate residents, suppress the fire, and transport personnel and equipment.

Additionally, wildfires can damage or destroy electrical transmission and distribution facilities and infrastructure. In some cases, when meteorological conditions are conducive to supporting wildfire, utilities may opt to cut electricity to consumers within their service areas as a preventative measure against ignition of wildfires.

3.8.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The analysis of environmental impacts associated with energy consumption focuses on the potential to result in the wasteful, inefficient, or unnecessary consumption of energy or conflict with or obstruct a state or local plan for energy efficiency. As discussed in Section 3.8.1, “Regulatory Setting,” the Warren-Alquist Act of 1974 directed the CEC to develop statewide energy conservation measures to minimize environmental impacts caused by “...growth in demand which is caused by wasteful, uneconomic, inefficient, and unnecessary uses of power” (Priolo 1973). Reducing the growth in energy demand under this legislation was intended to limit the proliferation of power plants in environmentally sensitive areas of the state. The act required the establishment of parameters for the siting of power plants. This language from the act is represented in Appendix G of the State CEQA Guidelines and applies primarily to environmental impacts related to energy demand requiring increased generation capacity and appurtenant transmission infrastructure.

The analysis herein discusses energy consumption under the program qualitatively in consideration of whether such consumption would be wasteful, uneconomic, inefficient, or unnecessary, consistent with the intentions of the Warren-Alquist Act.

THRESHOLDS OF SIGNIFICANCE

Thresholds of significance are based on Appendix G of the 2019 State CEQA Guidelines. An impact on energy resources would be significant if a treatment implemented under the program would:

- ▶ result in the wasteful, inefficient, or unnecessary consumption of energy resources; or
- ▶ conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

IMPACTS AND MITIGATION MEASURES

Impact 3.8-1: Potential to Result in Wasteful, Inefficient, or Unnecessary Consumption of Energy

Under the program, diesel would be consumed by the off-road equipment used in treatment activities, heavy trucks hauling equipment to and from the site, logging trucks hauling timber to sawmills, and chip vans hauling woody biomass to biomass power facilities. Gasoline would be consumed by passenger vehicles used to transport workers and for worker commute trips. However, because implementation of the treatments under the proposed program would decrease the intensity of wildfires, the treatment activities would also reduce the level of energy consumption associated with fire response activity. Impacts related to consumption of energy resources would be **less than significant**.

Diesel and other petroleum-based fuels would be consumed to operate heavy-duty equipment used in treatment activities. Diesel would also be consumed by trucks hauling merchantable timber to sawmills and chipped woody biomass to biomass power facilities. Gasoline would be consumed by on-road vehicles used by workers to commute to and from treatment sites. Additionally, diesel fuel would also be used to power heavy-duty equipment (e.g., bulldozers), other mechanical treatment equipment (e.g., masticators, chainsaws), and water trucks. Manual treatments would require the use of hand-operated power tools which typically run on blended two-cycle engine fuel (i.e., gasoline and oil mixed together). In limited cases, jet fuel could be required to operate helicopters, if used in any treatment activity.

Estimated quantities of diesel and gasoline consumption from vehicles and equipment are summarized in Table 3.8-1. In addition to the fuel consumption shown in Table 3.8-1, fuel would also be consumed as an accelerant to ignite pile burns and understory burns.

Table 3.8-1 Annual Energy Consumption by Treatment Type Annual Fuel Consumption (Gallons/Year)

Treatment Type	Diesel	Gasoline	Total
Mechanical	49,000	520	49,520
Manual	59,500	6,500	66,000
Understory Burn	2.4	256	258
Pile Burn	5	500	505
Annual Total	108,507	7,776	116,283

Source: Calculations by Ascent Environmental in 2019

Under existing conditions, vegetation treatments are implemented within the program area by the Tahoe Fire and Fuels Team (TFFT), CAL FIRE, and other land management agencies and agencies with land ownership responsibilities. Under the proposed program, treatment activities would occur within a 17,490-acre program area, and include an annual increase in treatment area from 503 to 1,250 acres per year. With this increase in treatment acreage, total fuel consumption related to vegetation treatments would increase in comparison to existing conditions.

A primary objective of the program is to reduce wildfire risk. Land management practices focusing on fire suppression combined with changing meteorological conditions because of climate change (e.g., higher temperatures, drought conditions, increased wind force) have contributed to increased risk of wildfires throughout the Tahoe region. Higher temperatures in particular have extended the fire season in the Tahoe region.

While treatment activities conducted under the program would be energy intensive, so are response efforts to manage and fight wildfires. Wildfires require an immediate response from emergency personnel and mobilization of equipment. During wildfires that exceed the containment capacity of local resources, personnel from throughout the state (and occasionally nationally and internationally) can be dispatched to assist in firefighting. Refer to discussion under the heading, "Energy Consumption for Current Vegetation Treatments and Wildfire," in Section 3.8.2 for examples. Efficient energy consumption is not a primary consideration during wildfires. Rather, protecting human life and property is prioritized.

Additionally, containment and cleanup of wildfires require a joint effort by local, State, and federal agencies. CalEPA and its departments assist local, state, and federal agencies during and after major wildfires. CARB provides emergency air monitoring, the California Department of Toxic Substances Control identifies and removes hazardous materials following containment, and the California Department of Resources Recycling and Recovery removes ash.

This movement of personnel results in a surge in the consumption of fossil fuels associated with vehicle and aerial travel, as well as an increase in grid-sourced electricity and propane and natural gas consumption associated with lodging personnel. Implementation of treatment activities under the program would not ensure that catastrophic fires would no longer occur. This is due to many unforeseen factors, including future climate conditions, availability of resources, and poor decisions made by humans resulting in ignitions. Nonetheless, implementation of the proposed program would reduce wildfire risk and the comparatively inefficient fossil fuel consumption associated with the emergency response to such events would also be reduced.

As described above, a project that could introduce substantial energy demand such that additional energy-related infrastructure and facilities (e.g., power plant) would need to be built and would result in physical environmental effects, would be considered a significant energy-related impact. Energy consumption under the proposed program would mostly consist of the combustion of fuels to implement vegetation treatment activities. Therefore, the program would not generate energy demand from the electrical grid to warrant the construction or operation of additional energy infrastructure that could result in physical environmental effects.

The existing conditions within the treatable landscape currently support landscapes conducive to largescale, highly damaging wildfire which, while active, require immediate and inefficient energy consumption to support response efforts. By reducing wildfire risk, the inefficient allocation of energy resources during catastrophic wildfire events could also be reduced.

For the reasons described above, energy consumption under the program would not be considered wasteful, inefficient, or unnecessary. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.8-2: Conflict with or Obstruct a State or Local Plan for Renewable Energy or Energy Efficiency

Forest treatments implemented under the program would result in the availability of woody organic materials that could be used as fuel in the production of renewable electricity at biomass power generation facilities. This would support the goal of increasing the use of biomass-based electricity, as advocated by Executive Order S-06-06, the Bioenergy Action Plan, the Renewables Portfolio Standard Program, and the Short-Lived Climate Pollutant Strategy. In addition, treatments would help prevent wildfires that could otherwise be disruptive to power transmission throughout the state, thereby supporting the state's goal of ensuring reliable, affordable, and environmentally responsible energy sources, as advocated by the Integrated Energy Policy Report. For these reasons, implementation of the program would not conflict with or obstruct any state or local plans for renewable energy or energy efficiency. This impact would be **less than significant**.

Some of the woody biomass material produced during forest treatments under the proposed program would be converted into renewable electricity, as has been proposed and is currently being implemented under the California Air Resources Board's Short-lived Climate Pollutants (SLCP) strategy. Using woody remnants resulting from treatment activities as fuel for power generation would help California meet its Renewable Portfolio Standard (RPS) targets and is consistent with the State Alternative Fuels Plan. California's RPS guidelines were recently updated to require statewide zero-carbon electricity projection by 2045, which would require a diverse mix of renewable energy generation sources. Woody biomass, such as that resulting from forest treatments, is indicated as an eligible renewable energy source under the RPS. Using woody biomass to generate electricity would be consistent with goals outlined in Executive Order S-06-06 and the Bioenergy Action Plan. Preventive treatments implemented under the program would also help reduce wildfire risk that could disrupt the operation of transmission lines and other energy infrastructure, thereby supporting the state's goal of ensuring reliable, affordable, and environmentally responsible energy sources, as advocated by the Integrated Energy Policy Report. For these reasons, implementation of the program would not conflict with or obstruct any state or local plans for renewable energy or energy efficiency. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

3.9 GEOLOGY, SOILS, AND LAND CAPABILITY

This section describes current conditions relative to geology, soils, and land capability within the program area. It includes a description of geology, soils, and land capability of the program area, analysis of environmental impacts, and recommendations for mitigation measures for any potentially significant impacts. Regulatory requirements that pertain to geology, soils, and land capability are summarized in this section. The analysis describes potential direct, indirect, and cumulative impacts from implementation of the proposed program.

Three comments were received on the Notice of Preparation that pertain to geology, soils, and land capability and include the following topics:

- ▶ All protection and mitigation measures needed to protect sensitive meadow and riparian habitat while conducting restoration and fuels reduction efforts should be included in the Tahoe PTEIR.
- ▶ Best Management Practices (BMPs) for managing, maintaining, and decommissioning access roads to minimize erosion risk and stabilize all slopes and surfaces impacted by treatment activities should be incorporated into the Tahoe PTEIR.
- ▶ The potential for increased generation of fine sediments through erosion, runoff, and dust (leading to atmospheric deposition) should be addressed in the Tahoe PTEIR.

Section 15128 of the State CEQA Guidelines allows an EIR to identify environmental effects that were determined to not be significant and to briefly describe the reasons. The following issues were considered and dismissed from further analysis for the reasons stated.

- ▶ The only expansive soil mapped in the program area is the Kings Beach silty sandy loam located in the northern part of the program area. Because projects under the PTEIR would not impact infrastructure, there would be no impact on expansive soils and issues related to locating activities on expansive soil, potentially creating substantial risks to property are not discussed further.
- ▶ Treatment activities under the PTEIR may disturb the very upper portions of the soil, typically shallower than the depth of paleontological resources (which are typically in bedrock). Because only the upper part of the soil has the potential to be disturbed by later treatment activities, there would be no effects on any unique paleontological resources or geologic features. Thus, issues related to direct or indirect destruction of a unique paleontological resource or site or unique geological feature are not discussed further.
- ▶ Treatment activities under the PTEIR would not involve excavation or movement of earth and would therefore have no effect on topography or ground surface relief. For this reason, issues related to causing a change in topography or ground surface relief features inconsistent with the natural surroundings is not discussed further.
- ▶ Treatment activities under the PTEIR would not create, modify, or affect structures or other infrastructure and would not affect faults or be affected by seismic risk. Thus, effects resulting from activities that could directly or indirectly cause potential substantial adverse impacts, including the risk of loss, injury, or death through the rupture of a known earthquake fault, strong seismic shaking, seismic-related ground failure, or soil liquefaction are not discussed further.
- ▶ Treatment activities under the PTEIR would not alter soils in any way that could affect their adequacy to support the use of septic tanks or other water disposal systems. For this reason, effects resulting from activities where soils are incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater are not discussed further.

3.9.1 Regulatory Setting

FEDERAL

Paleontological Resources Preservation Act (16 U.S.C. Section 470aaa)

Enacted as part of the Omnibus Public Land Management Act (2009), the Paleontological Resources Preservation Act (PRPA) requires the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on federal land using scientific principles and expertise. The PRPA includes specific provisions addressing management of these resources by the Bureau of Land Management, the National Park Service, the Bureau of Reclamation, the U.S. Fish and Wildlife Service, and the U.S. Forest Service of the Department of Agriculture. The PRPA affirms the authority for many of the policies the federal land managing agencies already have in place for the management of paleontological resources, such as issuing permits for collecting paleontological resources, curation of paleontological resources, and confidentiality of locality data.

Clean Water Act (33 USC Section 1251 Et Seq.)

The Federal Water Pollution Control Act of 1948 was the first major U.S. law to address water pollution. Growing public awareness and concern for controlling water pollution led to sweeping amendments in 1972. As amended in 1972, the law became commonly known as the Clean Water Act (CWA). The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including wetlands. The CWA provides standard regulations for the discharge of pollutants to the waters of the United States (U.S.) to maintain their chemical, physical, and biological integrity and protect their beneficial uses. In addition, the CWA provides the statutory basis for the National Pollutant Discharge Elimination System (NPDES). The CWA requires states to adopt water quality standards that must be approved by the U.S. Environmental Protection Agency (EPA) and requires NPDES permits for the discharge of pollutants in U.S. waters. In addition, the CWA gives authority to the EPA to (1) implement pollution control programs, including setting waste water standards and effluent limits on an industry-wide basis; and (2) authorize the NPDES Permit Program permitting, administration, and enforcement to state governments with oversight by the EPA.

Federal Antidegradation Policy (Code of Federal Regulations - Title 40: Protection of Environment 40 CFR 131.12)

The Federal Antidegradation Policy was issued in 1968 by the U.S. Department of the Interior to (1) ensure that activities will not lower the water quality of existing use, and (2) restore and maintain "high quality water." The federal policy maintains that states shall adopt a statewide antidegradation policy that includes the following conditions:

- ▶ Existing instream water uses and a level of water quality necessary to maintain those uses shall be maintained and protected.
- ▶ Water quality will be maintained and protected in waters that exceed water quality levels necessary for supporting fish, wildlife, and recreational activities, and water quality, unless the State deems that water quality levels can be lowered to accommodate important economic or social development. In these cases, water quality levels can only be lowered to levels that support all existing uses.
- ▶ Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

TAHOE REGIONAL PLANNING AGENCY

TRPA was designated as an areawide planning agency under Section 208 of the CWA in 1974. Under the Tahoe Regional Planning Compact, TRPA has established environmental threshold standards, goals and policies, and ordinances directed at protecting and improving land coverage and soils in Lake Tahoe and the Tahoe region.

Tahoe Regional Plan

Goals and policies

Goals and policies of the Regional Plan that are related to soil erosion and land coverage are located in the Conservation Element. Goals and policies for water quality are located in the Land Use Element. Relevant excerpts are included below.

GOAL S-1: Minimize soil erosion and the loss of soil productivity.

- ▶ **Policy S-1.1:** Allowable impervious land coverage shall be consistent with the Threshold Standard for impervious land coverage.
- ▶ **Policy S-1.6:** Maintain seasonal limitations on ground disturbing activities during the wet season (October 15 to May 1) and identify limited exceptions for activities that are necessary to preserve public health and safety or for erosion control.

GOAL SEZ-1: Provide for the long-term preservation and restoration of stream environment zones (SEZs).

- ▶ **Policy SEZ-1.1:** Restore all disturbed stream environment zone lands in undeveloped, unsubdivided lands, and restore 25 percent of the SEZ lands that have been disturbed, developed, or subdivided.
- ▶ **Policy SEZ-1.2:** SEZ lands shall be protected and managed for their natural values.
- ▶ **Policy SEZ-1.5:** No new land coverage or other permanent land disturbance shall be permitted in stream environment zones with some exceptions described in the regional plan.
- ▶ **Policy SEZ-1.6:** Replacement of existing coverage in stream environment zones may be permitted where the project will reduce impacts on stream environment zones and will not impede restoration efforts.

GOAL WQ-2: Reduce or eliminate point sources of pollutants which affect, or potentially affect, water quality in the Tahoe region.

- ▶ **Policy WQ-3.1:** Reduce loads of sediment, nitrogen, and phosphorus to Lake Tahoe; and meet water quality thresholds for tributary streams, surface runoff, and groundwater.

Thresholds

Through adoption of Resolution 82-11, TRPA has established threshold standards and indicators for nine resource areas including soil conservation. TRPA threshold standards are minimum standards of environmental quality to be achieved in the Tahoe Region. Every 4 years, TRPA evaluates the attainment status of all TRPA threshold standards. The latest TRPA Threshold evaluation was completed in 2015. There are two TRPA threshold indicator reporting categories related to soil conservation which direct development towards less sensitive lands and establish restoration goals to reverse impacts of existing development in SEZs: Land Coverage and SEZs.

Land Coverage

Impervious cover (or land coverage) is an indicator of land disturbance. Impervious coverage alters surface hydrology and modifies groundwater recharge regimes. There are two types of coverage defined by TRPA: hard and soft coverage which are distinguished by their degree of imperviousness. Hard coverage is completely impervious to infiltration of water into the soil (e.g., roofs, asphalt pavement, concrete sidewalks, etc.). Soft coverage is defined as disturbed or degraded soils not covered by a structure or paved surface that have water infiltration rates that are up to 75 percent of their natural value. Examples of soft coverage include soil compacted by vehicles, unpaved roads, dirt walking trails, and unpaved dirt driveways. The TRPA impervious cover threshold is guided by the Land-Capability classification system for the Lake Tahoe Basin, California-Nevada (Bailey 1974). Land capability districts (LCDs) are defined based on their Bailey classification, which is a function of soil type, erosional hazard, soil drainage, position in the landscape, and other features. The nine separate LCDs reflect the amount of development an area can support without soil or water quality degradation. Under this system, TRPA allows landowners to cover 1, 5, 20, 25, or 30 percent of their parcel with impervious surfaces, depending on its environmental sensitivity as defined by the Bailey classification system (Table 3.9-1).

Table 3.9-1 Description, Allowable Cover, and Status of Bailey Land Capability Districts

Land Capability District	Description	Allowable Cover	Status
1a	steep uplands (> 30%, very shallow soil)	1%	Considerably better than target
1b	streams, marshes, floodplains, meadows	1%	Considerably worse than target
1c	Mountainous uplands, no soil	1%	At or somewhat better than target
2	soil mantled (slope > 30%)	1%	Somewhat worse than target
3	low elevation moderately steep slopes (9-30%)	5%	Considerably better than target
4	moderately steep mountain slopes	20%	Considerably better than target
5	flat areas around Lake Tahoe	25%	Considerably better than target
6	gently sloping north side of Lake Tahoe	30%	Considerably better than target
7	dense forest, little erosion potential	30%	At or somewhat better than target

Note: Land Capability District and Bailey Land Capability Class are identical.

Source: TRPA 2012

For the 2015 Threshold Evaluation, estimates of impervious coverage were produced by land capability type using high-resolution Light Detection and Ranging (LiDAR) data compared with the TRPA land capability map.

Stream Environment Zones

Hydrology, soil, and water-associated vegetation define SEZ areas. SEZs only constitute a small portion of the total land area in the Lake Tahoe Region but perform many ecosystem services such as nutrient cycling and sediment retention, flood attenuation, infiltration and groundwater recharge, open space, scenic and recreational enjoyment, wildlife habitat, and wildfire abatement (Roby et al. 2015). The SEZ threshold includes preserving existing functioning SEZ lands in their natural hydrologic condition and restoring 25 percent of the SEZ lands that have been identified as disturbed, developed, or subdivided, to attain a five percent total increase in naturally functioning SEZ lands.

Code of Ordinances

Requirements listed in the TRPA Code of Ordinances (TRPA Code) that relate to soil conservation are described in Table 3.9-2.

Table 3.9-2 TRPA Code Requirements Related to Geology and Soils

Code Section	Requirements
Chapter 61.1.1.6D	Establishes minimum standards for tree cutting including yarding practices to reduce soil erosion.
Chapter 61.1.1.6E	Describes removal methods based on LCDs to limit soil erosion.
Chapter 61.1.1.6F	Describe skidding processes to limit soil erosion.
Chapter 61.1.1.6I	Describes erosion control measures associated with forest management.
Chapter 60.4	Sets standards for installation of BMPs for the protection or restoration of water quality.

Source: TRPA 2012

STATE

Alquist-Priolo Earthquake Fault Zoning Act (Cal. Public Res. Code, Section 2621 et seq.)

This act provides policies and criteria to assist cities, counties, and state agencies in the exercise of their responsibilities to prohibit the location of developments and structures for human occupancy across the trace of active faults. The act also requires site-specific studies by licensed professionals for some types of proposed construction within delineated earthquake fault zones.

California Department of Fish and Wildlife

Fish and Game Code Section 1602 requires an entity to notify the California Department of Fish and Wildlife (CDFW) before commencing any activity that may: substantially divert or obstruct the natural flow of any river, stream, or lake; substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or deposit debris, waste, or other materials that could pass into any river, stream, or lake. CDFW requires a Lake and Streambed Alteration Agreement when it determines that the activity may substantially adversely affect existing fish or wildlife resources. A Lake and Streambed Alteration Agreement includes measures necessary to protect existing fish and wildlife resources. The primary focus is the protection of fish habitat from suspended sediments, turbidity, and alteration of the lakebed or streambed.

California Geological Survey

The California Geological Survey's Forest and Watershed Geology Program provides technical information and advice about landslides, slope stability, erosion, sedimentation, and other geological hazards across the state's watershed and parkland areas. CAL FIRE and other entities use these data to evaluate soil conditions and geologic hazards. The California Geological Survey Forest and Watershed Geology Program may perform vital geological reviews of Timber Harvesting Plans pursuant to the California Forest Practice Rules (CFPR) (e.g., 14 CCR Sections 1037.3 and 1037.5), along with CAL FIRE, Department of Fish and Wildlife, and Regional Water Quality Control Boards.

Lahontan Regional Water Quality Control Board

The Lahontan Regional Water Quality Control Board (Lahontan RWQCB) is a regulatory agency with the mission to preserve, enhance, and restore the quality of California's water resources and drinking water. The Clean Water Act Section 401 program regulates discharges of fill and dredged material to all waters of the state, including waters of the U.S. under the Clean Water Act of Section 401 and the Porter-Cologne Water Quality Control Act. Lahontan RWQCB sometimes serves as the lead agency for CEQA compliance.

Porter-Cologne Water Quality Act (Cal. Water Code Div. 7)

The Porter-Cologne Water Quality Act is a key element of California water quality control legislation. Under the act, the State Water Resources Control Board (SWRCB) is given authority over state water rights and water quality policy and it established the State's nine regional water quality control boards (RWQCBs) to regulate and oversee regional and local water quality issues. The RWQCB is also responsible for developing and updating Basin Plans targeted toward (1) protecting waters designated with beneficial uses, (2) establishing water quality objectives for surface water and groundwater, and (3) determining actions necessary to maintain water quality standards and control point- and nonpoint-sources of pollution into the state's waters. Under the Act, proposed waste dischargers are required to file Reports of Waste Discharge to the RWQCB and the SWRCB and RWQCB are granted jurisdiction over the issuance and enforcement of Waste Discharge Requirements, NPDES permits, and Section 401 water quality certifications.

California State Antidegradation Policy (SWRCB Resolution No. 68-16, "Policy with Respect to Maintaining higher quality waters in California")

In 1968, the State of California adopted an antidegradation policy in response to directives under the Federal Antidegradation Policy. The antidegradation policy applies to high quality waters of the state, including surface waters and groundwater, and all existing and potential uses. The policy requires that high quality waters be maintained to the maximum extent possible and any proposed activities that can adversely affect high quality surface water and groundwater must (1) be consistent with the maximum benefit to the people of the State, (2) not unreasonably affect present and anticipated beneficial use of the water, and (3) not result in water quality less than that prescribed in water quality plans and policies.

Z'berg-Nejedly Forest Practice Act

The Z'berg-Nejedly Forest Practice Act (Forest Practice Act) identifies operating methods and procedures that seek to protect fish, wildlife, forests, and streams within timber harvesting areas where later fuel treatments may also be implemented under the proposed program. The Forest Practice Act is intended to achieve "maximum sustained production of high-quality timber products...while giving consideration to values relating to recreation, watershed,

wildlife, range and forage, fisheries, regional economic vitality, employment and aesthetic enjoyment” (PRC Section 4513[b]). The regulations created by the Board of Forestry and Fire Protection and authorized by the Forest Practice Act define factors such as the size and location of harvest areas, include measures to prevent unreasonable damage to residual trees, and address the protection of riparian areas, watercourses and lakes, wildlife, and habitat areas (14 CCR Chapter 4) (see Appendix B).

3.9.2 Environmental Setting

The Lake Tahoe Basin is located between the Sierra Nevada Range to the west and the Carson Range to the east. The Basin was created by a series of parallel normal fault blocks between these two ranges (Saucedo et al. 2005). The geology of the Basin consists of granodiorites which underlie most of the Basin (intrusives on Figure 3.9-1), volcanic rocks in the northwest portion of the Basin (volcanics), glacial deposits along glaciated valleys that feed Lake Tahoe (till), metamorphic rocks in the higher peaks in the southwest portion of the Basin (metamorphic), and glacial outwash and alluvium, which is particularly common in the southern portion of the Basin (Saucedo et al. 2005).

The largest fault in the Tahoe Basin is the Tahoe-Sierra frontal fault zone which extends from Echo Lakes to northwest of Truckee. The West Tahoe-Dollar Point Fault zone extends under the lake from Emerald Bay north to near Truckee and the North Tahoe-Incline Village Fault Zone is located in the northeast portion of the Basin and extends under the lake near the Nevada border (Schweickert et al. 2019). Earthquakes on these faults have led to several large landslides visible on the bed of Lake Tahoe (Schweickert et al. 2019).

Lake Tahoe began to form about 2 million years ago following the eruption of Mt. Pluto, which dammed the outlet of the lake several times and allowed the lake to fill. During the Pleistocene epoch, the Tahoe region was altered by glacial activity, and many of the landforms including lateral and terminal moraines that surround the lake were deposited. During glacial activities, valley glaciers dammed the Truckee River Canyon, raising the water level of Lake Tahoe. Lakebed sediments were deposited in the bays and canyons around the lake as a result of the rising lake levels.

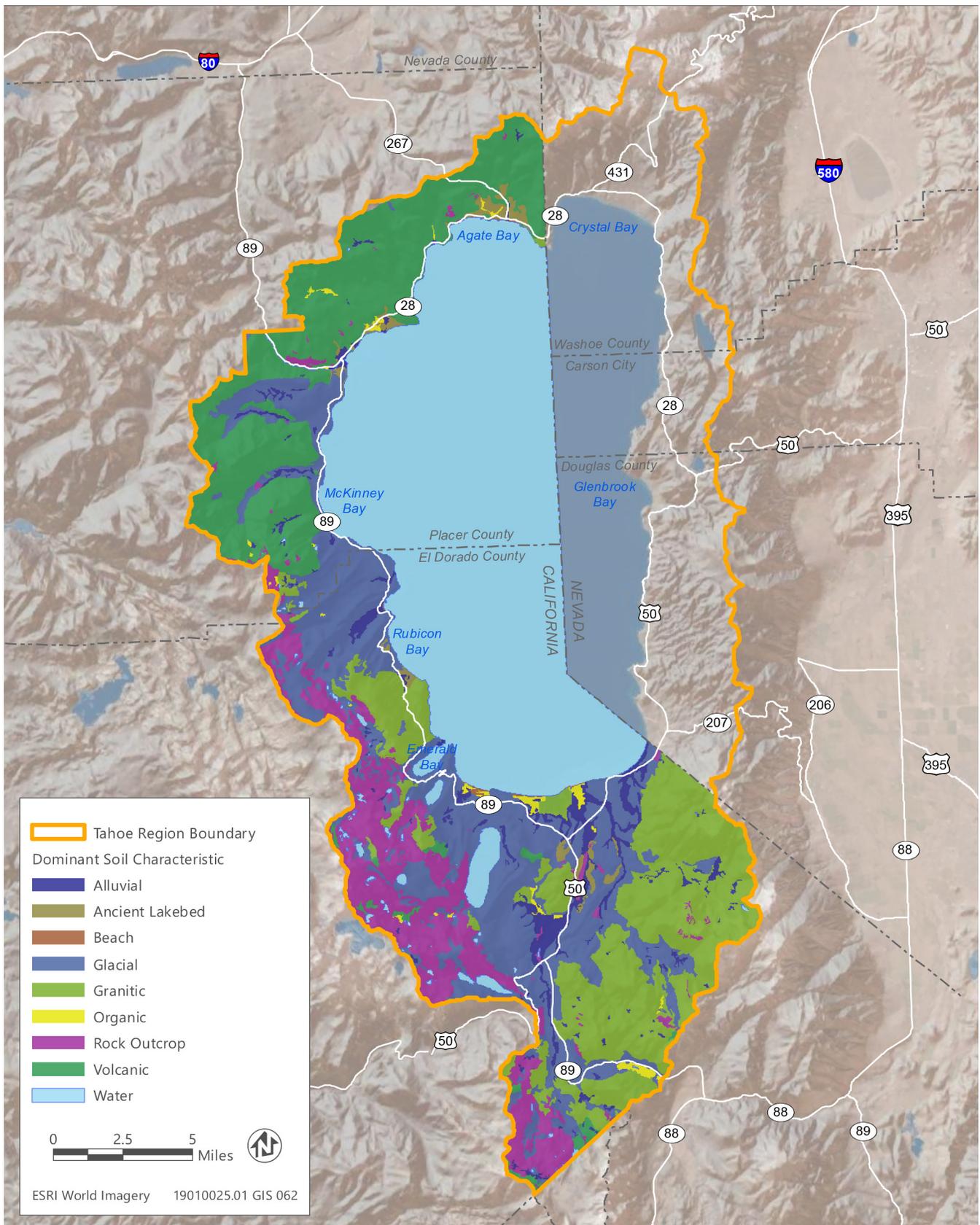
Relative to the Tahoe Basin as a whole, the Community Fuel Reduction Areas and planned CWPP Projects are more likely to be underlain by alluvium and less likely to be underlain by intrusive rocks (Table 3.9-3). This is because of the prevalence of program area lands in lower elevations, flatter areas of the Basin, particularly near South Lake Tahoe and the lower elevation portion of drainage basins. In addition, the California side of the Basin consists of more volcanic rocks and glacial till than the Nevada side of the Basin, which is more likely to consist of intrusive rocks. The proportion of glacial till in the Community Fuel Reduction Areas is greater than the proportion of glacial till in the Basin as a whole, in part because of projects on the dense forests that line moraines along Cascade Lake and near Homewood.

Table 3.9-3 Distribution of Geologic Types in the Program Area and Lake Tahoe Basin

Geology	Community Fuel Reduction Areas acres	Community Fuel Reduction Areas percent	Planned CWPP Projects acres	Planned CWPP Projects percent	Total Area in Lake Tahoe Basin acres	Total Area in Lake Tahoe Basin percent
Alluvium	2,295	39.3	3,305	28.6	20,322	13.0
Metamorphic rocks	19	0.3	245	2.1	5,361	3.4
Older alluvium	-	0.0	106	0.9	4,869	3.1
Glacial outwash	182	3.1	135	1.2	3,822	2.4
Glacial till	1,913	32.8	2,568	22.2	32,108	20.5
Construction fill	16	0.3	41	0.4	461	0.3
Intrusive igneous rocks	616	10.6	850	7.3	60,931	38.9
Volcanic rocks	792	13.6	4,318	37.3	28,904	18.4
Total	5,834	100	11,569	100	156,779	100

Note: Older alluvium includes Miocene landslide deposits.

Source: Plume et al. 2009



Source: Data downloaded from NRCS in 2018

Figure 3.9-1 Distribution of Soils in the California Portion of the Lake Tahoe Basin

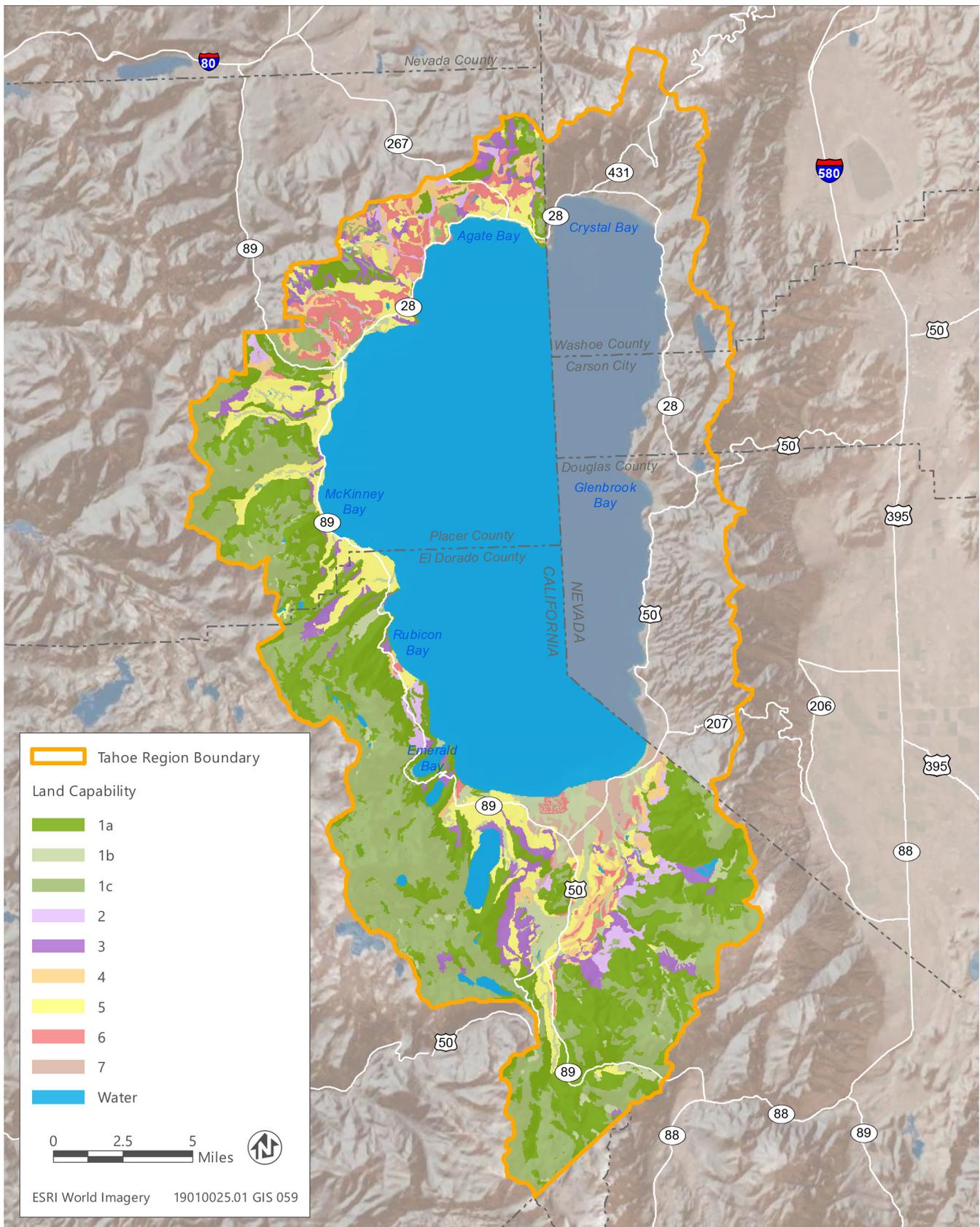
SOILS

NRCS Soil Survey of the Lake Tahoe Basin (USDA NRCS 2007) describes many soil map units in the Basin. Soils can be differentiated using characteristics such as parent material, landscape position, texture, structure, organic matter content, depth to bed rock, depth to groundwater, and hydrologic function. In the Basin, soils from similar parent materials found in similar landscape positions will have many qualities in common. For this analysis, soils have been grouped by origin. There is limited soil development in large areas of the Lake Tahoe Basin because of glacial removal of the soils and extensive bedrock outcrops. The major soil types found in the Basin are described below and their locations are shown in Figure 3.9-1:

- ▶ **Volcanic Soils:** Volcanic soils occur in the northwest portion of the Basin where volcanic rocks make up the surficial geology.
- ▶ **Granitic Soils:** Granitic soils formed over granitic bedrock which makes up the areas not scoured by glaciers in the southwest portion of the program area.
- ▶ **Glaciated Soils:** These soils are located in the downstream portion of the glaciated valleys along the west shore of Lake Tahoe in lateral and terminal moraines. These soils have a wide grain size distribution with fine material, gravels, cobbles, and boulders.
- ▶ **Alluvial Soils:** The alluvial soils in the program area are deposited in floodplains in low-relief valleys. The surface of these soils can be fine-grained as the sediments resulted from overbank deposition of fine materials during floods. Many sensitive ecosystems such as wetlands, meadows, and riparian areas are associated with alluvial soils.
- ▶ **Organic Soils:** Organic soils are commonly alluvial soils that developed in an area where a persistently high water table allows the accumulation of organic matter. These highly sensitive soils are found in the wettest areas of meadows and stream margins, particularly in the downstream end of the Upper Truckee River floodplain.
- ▶ **Beach Soils:** Beaches are characterized by well-drained, homogenous, gravelly coarse sand in places along the shorezone of Lake Tahoe.

LAND CLASSIFICATION

Since the late 1970s, TRPA has used a land capability classification system based on the ability of areas of soil to tolerate use without resulting in environmental damage (Bailey 1974). These Land Capability Districts (LCDs) in the California portion around Lake Tahoe are shown in Figure 3.9-2. The Bailey Land Capability Index divides the Lake Tahoe Basin into nine LCDs based on elevation, geomorphic history, and hillslope angle. LCDs are used to regulate the intensity of development that a site can support and are a useful tool to assess potential soil erosion (Table 3.9-4). LCDs 1a and 2 are identified as having high erosion potential, LCDs 3 and 4 (which have slopes of 0-16 percent) as having moderate erosion potential, and LCDs 5 – 7 as having slight erosion potential. LCDs 1b and 1c had poor natural drainage and hosted fragile biota and therefore both were recommended for protection regardless of their susceptibility to erosion. Areas in LCDs 1 – 2 are more likely to experience soil erosion during treatment activities than the rest of the Basin, and LCDs 1a and 2 are the most likely to experience landslides following disturbance. The mapped land capability has implications for the type of treatment activities that would be allowed. For instance, ground skidding is only permitted in LCDs 3, 4, 5, 6, and 7, and ground-based vehicle systems for removing trees may be approved in LCDs 4, 5, 6, and 7.



Source: Data received from Stillwater in 2019

Figure 3.9-2 Land Capability Map of the California Portion of the Lake Tahoe Basin

Table 3.9-4 Land Capability Areal Extent in the Program Area and Lake Tahoe Basin

Land Capability District	Description	Community Fuel Reduction Areas (acres)	Planned CWPP Projects (acres)	Total Area in Lake Tahoe Basin (acres)
1a	steep uplands (> 30%, very shallow soil)	811	2,790	51,895
1b	streams, marshes, floodplains, meadows	932	1,791	9,363
1c	Mountainous uplands, no soil	170	1,191	50,732
2	soil mantled (slope > 30%)	158	390	4,000
3	low elevation moderately steep slopes (9-30 percent)	642	916	9,188
4	moderately steep mountain slopes	531	847	5,731
5	flat areas around Lake Tahoe	1,705	1,936	17,328
6	gently sloping north side of Lake Tahoe	358	1,229	6,564
7	dense forest, little erosion potential	524	428	3,086
	Total	5,831	11,518	157,887

Source: Bailey 1974

Approximately 64 percent of the Community Fuel Reduction Areas and 46 percent of the Planned CWPP Project areas occur in LCDs 3 – 7 relative to 26 percent of the Basin as a whole. Planned CWPP Projects are located in more sensitive areas (LCDs 1 – 2) in the Homewood Creek, Cascade Creek, Trout Creek, Upper Truckee, and Ward Creek watersheds. The LCDs 1 – 2 sites in these watersheds include sparsely forested glaciated uplands, forested moraines, and the floodplains of the Upper Truckee River and Trout Creek. Roads are a component of existing land coverage. Approximately 71 percent of the program area is within 0.25-mile of an existing paved road (Figure 3.9-3).

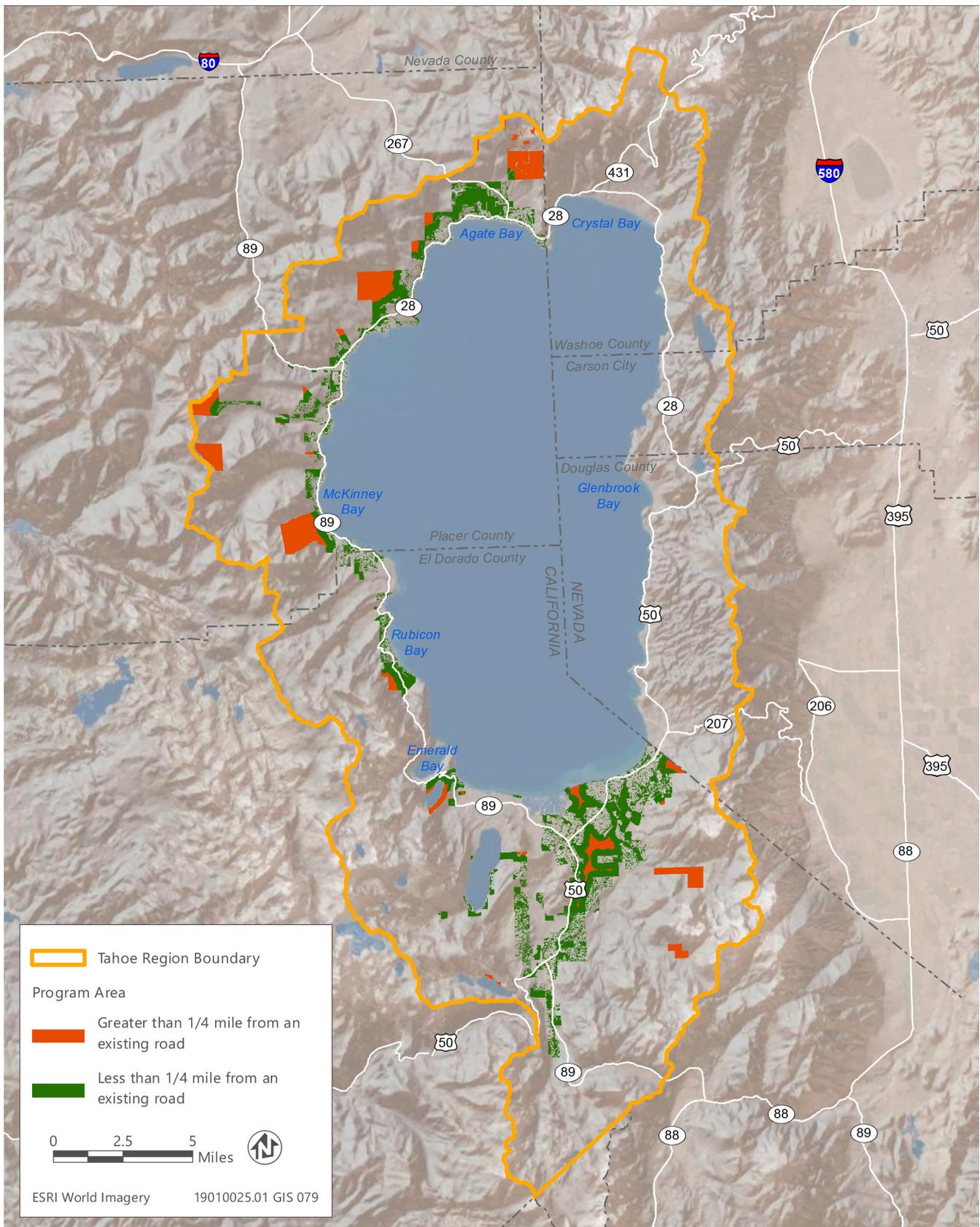
GEOLOGIC AND SOIL HAZARDS

Landslides

Numerous landslides have been identified as part of the geologic mapping of the Lake Tahoe Basin (Saucedo 2005). Landslides consist of the downslope movement of soil and rock under the influence of gravity. There are numerous types of landslides (Varnes 1978, Highland and Bobrowsky 2008), based on their materials (soil versus bedrock), water content, and speed of movement. A useful classification system for assessing forestry impacts divides landslides into deep-seated slides and shallow slides (Highland and Bobrowsky 2008). Deep-seated slides involve movement of soil and bedrock, while shallow landslides only involve the soil and weathered bedrock. The California Geological Survey has mapped deep-seated landslide susceptibility for the entire state, with the highest susceptibility in the Lake Tahoe Basin occurring on the steep, unconsolidated moraine deposits along the west shore of Lake Tahoe, including the lateral moraines surrounding Cascade Lake and the upslope reaches of Ward Creek (Willis et al. 2011).

Soil Erosion

Soil erosion in the Lake Tahoe Basin occurs through overland flow erosion of altered soils and erosion of streambanks. Results from monitoring data coupled with streambank erosion studies determined that just under half of the soil erosion in the Lake Tahoe Basin occurred in just four drainages: Upper Truckee River, Blackwood Creek, Trout Creek, and Ward Creek (Simon 2008). Simon suggested that about half of the fine sediment originated from stream bank erosion. Bank erosion could occur because of either direct disturbance and tree removal along streams or changes to the watershed that increase the magnitude of peak flows including urbanization and road construction. In Blackwood Creek, the legacy of logging, grazing, and gravel mining coupled with relatively unstable soils has led to the higher erosion rates.



Source: Data received from CTC in 2019; adapted by Ascent Environmental in 2019

Figure 3.9-3 Proximity to Paved Roads in the Program Area

Particle detachment can increase if the soil surface becomes finer, or the resistance to erosion decreases because of loss of vegetation. Focused erosion studies in the Lake Tahoe Basin have observed that soil erosion because of overland flow only occurs in disturbed soils, with little erosion of undisturbed soils and erosion in volcanic soils is greater than granitic soils (Grismer and Ellis 2006). Soil erosion because of overland flow is greatest on steeper slopes, where gravitational forces can be highest. Figure 3.9-4 shows the hillslope angle (in percent slope). The steepest hillslopes in Figure 3.9-4 are located in historically glaciated headwaters and along the flanks of lateral moraines. The lowest hillslope angles are located in glacial valleys and outwash deposits of the Upper Truckee River (Figure 3.9-4).

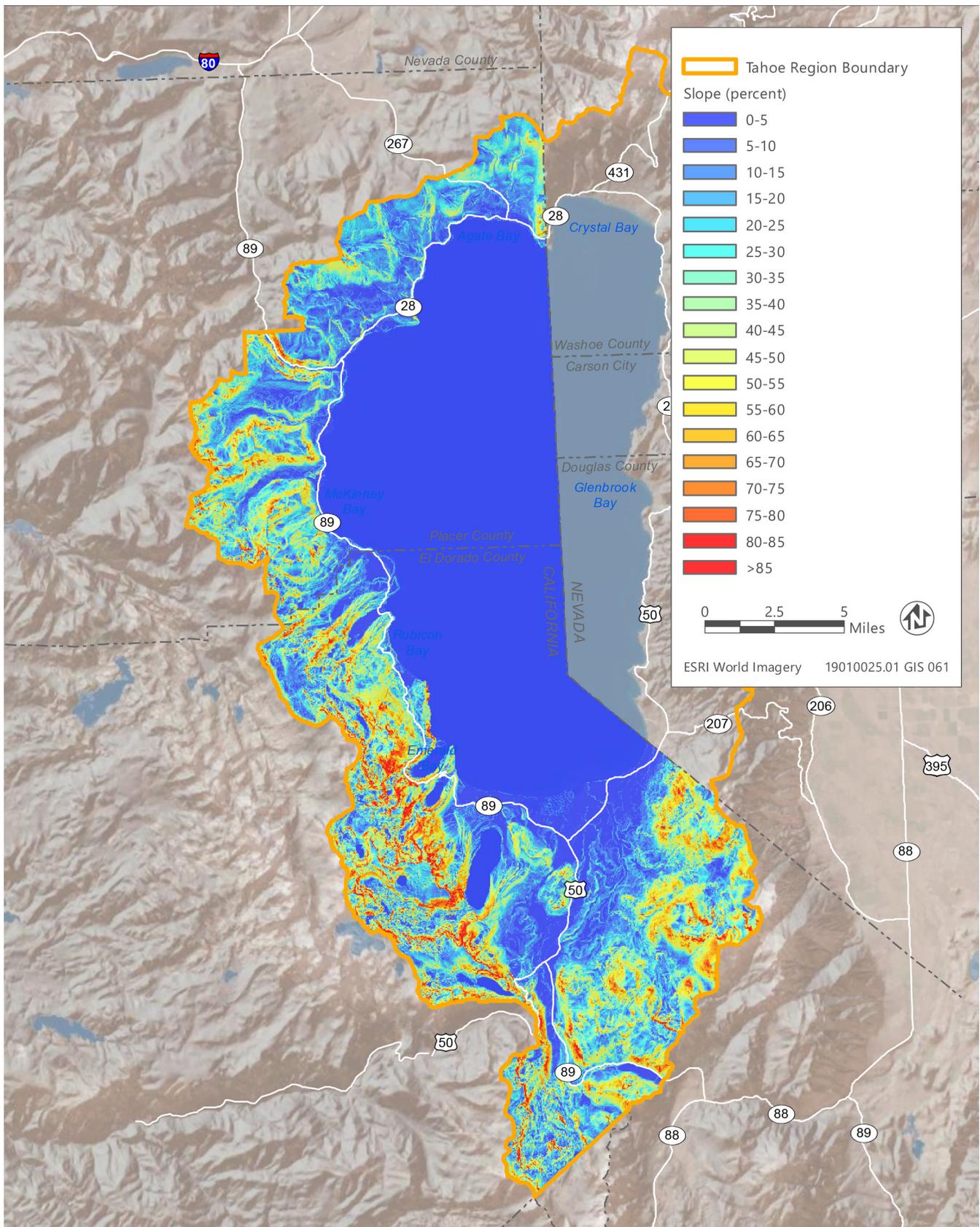
An estimated 3,362 acres (84 percent) of the Community Fuel Reduction Areas are located in areas with hillslope angles less than 30 percent and 6,232 acres (40 percent) of Planned CWPP Projects are located in this hillslope angle range (Table 3.9-5). Approximately 505 acres and 2,012 acres of Community Fuel Reduction Areas and Planned CWPP Project areas, respectively (13 percent of each category) have hillslope angles from 30-50 percent (Table 3.9-5). Only 111 acres (3 percent) of the Community Fuel Reduction Areas occur where the hillslope angle is 50-65 percent, but 7,312 acres (47 percent) of the Planned CWPP Projects occur in the slope range. An estimated 15 acres (0.4 percent) of the Community Fuel Reduction Areas and 149 acres (0.9 percent) of the Planned CWPP Projects occur where hillslope angles exceed 65 percent. TRPA does not allow tractor roads or skid trails in areas with slopes that exceed 30 percent; whereas, the CFPRs allow heavy equipment use for hillslope angles up to 50 percent for soils with high or extreme erosion hazard and 65 percent for soils with moderate erosion hazard. Large portions of the program area, particularly for the Planned CWPP Projects occur on slopes steeper than currently permitted for heavy equipment use by TRPA.

Table 3.9-5 Areal Extent of Hillslope Angle in the Program Area

Slope Range (percent)	Community Fire Reduction Areas (acres)	Planned CWPP Projects (acres)
0-30	3,362	6,232
30-50	505	2,012
50-65	111	7,312
>65	15	149

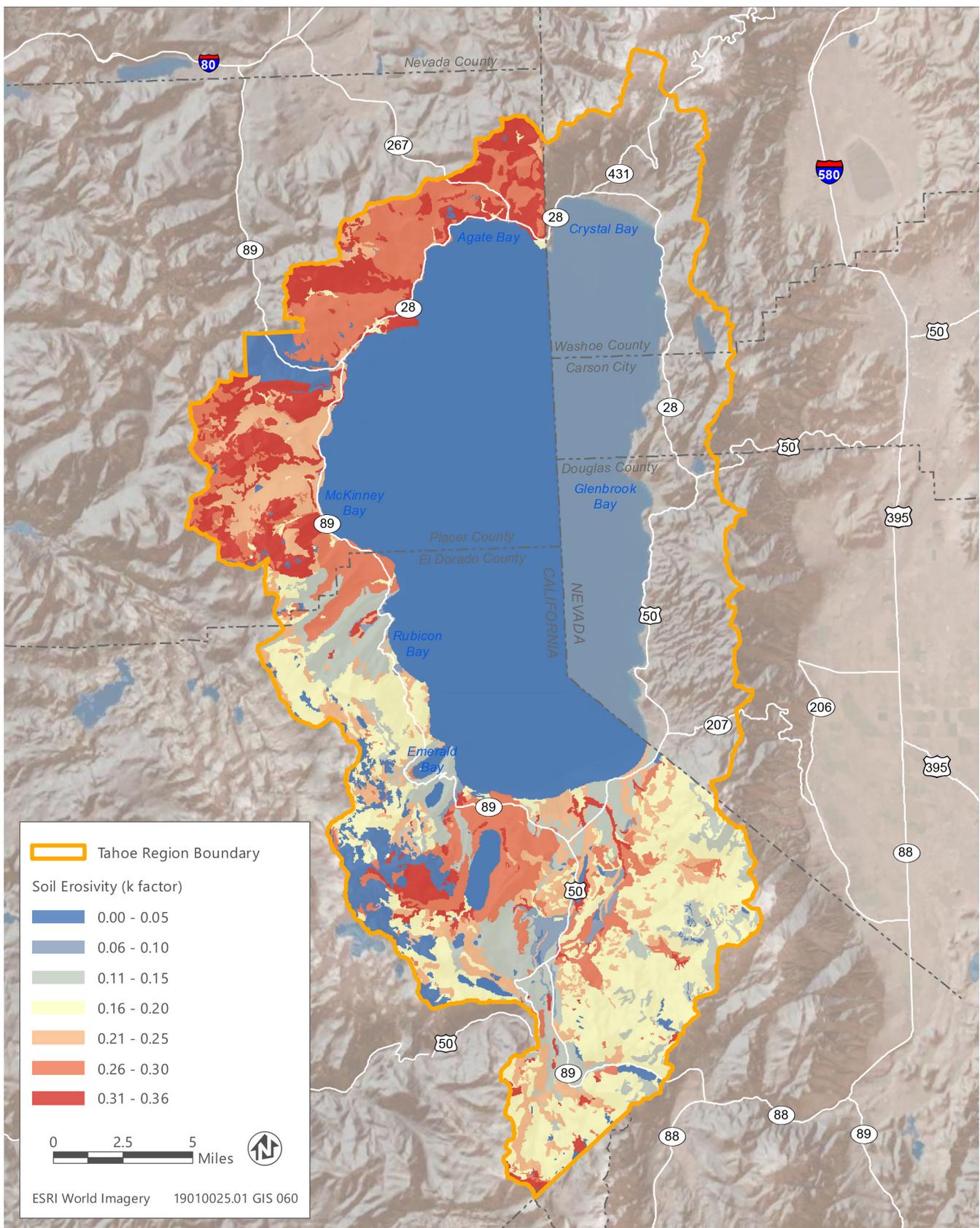
Source: compiled by Stillwater Sciences in 2019

Erodibility of soil by water can be represented using the K factor, an index which quantifies the relative susceptibility of the soil to sheet and rill erosion. Soil properties affecting the K factor include texture, organic matter content, structure, and saturated hydraulic conductivity, and values range from 0.02 for the least erodible soils to 0.64 for the most erodible (Renard et al. 1997). In the Lake Tahoe Basin, the mapped K factor ranges from 0 to 0.36 (USDA NRCS 2007). The soils with the highest K-factor are in the Upper Truckee River basin, Blackwood Creek, and Ward Creek. Comparison of the K-factor (Figure 3.9-5) and hillslope angle (Figure 3.9-4) show that the most erodible soils tend to be at lower slopes. Glaciation stripped the steepest slopes of sediment, and the lateral moraines, which are close to their angle of repose, are made up of a wide range of grain sizes (from silt to boulders) and are therefore relatively stable. Large areas of the program area occur in the highly erodible lowland areas.



Source: Data received from Stillwater Sciences in 2019

Figure 3.9-4 Hillslope (in percent) for the California Portion of the Lake Tahoe Basin



Source: Data downloaded from USDA NRCS in 2007

Figure 3.9-5 Soil Erosivity in the California Portion of the Lake Tahoe Basin

3.9.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

Analysis of soil conservation, landslide impacts, and paleontological resources was based on a review of documents pertaining to the geology and soils of the Lake Tahoe Basin, including the geologic map of the Basin, NRCS soil survey of the Lake Tahoe Basin, California and Nevada, scientific studies, and TRPA regulations and planning documents. The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects, based on the thresholds of significance presented in this section. In determining the level of significance, the analysis assumes that later treatment activities under the proposed program would implement the standard project requirements (SPRs) developed for the program and the following analysis assumes their incorporation into later treatment activities under the proposed program; it also assumes that treatment activities would comply with relevant federal and state laws, regulations, and ordinances. The SPRs also include applicable CFPRs that apply to timber operations for commercial purposes (PRC Section 4527(a)), as well as additional measures that apply to all later treatment activities (see Appendix B):

- ▶ **SPR GEO-1 Suspend Disturbance during Heavy Precipitation:** The project implementer will suspend mechanical treatments if the National Weather Service forecast is a "chance" (30 percent or more) of rain within the next 24 hours. Activities that cause soil disturbance may resume when precipitation stops and soils are no longer saturated (i.e., when soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur). Indicators of saturated soil conditions may include, but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials. This SPR applies only to mechanical treatment methods.
- ▶ **SPR GEO-2 Limit High Ground Pressure Vehicles:** The project implementer will use heavy equipment only where the ground is dry, frozen, or covered in snow to limit soil disturbance or compaction. Machinery will be kept off moist soils to reduce compaction and/or damage to soil structure. Saturated soil means that soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur. If use of heavy equipment is required in moist areas, other measures such as operating on organic debris, using low ground pressure vehicles, or operating on frozen soils/snow covered soils will be implemented to minimize soil compaction. Existing compacted road surfaces are exempt as they are already compacted from use. This SPR applies only to mechanical treatment methods.
- ▶ **SPR GEO-3 Stabilize Disturbed Soil Areas:** The project implementer will stabilize soil disturbed during mechanical and prescribed herbivory treatments with mulch or equivalent immediately after treatment activities, to the maximum extent practicable, to minimize the potential for substantial sediment discharge. If mechanical activities could result in substantial sediment discharge from soil disturbed by machinery, organic material from mastication or mulch will be incorporated onto at least 75 percent of the disturbed soil surface where the soil erosion hazard is moderate or high, and 50 percent of the disturbed soil surface where soil erosion hazard is low to help prevent erosion. Where slash mulch is used, it will be packed into the ground surface with heavy equipment so that it is sufficiently in contact with the soil surface to disrupt overland flow but does not compact the soil. This SPR applies only to mechanical treatment activities.
- ▶ **SPR GEO-4 Erosion Monitoring:** The project implementer will inspect treatment areas for the proper implementation of erosion control SPRs and mitigations before the rainy season. Additionally, the project proponent will inspect for evidence of erosion a sufficient number of times during the extended wet weather period, particularly after large winter storm events (i.e., ≥ 1.5 inches in 24 hours) and at least once annually, to evaluate the function of drainage facilities and structures. Any area of erosion that will result in substantial sediment discharge will be remediated. This SPR applies to mechanical and understory burning treatment methods.

- ▶ **SPR GEO-5 Drain Stormwater via Water Breaks:** The project proponent will drain compacted and/or bare linear treatment areas capable of generating storm runoff (i.e., roads and skid trails) via water breaks using the spacing and erosion control guidelines contained in Section 954.6(c) of the CFPRs. Where water breaks cannot effectively disperse surface runoff, including where water breaks cause surface runoff to be concentrated on downslopes, other erosion controls will be installed as needed to comply with 14 CCR Sections 954 et seq.].
- ▶ **SPR GEO-6 Minimize Burn Pile Size:** The project proponent will not create burn piles that exceed 20 feet in length, width, or diameter, except when on landings, road surfaces, or on contour to minimize the spatial extent of soil damage. In addition, burn piles will not occupy more than 15 percent of the total treatment area. The project proponent will not locate burn piles in a WLPZ as defined in 14 CCR Section 956.5 of the CFPR, in a SEZ as defined in TRPA Code of Ordinances Section 61.1.6.C, or in another area where existing regulations limit ground disturbance to reduce erosion and protect beneficial uses of water.
- ▶ **SPR GEO-7 Minimize Erosion on Steep Slopes:** To minimize erosion, the project proponent will limit mechanical treatments on steep slopes. If TRPA regulations are not changed, mechanical treatments as described will not occur in slopes exceeding 30 percent. If TRPA regulations are changed, mechanical treatments will not occur in slopes exceeding the new threshold, or the CFPR for the Southern District, whichever is lower.
- ▶ **SPR GEO-8 Unstable Soils and Active and Dormant landslide exclusion:** The project proponent will require a Registered Professional Forester (RPF) or licensed geologist to evaluate treatment areas for unstable areas and unstable soils including active or dormant landslides. If unstable areas or soils are identified within the treatment area, are unavoidable, and will be potentially directly or indirectly affected by the treatment, a licensed geologist (P.G. or C.E.G.) will determine the potential for landslide, erosion, of other issue related to unstable soils and identity measures that will be implemented by the project proponent such that substantial erosion or loss of topsoil would not occur.
- ▶ **SPR GEO-9 Skidding Practices to Limit Erosion:** Ground skidding will be limited to Land Capability Districts 3, 4, 5, 6, and 7 and logs will be skidded endwise. Where possible ground skidding will be conducted over snow rather than bare ground. If TRPA rules are changed, ground skidding may also occur over frozen ground. This SPR applies only to mechanical treatment activities.
- ▶ **SPR GEO-10 Limit Intensity of Prescribed Burns:** To limit erosion following prescribed burns by maintaining >50% litter and duff, prescribed burns will be limited to the fall through spring months when forest duff is sufficiently moist to maintain low severity fires. This SPR applies to pile and understory burning.
- ▶ **SPR GEO-11 Minimize New Land Coverage During Road Improvements:** To avoid new land coverage, improvements to existing roads necessary for access to or hauling will be limited to within the existing footprint of the road, where feasible. If it is not feasible to remain within the existing footprint of the road, the portion of the road that is widened or otherwise extends beyond the existing footprint will be limited to the minimum amount necessary to provide safe access or hauling. If any portion of an improved road will extend beyond the footprint of the existing road, the proponent will coordinate with TRPA and acquire a permit or other approval necessary for the creation of new land coverage, if applicable.
- ▶ **SPR HYD-3 Identify and Protect Watercourse and Lake Protection Zones and Waterbody Buffer Zones:** The project proponent will establish WLPZs as defined in 14 CCR Section 956.5 of the CFPR and Waterbody Buffer Zones as defined in Attachment B of the Timber Waiver (Lahontan RWQCB 2019a). WLPZs and Waterbody Buffer Zones are classified based on the uses of the stream and the presence of aquatic life. Wider zones are required for steep slopes. Waterbody Buffer Zone widths for Class I and II watercourses are equivalent to WLPZs. Whereas WLPZ widths or other watercourse protections for Class III and IV watercourses are determined on a site-specific basis (see 14 CCR Section 956.4), Waterbody Buffer Zone widths for Class III and IV watercourses are fixed and correspond with the steepness of adjacent slopes, as defined in Attachment B of the Timber Waiver (Lahontan RWQCB 2019a). The following protections will be applied for all treatments:
 - Treatment activities within Waterbody Buffer Zones and WLPZs will meet the overstory and understory vegetation retention guidelines and ground disturbance limitations described in the Timber Waiver

(Lahontan RWQCB 2019a) and in 14 CCR Section 956.4 Subsection (b) and Section 956.5, including retention of at least 75 percent surface cover and undisturbed area.

- Equipment, including tractors and vehicles, must not be driven in wet areas, Waterbody Buffer Zones, or WLPZs, except over existing roads or watercourse crossings where vehicle tires or tracks remain dry.
- Equipment used in vegetation removal operations will not be serviced in Waterbody Buffer Zones or WLPZs, within wet meadows or other wet areas, or in locations that would allow grease, oil, or fuel to pass into lakes, watercourses, or wet areas.
- Watercourses will be kept free of slash, debris, and other material that harm the beneficial uses of water. Accidental deposits will be removed immediately.
- Burn piles will be located outside of WLPZs or other applicable watercourse protection zones unless all applicable Timber Waiver and/or Basin Plan exemption requirements are met.
- No fire ignition will occur within WLPZs or other applicable watercourse protection zones unless all applicable Timber Waiver and/or Basin Plan exemption requirements are met; however low intensity backing fires may be allowed to enter or spread into watercourse protection zones.
- Within the WLPZs, mulch treatments to stabilize soils, minimize soil erosion, and prevent significant sediment discharge, as described in 14 CCR Section 956.9(n)(1), will be as follows:
 - Soil stabilization is required for areas where timber operations have exposed bare soil exceeding 100 contiguous square feet.
 - Where straw or slash mulch is used, the minimum straw coverage shall be 90 percent, and any treated area that has been reused or has less than 90 percent surface cover shall be treated again by the end of timber operations.
 - Where slash mulch is packed into the ground surface through the use of a tractor or equivalent piece of heavy equipment the minimum slash coverage shall be 75 percent.
- Equipment limitation zones (ELZs) will be designated adjacent to Class III and Class IV watercourses with minimum widths of 25 feet where side-slope is less than 30 percent and 50 feet where side-slope is 30 percent or greater. An RPF will describe the limitations of heavy equipment within the ELZ and, where appropriate, will include additional measures to protect the beneficial uses of water.
- ▶ **SPR HYD-4 Identify and Protect Stream Environment Zones:** Prior to conducting treatment activities, an RPF or qualified biologist or botanist will flag SEZ areas within the treatment site. Project implementers will comply with TRPA requirements for tree cutting within SEZ areas. These requirements, described in detail under TRPA Code of Ordinances Section 61.1.6.C and Attachment N of the Timber Waiver (Lahontan RWQCB 2019a), include:
 - Vehicle use is restricted in SEZs with exceptions for use of vehicles in over-snow tree removal operations and use of "innovative technology" vehicles or "innovative techniques," provided that no significant soil disturbance or significant vegetation damage will result from the use of equipment;
 - Work within SEZs shall be limited to times of the year when soil conditions are dry and stable, when conditions are adequate for over-snow tree removal operations, or when conditions are consistent with TRPA and Lahontan RWQCB standards for tree removal operations on frozen ground;
 - Felled trees and harvest debris will be kept out of all watercourses classified as Class I through IV including perennial streams, intermittent streams, man-made waterbodies, and ephemeral (unclassified) streams;
 - Crossings of perennial streams or other wet areas, shall be limited to improved crossings meeting Best Management Practices or to temporary bridge spans that can be removed upon project completion or at the end of the work season, whichever is sooner;
 - New waterholes will not be constructed within the 100-year floodplain or SEZ;

- Permanent disturbance or fill within SEZs will be avoided;
- Activities conducted within 100-year floodplains or in SEZs that would require a Timber Waiver exemption granted by the Lahontan RWQCB include: enlargement of existing permanent watercourse crossings and/or roads, construction of temporary roads, construction of temporary watercourse crossings and associated approaches in place longer than one season, construction of skid trails, slash piling and burning not conducted in accordance with Timber Waiver, and conventional equipment operated off-road in SEZs or floodplains; and
- Discharge or threatened discharge, attributable to human activities, of solid or liquid waste materials including soil, silt, clay, sand, and other organic or earthen materials to lands within the highwater rim of Lake Tahoe or 100-year floodplains of any tributary (including the Truckee River and Little Truckee River and tributaries) to Lake Tahoe and to SEZs in the Lake Tahoe Basin is prohibited.

THRESHOLDS OF SIGNIFICANCE

Significance criteria are based on Appendix G of the State CEQA Guidelines. Applicable TRPA threshold standards and land criteria from the TRPA Initial Environmental Checklist were also considered in developing thresholds of significance.

The impacts of later treatment activities under the proposed program can be divided into impacts that increase soil compaction and erosion and impacts that increase landslide frequency or magnitude. An impact would be significant if later treatment activities implemented under the Tahoe PTEIR would:

- ▶ result in substantial soil erosion or the loss of topsoil or changes to deposition;
- ▶ be located on a geologic unit or soil that is unstable, or that would become unstable as a result of later treatment activities, and potentially result in on-site or off-site landslide or collapse; or
- ▶ directly or indirectly cause substantial adverse effects, including risk of loss, injury, or death involving landslides, mud slides, and avalanches.

IMPACTS AND MITIGATION MEASURES

Impact 3.9-1: Substantially Increase Soil Erosion or Lose Topsoil, Degrade Soil Condition, or Cause Sediment Deposition Downslope or Downstream of Project Sites

The later treatments activities that would be implemented under the proposed program have the potential to disturb soils and reduce vegetation cover that, together, could increase soil loss and erosion. If eroded sediment enters watercourses, downstream deposition could degrade aquatic habitat, reduce the clarity of Lake Tahoe, or cause other alterations in streams and lakes. Mechanical treatments have the potential to increase erosion by disturbing or compacting the soil as machinery is driven over hillslopes, altering hydrologic flow paths and increasing overland flow and overland flow erosion. Driving vehicles over saturated dirt roads can increase erosion of the road surface and compact the soil, reducing infiltration and increasing overland flow and soil erosion. Areas subject to tree removal or prescribed fire could experience a loss of root strength, decreasing the resistance to soil movement and leading to increased erosion via rainsplash, overland flow erosion, and shallow landslides. High intensity burning can remove forest duff and increase erosion rates. Later treatment activities implemented under the proposed program would be subject to the erosion control and avoidance measures contained in the CFPRs and would implement the SPRs listed above to provide additional protections in erosion prone areas and monitor soil and erosion conditions. With implementation of these rules and requirements, the impact of later treatment activities on soil erosion, soil condition, and sediment deposition would be **less than significant**.

Soil erosion occurs when soil is moved downslope under the influence of water or gravity. Soil naturally moves downslope under the influence of gravity or overland flow, but a steady soil thickness can occur if rates of soil erosion

are balanced by soil production and soil delivery from upslope (Gilbert 1909). Soil mass loss can occur either through the physical movement of the soil or via chemical weathering. Soil movement occurs through a variety of processes including soil creep, rainsplash, and erosion by overland flow--sheet erosion, rill erosion, gully erosion. Erosion by overland flow occurs when flows over the ground surface are sufficient to entrain particles and move them downstream. Increases to the stress because of the flows (either by increasing the discharge of overland flow, its velocity, or depth) will lead to increased erosion because of overland flows.

Overland flow discharge can increase through decreased water infiltration into the soil because of soil compaction, development of impervious soil layers because of high intensity fires, or increases in soil moisture that promote overland flows. Forestry practices can increase soil erosion through road improvements (Reid et al. 1984), soil compaction (Robichaud et al. 2010), and reduced soil strength caused by removing roots and vegetated understory (Robichaud et al. 2010). These actions can increase the portion of the water balance that contributes to overland flow.

Soil can also be eroded through erosion of riverbanks which remove floodplain soils and transport that material downstream. If the channel is migrating without incising, the overall contribution to erosion is 10-20% of the total amount of material removed as sediment is depositing on the inside bank of the point bar while the outer bank is eroding (Lauer and Parker 2008), provided that the sediments deposited on the inner and outer banks are the same size. If, however, the channel is widening or incising soil erosion from floodplains can be a large contributor to sediment budgets (e.g., Simon 2008). Research by Simon (2008) suggested that a substantial portion of the fine sediment eroding from Tahoe Basin drainages originated from stream bank erosion. Bank erosion could occur because of either direct disturbance and tree removal along streams or changes to the watershed that increase the magnitude of peak flows.

Soil Disturbance from Manual and Mechanical Treatments

Erosion rates in the Lake Tahoe Basin tend to be higher in volcanic soils than granitic soils (Stubblefield et al. 2009), with very high erosion rates in the disturbed volcanic soils of Blackwood Creek and Ward Creek in the northwest portions of the Basin (Simon et al. 2003). Erosion rates increase when the vegetative cover is removed or reduced, the soil is otherwise disturbed, or when both of these conditions exist. In general, areas with less vegetative cover are more prone to soil erosion than heavily vegetated areas, because surface cover and additional soil structure from plant roots can reduce soil erosion potential.

Surface erosion typically increases on steeper slopes. The steepest hillslopes in the program area are located in the headwaters of glaciers, along the flanks of lateral moraines and the lowest hillslope angles are located in glacial valleys and outwash deposits of the Upper Truckee River (Figure 3.9-4). Nearly 60 percent of the Planned CWPP Projects and about 15 percent of the Community Fuel Reduction Areas lie within the 30-65 percent slope range, particularly along the southwest portion of the basin. Under current TRPA rules, tractor yarding would not be permitted on these slopes, effectively minimizing the risk of soil disturbance and erosion. However, these areas may be subject to heavy equipment use if the TRPA revises its regulations. Avoiding unstable slopes and active and dormant landslides (SPR GEO-8) and using skidding practices to limit erosion (SPR GEO-9) would minimize erosion in the event that changes to the TRPA regulations allow equipment use on slopes greater than 30 percent. Stabilization of disturbed areas consistent with (SPR GEO-3) would help to limit erosion of any disturbed soils following program operations using erosion control BMPs. By monitoring sites following treatment, (SPR GEO-4) would help to assess treated areas that may require additional erosion control measures to be implemented. If monitoring indicated that additional measures are necessary, the project proponent would be required to take actions to remediate erosion. While treatment activities could also cause soil loss via landslides and in SEZs, implementation of SPRs to avoid or protect these areas would avoid or minimize these effects. Avoiding steep slopes (SPR GEO-7), WLPZs (SPR HYD-3), and sensitive stream environment zones (SPR HYD-4) would help to limit soil loss in locations where it is most likely to occur.

Wildfire

Surface erosion from high severity wildfire can increase runoff and erosion rates by two or more orders of magnitude relative to unburned conditions (Robichaud et al. 2010). Following fires in Lake Tahoe, sediment loads largely increased with the extent of the burned ground surface (Harrison et al. 2016). Because the proposed program is

expected to reduce the extent of wildfire and the extent of high severity wildfire (See Section 3.2, "Wildfire"), its implementation would reduce erosion associated with wildfires.

Prescribed Burning

Low-severity wildfire similar to the prescribed burning proposed for later treatment activities under the proposed program has a much smaller effect, if any, on sediment loads (Robichaud et al. 2010) and this increase can be mitigated by placing masticated organic material on the ground surface (Harrison et al. 2016). Prescribed fire is generally designed to have a low intensity and not disturb the soil. However, high fire intensity patches within the prescribed burn and areas that were disturbed before the prescribed fire can lead to higher erosion rates (McNabb and Swanson 1990). Fire prescriptions that retain at least 50% of the litter and duff were able to capture hillslope sediment and limit increases in fire-associated sediment supply (Harrison et al. 2016). SPR GEO-3 would require immediate stabilization of disturbed soil after treatment activities. With implementation of this SPR, initial treatment activities would not create disturbed areas that could lead to increased erosion during subsequent prescribed burning treatments. Implementation of SPR GEO-10 would limit prescribed burning to the fall through spring months when forest duff is sufficiently moist to maintain low severity fires with the goal of maintaining >50% litter and duff. With implementation of these SPRs, prescribed burning would not result in a substantial increase in erosion or soil degradation.

Road Maintenance and Off-Road Equipment Use

Changes to soils (i.e., compaction, increased runoff) could affect the attainment and maintenance of land coverage targets for the Lake Tahoe Land Capability system which has goals for the extent of impervious surfaces for each Land Capability district. TRPA defines soft land coverage as land coverage that allows less than 75 percent of natural infiltration (a 25 percent decrease from natural conditions). Although later treatment activities would not include new road construction, compaction could occur through targeted widening of existing roads, driving on unpaved roads, and through log skidding and use of off-road equipment. Approximately 71 percent of the program area is within 0.25-mile of an existing paved road (Figure 3.9-3). For this portion of the program area, maintenance and/or widening of existing unpaved roads would not be necessary. For the remaining 29 percent of the program area, treatment sites would be accessed using existing unpaved roads. Depending on the condition of these roads, they may need to be widened or maintained to allow equipment to access treatment sites. Road widening would increase the extent of soft land coverage and the degree to which road maintenance would affect soft land coverage depends on the initial condition of the road. Road widening and/or maintenance would be subject to permits from TRPA. These permits would include BMPs to avoid significant impacts to soils and geology. Minimizing new land coverage during road improvements (consistent with SPR GEO-11,) would minimize the creation of soft coverage, and would ensure that any additional soft coverage is consistent with applicable TRPA ordinances and would not adversely affect attainment of the TRPA Land Coverage Threshold. Additionally, suspending disturbance during precipitation (as required by SPR GEO-1), would further limit compaction of roads to some degree by limiting use during wet periods.

Suspending disturbance during precipitation (and limiting high ground-pressure vehicles as required by (SPR GEO-2) would limit soil compaction by avoiding work during wet periods and using equipment designed to limit ground pressure. In addition using skidding practices that limit erosion (per SPR GEO-9) would limit compaction during skidding operations by reducing pressure on the soil. Erosion from road surfaces and skid trails would be minimized through implementation of SPR GEO-1 (suspending disturbance during precipitation), SPR GEO-5 (drain stormwater via water breaks), and SPR GEO-8 (unstable soils and landslide exclusion). By avoiding wet roads, SPR GEO-1 (suspending disturbance during precipitation) would limit direct erosion of road surfaces during storms. By providing water breaks on roads and skid trails, SPR GEO-5 (drain stormwater via water breaks) would minimize delivery of sediment to watercourses from roads and skid trails. By limiting ground skidding practices to areas where erosion is less likely and when the ground is protected by snow, SPR GEO-8 (unstable soils and landslide exclusion) would help to limit soil compaction, erosion, and downstream deposition.

Conclusion

The later treatment activities that would be implemented under the proposed program have the potential to increase soil loss and erosion. Treatment activities could increase erosion through soil disturbance or loss of vegetative cover,

prescribed burning, road maintenance, and off-road equipment use. Treatment activities implemented under the proposed program would be subject to the erosion control and avoidance measures contained in the CFPRs and would implement SPRs to provide additional protections in erosion prone areas and monitor soil and erosion conditions. Any widening or maintenance of existing forest roads would implement BMPs to limit soil compaction in compliance with TRPA land coverage standards. With implementation of the mandatory requirements of the CFPRs, SPRs, and BMPs, implementation of the proposed program would have a **less-than-significant** impact related to soil erosion, loss of topsoil, soil degradation, and soil deposition.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.9-2: Increase in Landslide Hazards, Mudslides, and Avalanches Associated with Treatment Activities

Removal of vegetation can reduce the strength of hillslope soils, potentially increasing the likelihood of shallow landslides on steep hillslopes. Landslides would be more common where disturbed areas are larger. These shallow landslides could cause debris flows posing hazards to infrastructure and populations downslope. In addition, reducing the biomass of trees would reduce the uptake of shallow groundwater, which could lead to increased water retention in the soil and increase the potential for landslides. The potential to increase landslides is higher on steeper slopes, particularly those where the soil strength is dependent on vegetation, and on recently active or dormant landslides. Limiting surface disturbance and overland flow (as described for Impact 3.9-1) would help to limit the potential for shallow landslides, as would the focus on selective vegetation removal (i.e., tree thinning) rather than clearcutting. Because trees would remain on avalanche-prone slopes following vegetation removal, treatment activities would be unlikely to increase avalanche risk. As a result, and with incorporation of SPRs and applicable CFPR measures to minimize new road construction, avoid steep and unstable slopes, and minimize changes that might alter subsurface flow, treatment activity-related landslide hazards are unlikely. This impact would be **less than significant**.

Forest practices are most likely to increase the incidence of shallow slides that involve the soil layers through loss of root strength (Swanson and Dyrness 1975) and the impact of roads (Reid et al. 1984). Roads can destabilize the toe of landslides and also alter hydrology such that ground becomes saturated and fails. Shallow landslides (which only involve the soil and weathered bedrock) often originate in hollows—unchanneled convergent topography at the upper end of drainage networks (Dietrich et al. 1986)—and can turn into debris flows. Debris flows (often referred to as mudslides) are a rapid movement of a slurry of water and colluvial materials which can travel down the channel network and are particularly destructive to people and property. Deep-seated landslides can be mobilized by high water content within the landslide or by oversteepening the toe or any other part of the potential slide through channel erosion (Highland and Bobrowsky 2008). Fires have reinitiated movement on previously mapped deep-seated landslides (Mikulovsky et al. 2012) by altering hillslope flow paths.

Landslides occur when the shear stress exceeds the shear strength of the materials forming the slope (Highland and Bobrowsky 2008). Factors contributing to high shear stress on hillslopes include steep slopes, high mass loading (e.g., through high soil moisture levels or placement of fill material), slope undercutting (e.g., through erosion or excavation), and soils that vary in volume (shrink and swell) in relation to moisture content. Climate and vegetative cover also affect landslide hazard because of their influence on soil root support, which resists landsliding, and hillslope moisture, which drives landslide risk (Istanbulluoglu and Bras 2005). Later treatment activities under the proposed program would focus on thinning trees to reduce wildfire risk, rather than cutting large patches of forest. Since most trees (and their associated root strength) would not be impacted by later treatment activities, the likelihood of increased landslide risk resulting from vegetation removal is low.

Landslides can be classified as active or dormant, based on how recently they have moved. Active landslides are generally more unstable than dormant landslides and may require mitigation measures to avoid mobilization. Excavation, the use of heavy equipment, soil saturation, or the removal of root support can mobilize active landslides. Although dormant landslides are less likely to be mobilized by human activities, portions of dormant landslides (e.g.,

their steep headwalls and margins) are often unstable. Deep-seated and shallow landslides are observed in the Lake Tahoe Basin (e.g., Saucedo et al. 2005) because of land use (Glancy 1969), road construction (Bailey 1974), and earthquakes (Schweickert et al. 2019). Because later treatment activities under the PTEIR would not include new road construction, treatment activities would not destabilize the toes of hillslopes and should not affect deep-seated slides. Landslide risk would also be minimized by reducing erosion on steep slopes (SPR GEO-7), avoiding areas with existing landslides or unstable soils (SPR GEO-8) and minimizing soil compaction (SPR GEO-2, SPR GEO-5), thus minimizing alterations to surface and subsurface flow paths that could otherwise contribute to increased landslide risk.

Moderate to high severity wildfire can greatly increase the likelihood of debris sliding and debris flows (Highland and Bobrowsky 2008). Wildfire can significantly alter the hydrologic response of a watershed to the extent that even modest rainstorms can produce dangerous flash floods and debris flows. The joint probability of a wildland fire event followed by a debris flow is driven by many factors. The debris-flow potential after a fire is a function of the percent of area that burned at a moderate to high severity (Staley et al. 2018). By ensuring that prescribed burns would be relatively low intensity (SPR GEO-9), fire-related landslides associated with later treatment activities under the PTEIR is very unlikely.

Clearcut logging can increase the size and severity of avalanches by decreasing the resistance at the avalanche initiation site and in the runout zone (McClung 2001, Anderson and McClung 2012). Because later treatment activities under the PTEIR would only include thinning and not include any clearcutting, increased avalanche risk because of treatment activities is unlikely.

Conclusion

The later treatment activities that would be implemented under the proposed program have the potential to increase landslides, mudslides, and avalanches. Treatment activities could increase landslides and mudslides by disturbing historical landslide location, creating prescribed burning, road maintenance, and off-road equipment use. An increase in avalanches is unlikely because the proposed program does not involve clearcutting. Treatment activities implemented under the proposed program would be subject to erosion control and avoidance measures contained in the CFPRs and would implement SPRs to limit the likelihood of increases to landslide and mudflow risk. With implementation of the mandatory requirements of the CFPRs and SPRs, the proposed program would have a **less-than-significant** impact related to landslide hazards, mudflows, and avalanches.

Mitigation Measures

No mitigation is required for this impact.

3.10 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

This section presents a summary of regulations and policies applicable to greenhouse gas (GHG) emissions; a review of climate change science and GHG sources in California and the program area; quantification of GHG emissions associated with treatment activities implemented under the proposed program; and a discussion about the program's contribution to global climate change. In addition, mitigation measures are included to reduce the proposed program's contribution to climate change, as discussed below.

There were no comments received on the notice of preparation related to GHGs and Climate Change.

3.10.1 Regulatory Setting

GHG emissions in California, including within the program area, are regulated by federal, state, regional, and local government agencies. These agencies aim to reduce GHG emissions to lessen the impact of global climate change through legislation, planning, policy-making, education, and a variety of programs. The regulations and the agencies responsible for regulating GHGs within the program area are discussed below.

FEDERAL

In *Massachusetts et al. v. Environmental Protection Agency et al.*, 549 U.S. 497 (2007), the Supreme Court of the United States ruled that carbon dioxide (CO₂) fit within the definition of "air pollutant" under the federal Clean Air Act and that the U.S. Environmental Protection Agency (EPA) has the statutory authority to regulate GHG emissions.

In October 2012, EPA and the National Highway Traffic Safety Administration, issued final rules to further reduce GHG emissions and improve corporate average fuel economy (CAFE) standards for light-duty vehicles for model years 2017 and beyond (77 Federal Register [FR] 62624). These rules would increase fuel economy to the equivalent of 54.5 miles per gallon, limiting vehicle emissions to 163 grams of CO₂ per mile for the fleet of cars and light-duty trucks by model year 2025 (77 FR 62630). However, on April 2, 2018, the EPA administrator announced a final determination that the current standards are not appropriate and should be revised. On August 2, 2018, the U.S. Department of Transportation and EPA proposed the Safer Affordable Fuel-Efficient Vehicles Rule, which would amend existing CAFE and tailpipe CO₂ emissions standards for passenger cars and light trucks and establish new standards covering model years 2021 through 2026. The proposal would retain the model year 2020 standards for both programs through model year 2026 (NHTSA 2018). Vehicles used for worker commute and hauling equipment for treatments implemented under the proposed program would be subject to CAFE standards.

Tahoe Regional Planning Agency

Thresholds

TRPA has not specifically identified threshold standards related to GHG emissions or climate change at this time (TRPA 2012).

Tahoe Regional Plan

One policy in the Regional Plan pertains to GHGs:

- ▶ **AQ-1.3 Encourage the reduction of emissions from motor vehicles and other motorized machinery in the region.** Significant emissions of air pollutants including greenhouse gases (GHGs) and entrained dust are produced by automobiles, motor vehicles and other gas-powered machinery in the Region. The Land Use Subelement and the Transportation Element contain Goals and Policies to reduce the amount of air pollution generated from motor vehicles in the Region. Additionally, TRPA shall pursue other feasible and cost-effective opportunities to reduce emissions from motor vehicles and other gas-powered machinery in the Region.

Code of Ordinances

The TRPA Code of Ordinances does not include any regulations regarding GHGs that are applicable to the proposed program.

Lake Tahoe Sustainability Action Plan

As part of the Lake Tahoe Sustainability Collaborative, TRPA participated in the preparation of the Tahoe Sustainability Action Plan (SAP). The SAP, released in 2013, provides tools to assist local governments, agencies, businesses, residents, visitors, and community groups with prioritizing and adopting consistent sustainability actions throughout the Tahoe region. The SAP represents an integrated approach to reducing GHG emissions and striving toward zero-impact in all aspects of sustainability. The SAP includes a GHG emissions inventory and reduction targets, and climate change and adaptation strategies vetted through the Lake Tahoe Sustainability Collaborative and the Tahoe Basin Partnership for Sustainable Communities. Within the SAP, TRPA established a GHG reduction goal for the Tahoe region of 5 percent and 49 percent below the 2005–2010 average baseline by 2020 and 2035, respectively. The SAP identifies actions that have the potential to reduce GHG emissions during construction and operation of land uses and protect against the effects of climate change. None of the GHG reduction measures identified in the SAP pertain to the proposed program. The recommended actions have not been officially adopted and, thus, are discretionary for implementation, not currently required by TRPA or Tahoe Metropolitan Planning Organization (TMPO) (Lake Tahoe Sustainable Communities Program 2013).

STATE

Statewide GHG Emission Targets and the Climate Change Scoping Plan

Reducing GHG emissions in California has been the focus of state government policy for approximately two decades (State of California 2018). GHG emission targets established by the state legislature include reducing statewide GHG emissions to 1990 levels by 2020 (Assembly Bill [AB] 32, Statutes of 2006) and to 40 percent below 1990 levels by 2030 (Senate Bill [SB] 32, Statutes of 2016). Executive Order S-3-05 calls for statewide GHG emissions to be reduced to 80 percent below 1990 levels by 2050. Executive Order B-55-18 calls for California to achieve carbon neutrality by 2045 and achieve and maintain net negative GHG emissions thereafter. These targets are in line with the scientifically established levels needed in the U.S. to limit the rise in global temperature to no more than 2 degrees Celsius, the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected. These targets also are consistent with efforts to further limit the temperature increase to 1.5 degrees Celsius (United Nations 2015:3).

California's 2017 Climate Change Scoping Plan (2017 Scoping Plan), prepared by the California Air Resources Board (CARB), outlines the main strategies California will implement to achieve the legislated GHG emission target for 2030 and "substantially advance toward our 2050 climate goals" (CARB 2017a:1, 3, 5, 20, 25–26). It identifies the reductions needed by each GHG emission sector (e.g., transportation, industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential, and recycling and waste).

The 2017 Scoping Plan identifies a 15–20 million metric tons of carbon dioxide equivalent (MMTCO₂e) reduction from business-as-usual emissions from the natural and working lands sector to meet the state's 2030 target. This section includes lands used for agriculture, grazing, and forestry. This reduction would be achieved through carbon sequestration in trees, other vegetation, soils, and aquatic sediment (CARB 2017a:14). Recent trends indicate that from 2001 to 2010, approximately 120 million metric tons of carbon were lost through wildland fire. California's climate objective for natural and working lands is to maintain them as a carbon sink (i.e., net zero or negative GHG emissions) and, where appropriate, minimize the net GHG and black carbon emissions associated with management, biomass utilization, and wildfire events. To achieve this objective, the 2017 Scoping Plan focuses on continued research and development to advance the state of science on carbon dynamics, develop a natural and working lands inventory, and directs the California Natural Resources Agency (CNRA) and other state agencies to complete a Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal of Executive Order B-55-18. Specifically, the 2017 Scoping Plan acknowledges the role of fuel reduction treatments and prescribed burns in managing natural and working lands to reduce GHG emissions (CARB 2017a:87). Development of the Natural and Working Lands Climate Change Implementation Plan is discussed in greater detail below.

Draft 2030 Natural and Working Lands Implementation Plan

In a joint, interagency effort, the California Environmental Protection Agency (CalEPA), California Department of Food and Agriculture (CDFA), CNRA, CARB, and California Strategic Growth Council (SGC) released the *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan* in January 2019. The draft plan is specific to the natural and working lands sector, which includes farmland, rangeland, forests, grasslands, wetlands, riparian areas, seagrass, and urban green space. The draft plan addresses the carbon flux from this sector, including the ever-dynamic changes in both GHG emissions and carbon sequestration associated with the management of these lands. It is estimated that California's natural and working lands lost approximately 170 MMT of carbon between 2001 and 2014. Most of these losses were due to wildfire. This loss of carbon is equivalent to cumulative emissions of 630 MMTCO_{2e} of previously sequestered carbon removed from the land over the same period (applying the atomic weight ratio of 3.67 for carbon to CO₂). However, not all the carbon lost was emitted to the atmosphere as CO₂. Some carbon leaves the land but persists in durable wood products. Other carbon losses are part of normal ecosystem function (CalEPA et al. 2019:9). The draft plan serves as a multi-disciplinary approach to conserve and maintain a resilient natural and working lands sector that will gradually shift the natural and working lands sector from being a net carbon emitter to a net carbon sink, while also improving air quality, water quality, wildlife habitat, recreation, and providing other benefits. The draft plan sets goals for, at a minimum, increasing the rate of state-funded soil conservation practices fivefold, doubling the rate of state-funded forest management and restoration efforts, tripling the rate of state-funded oak woodland and riparian reforestation, and doubling the rate of state-funded wetland and seagrass restoration (CalEPA et al. 2019:13). The measures included in the draft plan are projected to result in cumulative emissions of 21.6 to 56.8 MMTCO_{2e} by 2030 and cumulative emissions reduction of -36.6 to -11.7 MMTCO_{2e} by 2045 (CalEPA et al. 2019:13-14).

The draft plan indicates that these GHG reductions will be met through a variety of practices under four broad pathways: conservation, forestry, restoration, and agriculture. One suite of practices is called, "Forestry – Improved forest health and reduced wildfire severity." This suite of practices includes prescribed fire, mechanical thinning, and understory treatment. It aims to "restore health and resilience to overstocked forests and prevent carbon losses from severe wildfire, disease, and pests."

The implementation goals for this practice includes 23,800–73,300 acres of prescribed fire per year, 59,000–73,000 acres of thinning per year, and 23,500–25,300 acres of understory treatment per year (CalEPA et al. 2019:18). CAL FIRE is identified as one of the implementing agencies of this practice. The draft plan notes that, although fuel reduction treatments involve near-term carbon costs, they result in long-term net carbon benefits in California. Fuel reduction activities, such as mechanical thinning and prescribed fire, reduce stand densities and fuel loads, restore the structure and composition of forest ecosystems, and lower the potential for damaging, high-severity fire, which is currently the primary cause of GHG emissions and carbon loss from the land sector. In the long-term, these activities are expected to result in climate benefits and healthier, more stable, and more resilient forests (CalEPA et al. 2019:14).

California Forest Carbon Plan

In January 2017, CAL FIRE, in coordination with CNRA and CalEPA, released the *California Forest Carbon Plan*. The plan serves to implement policies to meet the forest carbon goals embodied in the *2017 Scoping Plan*. Currently, much of California's forests are unhealthy, supporting unnatural density that lack resilience to drought, disease, insect and parasite infestation, and large, severe wildfire. The plan describes forest conditions across California; provides a projection of future conditions in consideration of climate change; and describes goals and related specific actions that may be taken to improve forest health, including resilient carbon sequestration; and provides principles and policies to guide and support these actions (CAL FIRE, CNRA, and CalEPA 2017). Specifically, the plan identifies the following targets for forest restoration and treatment activities on non-federal forest lands:

- ▶ by 2020, double the current rate of forest restoration and fuels reduction treatments, including prescribed fire, through the CAL FIRE Vegetation Treatment Program from the recent average of 17,500 acres per year to 35,000 acres per year;

- ▶ by 2030, increase forest restoration and fuels treatments, including mechanical thinning and prescribed burning, from the current rate of approximately 17,500 acres per year to 60,000 acres per year. This target is based on CAL FIRE's determination of an operationally feasible increase in activity through its Vegetation Treatment Program;
- ▶ through CAL FIRE's Forest Practice Program and the Timber Regulation and Forest Restoration Program, ensure that timber operations conducted under the Forest Practice Act and Rules contribute to the achievement of healthy and resilient forests that are net sinks of carbon, with due consideration given to all forest carbon pools;
- ▶ promote increasing the acreage of forest carbon projects and remove barriers to their implementation; and
- ▶ to address forest health and resiliency needs identified statewide on nonfederal lands, CAL FIRE has estimated that the rate of treatment of all types would need to be increased to approximately 500,000 acres per year to make an ecologically meaningful difference at a landscape scale. This estimate is based on consideration of ecological need and predictions of capacity to implement treatments. It should be considered an aspirational target to work toward. This goal is achievable with increased resources and expanded markets for woody materials. These treatments include those that generate revenue from harvest materials, such as commercial thinning and regeneration harvests.

Forest Management Task Force

California's Forest Management Task Force is an entity organized to protect the environmental quality, public health, and economic benefits provided by healthy forests. Its goals include, but are not limited to, implementing Executive Order B-52-18, improve and enhance forest health and resiliency, minimize regulatory barriers for prescribed fire and fuels reduction projects, and improve public education regarding the benefits of a healthy forest (Forest Management Task Force 2019).

Assembly Bill 1504 Forest Carbon Inventory

AB 1504 (Statutes of 2010) emphasizes the critical role California's forests play in carbon sequestration and formalizes the Board of Forestry and Fire Protection's (Board) responsibility in meeting or exceeding the statewide GHG emission reduction targets for the forest sector. AB 1504 requires the Board to ensure that its rules and regulations that govern the harvesting of commercial forest tree species consider the capacity of forest resources to sequester carbon sufficient to meet or exceed the state's GHG reduction requirements for the forestry sector by 2020. The initial AB 32 Scoping Plan adopted by CARB in 2008 set a goal of maintaining the forest carbon sink with a net annual sequestration rate of 5 MMTCO₂e/year (CARB 2008:64), a rate that was reiterated in the 2017 Scoping Plan (CARB 2017a:3).

CAL FIRE's Fire and Resource Assessment Program (FRAP) develops an annual Forest Ecosystem and Harvested Wood Product Carbon Inventory (Forest Carbon Inventory) in collaboration with the U.S. Forest Service's (USFS) Forest Inventory and Analysis Program (FIA), USFS Pacific Northwest Research Station (PNW), and the University of Montana Bureau of Business and Economic Research (BBER). This annual Forest Carbon Inventory report assists the Board in assessing whether the goal of sequestering 5 MMTCO₂e/year of forest carbon is being met. This report also informs the goals identified in the *California Forest Carbon Plan*, discussed above. The annual Forest Carbon Inventory has been produced for 2015, 2016, and 2017.

Forest ecosystem carbon estimates for California are based on plot re-measurement of the same trees over time. This method captures and quantifies growth, tree removal, and tree mortality. Harvested wood product carbon estimates are based on a model created by BBER and the USFS, which follows annual harvest volumes through their timber product class allocation (e.g., softwood sawlogs, softwood pulpwood) and primary product allocation (e.g., softwood lumber, softwood plywood). Among other things, the model estimates how much carbon remains stored in durable wood products in use and at solid waste disposal sites. According to the most recent Forest Carbon Inventory (Christensen et al. 2018), California's forests are sequestering 27.9 MMTCO₂e/year, which exceeds the net annual sequestration target of 5 MMTCO₂e.

Transportation-Related Standards and Regulations

The State has also passed legislation addressing GHG emissions associated with industrial sources, transportation, electricity generation, and energy consumption, as summarized below.

As part of its Advanced Clean Cars program, CARB established more stringent GHG emission standards and fuel efficiency standards for fossil fuel-powered on-road vehicles. In addition, the program's zero-emission vehicle (ZEV) regulation requires battery, fuel cell, and plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025 (CARB 2016a:15). By 2025, when the rules will be fully implemented, GHG emissions from the statewide fleet of new cars and light-duty trucks will be reduced by 34 percent and cars will emit 75 percent less smog-forming pollution than the statewide fleet in 2016 (CARB 2016b:1).

Executive Order B-48-18, signed into law in January 2018, requires all state entities to work with the private sector to have at least 5 million ZEVs on the road by 2030, as well as 200 hydrogen fueling stations and 250,000 electric vehicle-charging stations installed by 2025. It specifies that 10,000 of these charging stations must be direct-current fast chargers.

CARB adopted the Low Carbon Fuel Standard (LCFS) in 2007 to reduce the carbon intensity of California's transportation fuels. The LCFS applies to fuels used by on-road motor vehicles and by off-road vehicles, including construction equipment (Wade, pers. comm., 2017). In September 2018, CARB approved amendments to the LCFS to require a 20 percent reduction in carbon intensity by 2030 to further the state towards the 2030 GHG reduction target. The staff report that accompanied the amendments estimated that from January to March 2018, biomass-based diesel averaged 14 percent of every gallon of diesel sold in the state and renewable natural gas (e.g., biogas) was 68 percent of all fuel used in natural gas vehicles (CARB 2018a:EX-1).

California's Climate Adaptation Strategy

California's overall plan for climate adaptation is expressed in *Safeguarding California Plan: 2018 Update* (CNRA 2018). The plan provides policy guidance for state decision-makers and is part of continuing efforts to reduce impacts and prepare for climate risks. The plan includes 76 policy recommendations across 11 policy sectors. One of the key sectors is forestry, which includes: restoring and protecting forest ecosystem function by reintroducing fire and improving management, protecting California's forest base, and enhancing watershed health; supporting community resilience by rebuilding California's forest management workforce, expanding the extent and health of California's urban tree canopy, and advancing fire preparedness; and fostering creative solutions to sustainably use biomass from fuels reduction activities and to better understand climate trends in forests via research and monitoring. Goal F-1 of the plan is to restore fire as a core ecological process, complemented by fuels reduction, working forests, and thinning to enhance forest health, resilience, and long-term carbon stability (CNRA 2018:4, 116–117, 127).

LOCAL

El Dorado County

The El Dorado County General Plan (2019) does not specifically include policies or goals to reduce GHG emissions. However, the general plan provides countywide goals and policies aimed at improving energy efficiency, transportation efficiency, and reducing air emissions, all of which would reduce GHGs.

The El Dorado County Board of Supervisors adopted Resolution No. 29-2008, the "Environmental Vision for El Dorado County," on March 25, 2008. The Resolution sets forth goals and calls for implementation of positive environmental changes to reduce global impact, improve air quality and reduce dependence on landfills, promote alternative energies, increase recycling, and encourage local governments to adopt green and sustainable practices. Relevant goals related to GHGs and climate change focus on reducing GHG emissions from the transportation sector, encouraging sustainable land use planning, and promoting clean energy and the use of alternative fuels (El Dorado County 2008).

At the time of writing this Draft PTEIR, El Dorado County does not have an adopted Climate Action Plan consistent with State CEQA Guidelines Section 15185.5(b).

Placer County

The Placer County General Plan (2013) also does not specifically include policies or goals to reduce GHG emissions. However, the general plan provides countywide goals and policies aimed at improving energy efficiency, transportation efficiency, and reducing air emissions, all of which would reduce GHGs. At the time of writing this Draft PTEIR, Placer County does not have an adopted Climate Action Plan consistent with State CEQA Guidelines Section 15185.5(b). However, the county has prepared a draft sustainability plan that includes a GHG emission reduction plan (Placer County 2020). The Placer County Tahoe Basin Area Plan does not include any policies or regulations regarding GHGs that are directly applicable to the proposed program (Placer County 2016).

City of South Lake Tahoe

The City of South Lake Tahoe General Plan (2011) includes a global warming and energy conservation section within the Natural and Cultural Resources Element. This section includes numerous policies focused on improving energy efficiency in new and existing buildings to reduce GHG emissions. No policies are directly relevant to the proposed program. The City of South Lake Tahoe is in the early stages of developing its first-ever Climate Action Plan.

3.10.2 Environmental Setting

PHYSICAL SCIENTIFIC BASIS OF GREENHOUSE GAS AND CLIMATE CHANGE

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected toward space. The absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun; therefore, the earth emits lower frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are CO₂, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-generated emissions of these GHGs in excess of natural ambient concentrations are found to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropomorphic increase in GHG concentrations and other anthropomorphic forcing (IPCC 2014:5). This warming is observable considering the 20 hottest years ever recorded occurred within the past thirty years (McKibben 2018).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas most pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the lifetime of any GHG molecule depends on multiple variables and cannot be determined with perfect certainty, it is understood that more CO₂ is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO₂ emissions, approximately 55 percent are estimated to be sequestered through ocean and land uptake every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO₂ emissions remain stored in the atmosphere (IPCC 2013:467).

The quantity of GHGs in the atmosphere responsible for climate change is not precisely known, but it is enormous. No single project alone would measurably contribute to an incremental change in the global average temperature or to global or local climates or microclimates. From the standpoint of CEQA, GHG impacts relative to global climate change are inherently cumulative.

GREENHOUSE GAS EMISSION SOURCES AND SINKS

As discussed previously, GHG emissions are attributable in large part to human activities. Emissions of CO₂ are byproducts of fossil fuel combustion. Methane, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices, organic material decomposition in landfills, and the burning of forest fires (Black et al. 2017). Nitrous oxide emissions are largely attributable to agricultural practices and soil management. CO₂ sinks, or reservoirs, include vegetation and the ocean, which absorb CO₂ through sequestration and dissolution (CO₂ dissolving into the water), respectively, two of the most common processes for removing CO₂ from the atmosphere.

The total GHG inventory for California in 2016 was 429 MMTCO₂e (CARB 2018b). This is less than the 2020 target of 431 MMTCO₂e equal to the inventory for 1990 (CARB 2018c:1). Table 3.10-1 summarizes the GHG inventory for California.

Table 3.10-1 Statewide GHG Emissions by Economic Sector¹

Sector	Percent
Transportation	41
Industrial	23
Electricity generation (in state)	10
Electricity generation (imports)	6
Agriculture	8
Residential	7
Commercial	5
Not specified	<1

¹ The inventory provides estimates of anthropogenic GHG emissions within California, as well as emissions associated with imported electricity; natural sources are not included in the inventory.

Source: CARB 2018b

Existing Levels of Emissions Generated by Wildfires

As shown in Table 3.10-1, transportation, industry, and electricity generation are the largest sectors of anthropogenic GHG emissions. These estimates do not account for GHGs emitted from wildfire or any other sources of GHGs on natural and working lands (besides those generated by agricultural activities). Wildfire has been a pervasive, natural, environmental factor throughout most of the state since before Euro-American settlement of California. It is estimated that approximately 1.8 million hectares (4.4 million acres) burned annually, historically, resulting in high levels of wildfire emissions (Stephens et al. 2007). Table 3.10-2 summarizes CARB's estimation of annual GHG emissions associated with wildfire between 2007 and 2018 (CARB 2019a).

Table 3.10-2 Annual GHG Emission Estimates from Wildfire in California, 2007–2018¹

Year	MMTCO ₂ e/year ²	Acres Burned (million)
2007	22.8	1.04
2008	45.7	1.35
2009	9.6	0.43
2010	1.4	0.09
2011	3.5	0.20
2012	15.9	0.75
2013	19.2	0.56
2014	21.2	0.53
2015	22.9	0.79

Year	MMTCO ₂ e/year ²	Acres Burned (million)
2016	14.4	0.55
2017	36.7	1.34
2018	45.5	1.59

Note: MMTCO₂e/year = million metric tons carbon dioxide equivalent per year.

¹ There are large uncertainties associated with mapped vegetation types, fuel loading, fuel moisture, burned area, modeled fuel consumption in flaming and smoldering phases, and emission factors. The emission estimates may have an uncertainty of between a factor of 2 to 3. (CARB 2019b:1). The latest estimates from CARB are for 2018.

² Emissions estimates only account for the emissions of carbon dioxide and do not include emissions of nitrous oxide or methane. Emissions estimates also do not include those GHG emissions associated with firefighting activity (e.g., combustion of fossil fuels by equipment, trucks, and aircraft).

Source: CARB 2019a

As shown in Table 3.10-2, the level of GHGs emitted by wildfires across the state varies from year to year with a statewide average of 21.6 MMTCO₂e per year during the 2007–2018 period.

The number of acres burned by wildfires in the Lake Tahoe Basin has increased in each decade since 1973, including a ten-fold increase during the last decade (CAL FIRE 2019). Table 3.10-3 includes historic wildfires within the Basin that overlap with the program area and provides estimates of GHG emissions for the entire wildfire areas.

Table 3.10-3 Historic Wildfires in Program Area with Estimates of GHG Emissions

Fire Name	Year	Total Acres ¹	Acres with the Program Area	GHG Emissions MTCO ₂ e ²
1918 Fire	1918	1,013	159	66,973
Gondola	2002	643	21	42,511
Pioneer 2	2002	24	6	1,587
Angora	2007	3,070	228	202,968
Washoe	2007	20	6	1,322
Emerald	2016	175	88	11,570

Note: MTCO₂e/year = metric tons of carbon dioxide equivalent.

¹ Fire size, expressed in acres, provided by CAL FIRE 2019.

² GHG emissions estimated for entire wildfire area using the US Forest Service BlueSky modeling tool (USFS 2019). Emission estimates may have an uncertainty of between a factor of 2 to 3 (CARB 2019b).

Source: Compiled by Ascent Environmental in 2019

Existing Levels of Emissions Generated by Vegetation Treatments

As described in Section 2.4.1, "Pace and Scale of Treatments," project proponents have treated an average of 503 acres each year within the program area since 2007, with an average of 199 acres treated by hand thinning, 200 acres treated by mechanical thinning, and 104 acres of pile burning. GHG emissions are generated by existing treatment activities. Emissions are generated by mechanical equipment, hand tools, worker commute and haul trips, and from prescribed burning. Based on the estimates GHG emissions from each treatment activity shown in Table 3.9-4, below, existing vegetation treatments in the program areas are estimated to result in annual GHG emissions of 4,549.86 MTCO₂e per year.

EFFECTS OF CLIMATE CHANGE ON WILDFIRE RISK

According to the Intergovernmental Panel on Climate Change (IPCC), which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature will increase by 1.5 degrees Celsius (°C) (2.7 degrees Fahrenheit [°F]) by 2040. This 1.5 °C warming represents a global average indicating that some portions of the earth will experience more dramatic warming than others, and thus the

extent of climate change effects on individual regions will vary. Long-term effects of climate change include rising temperatures; changes in precipitation patterns; increased severe weather events such as droughts, heat waves, and hurricanes; and sea-level rise. These effects have the potential to threaten transportation and energy infrastructure, crop production, forests and rangelands, and public health (CNRA 2018:64, 116–117, 127; OPR, CEC, and CNRA 2018:7–14). The effects of climate change will also have an indirect adverse impact on the economy as more severe natural disasters such as frequent and catastrophic wildfires cause expensive, physical damage to communities.

According to California’s Fourth Climate Change Assessment, *Statewide Summary Report* (2018), if global GHGs are reduced at a moderate rate, California will experience average daily high temperatures that are warmer than the historic average by 2.5 °F from 2006 to 2039, by 4.4 °F from 2040 to 2069, and by 5.6 °F from 2070 to 2100. If GHG emissions continue at current rates, then California will experience average daily high temperatures that are warmer than the historic average by 2.7 °F from 2006 to 2039, by 5.8 °F from 2040 to 2069, and by 8.8 °F from 2070 to 2100 (OPR, CEC, and CNRA 2018:5). The potential effects of this warming in California are well documented. Since its previous climate change assessment in 2012, California has experienced several of the most extreme natural events in its recorded history: a severe drought from 2012–2016, an almost non-existent Sierra Nevada winter snowpack in 2014–2015, back-to-back years of the warmest average temperatures, and increasingly large and severe wildfires (OPR, CEC, and CNRA 2018:3).

As discussed in Section 3.15, “Wildfire,” climate change has led to the exacerbation of wildfire conditions in two major ways: earlier spring snowmelt and reduced winter precipitation have resulted in a longer wildfire season, and cycles of heavy precipitation followed by drought conditions increase fuel loading in wet years and reduce moisture-content during droughts. One study estimates that the western U.S. has experienced a doubling of area burned by wildfire due to anthropogenic climate change (Abatzoglou and Williams 2016). These conditions have resulted in the largest, most destructive, and deadliest wildfires on record in California history. Nine of the state’s 10 deadliest wildfires have occurred since 2003 and are listed in Table 3.15-1, “Largest Wildfires in California Through 2018.” According to California’s Fourth Climate Change Assessment, if GHG emissions continue to rise, the frequency of extreme wildfires burning over 25,000 acres could increase by 50 percent by 2100 and the average area burned statewide could increase by 77 percent by the end of the century (OPR, CEC, and CNRA 2018). The proposed program would substantially increase the pace and scale of vegetation treatments in the program area in response to increased wildfire risk.

3.10.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

State CEQA Guidelines, Section 15064 and Appendix G direct a lead agency to consider the following factors when assessing the significance of GHG emissions:

- ▶ The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
- ▶ Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and
- ▶ The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Significance determinations account for the influence of relevant SPRs, which are incorporated into treatment design and listed below.

- ▶ **SPR AQ-3 Create Burn Plan:** The project proponent or project implementer will create a burn plan using the CAL FIRE burn plan template for all prescribed burns. The burn plan will include a fire behavior model output of First Order Fire Effects Model and BEHAVE or other fire behavior modeling simulation and that is performed by a qualified fire behavior technical specialist that predicts fire behavior, calculates consumption of fuels, tree

mortality, predicted emissions, greenhouse gas emissions, and soil heating. The project implementer will minimize soil burn severity from understory burning to reduce the potential for runoff and soil erosion. The burn plan will be created with input from a qualified technician or certified State burn boss. This SPR applies pile and understory burning.

- ▶ **SPR GHG-1 Contribute to the AB 1504 Carbon Inventory Process:** The project proponent of treatment activities subject to the AB 1504 process will provide all necessary data about the treatment that is needed by the U.S. Forest Service and CAL FIRE's Fire and Resource Assessment Program (FRAP) to fulfill requirements of the AB 1504 carbon inventory, and to aid in the ongoing research about the long-term net change in carbon sequestration resulting from treatment activity.

Emissions generated by off-road equipment were estimated using emission factors derived from CARB's web-based OFFROAD2017 model (CARB 2017b). Emissions generated by on-road vehicle trips were estimated using emission factors from the Emission Factor 2014 model (EMFAC2017, Version 1.0.2) (CARB 2017b). Emissions from prescribed burns, including understory burning and pile burning, were estimated using emission factors from published research (Urbanski 2014) and fuel loading consumption rates from NWCG's *National Wildfire Coordinating Group Smoke Management Guide for Prescribed Fire* (NWCG 2018). Detailed calculations and assumptions are provided in Appendix D. The emissions intensity of treatment activities may vary widely according to multiple factors including, but not limited to, the amount of vegetation removed or treated per acre, the frequency of treatments over the course of a year, the number of workers and equipment needed for each treatment project, and the specific types of equipment available. For these reasons, all assumptions involved in the emissions calculations are included in Appendix D and all emissions estimates are approximations. In addition to short-term treatment activity-related emissions, the analysis also acknowledges that the proposed program is intended to decrease the severity of wildfires over the long-term, resulting in the potential for reduced or avoided future GHG emissions and increased levels of sequestered carbon; however, the state of the science makes it infeasible to include reliable quantified estimates of potential long-term changes in GHG emissions or carbon sequestration that may indirectly result from these treatments over time.

As explained in Section 3.10.1, "Regulatory Setting," at the time of writing this Draft PTEIR, neither El Dorado County, Placer County, or the City of South Lake Tahoe have an adopted Climate Action Plan consistent with State CEQA Guidelines Section 15185.5(b). Thus, it is not possible to evaluate GHGs associated with the proposed program based on the program's consistency with such a GHG reduction plan.

The program area includes portions of two local air districts, the El Dorado County Air Quality Management District (EDCAQMD) and the Placer County Air Pollution Control District (PCAPCD). At the time of writing this Draft PTEIR, EDCAQMD has not developed GHG thresholds or guidance based on the statewide GHG target mandated by SB 32.

To evaluate whether a project's contribution to climate change would be cumulatively considerable, PCAPCD established GHG thresholds of significance for land use development projects and stationary sources that occur within its jurisdiction (PCAPCD 2017:2-24; PCAPCD 2016a:E-2). The development of these thresholds was based on the number and size of past CEQA projects in its jurisdiction and their associated GHG emissions (PCAPCD 2016a:16-22). Thresholds used to determine significance are from PCAPCD's policy document, *Review of Land Use Projects under CEQA*, and are shown below (PCAPCD 2016b).

PCAPCD's policy document, *California Environmental Quality Act Thresholds of Significance – Justification Report*, notes the following in describing how each of the thresholds should be applied (PCAPCD 2016a:16-22):

- 1) A bright-line threshold of 10,000 metric tons of CO₂ equivalent per year (MTCO_{2e}/year) for the construction and operational phases of land use development projects and new stationary sources;
- 2) A matrix of GHG efficiency metrics for the operational phase of land use development projects when emissions exceed the De Minimis Level. These metrics are expressed in units of MTCO_{2e} per person or MTCO_{2e} per square footage and, therefore, specific to land use development projects; and
- 3) A De Minimis Level for the operational phases of 1,100 MTCO_{2e}/year. This rate of emissions represents the level which can be considered to be less than a cumulatively considerable contribution to climate change.

Although PCAPCD recommends specific thresholds of significance for GHG emissions, these thresholds are meant for evaluating GHGs associated with land use development projects, including residential, commercial, industrial, and public land uses and facilities. Thus, they are not applicable to evaluation of treatment activities under the proposed program, which would generate short-term GHG emissions but are expected to result in long-term benefits. No thresholds of significance have been established by an air district, agencies that comprise the TFFT, or any other government agencies that is aligned with the 2030 statewide GHG target mandated by SB 32 of 2016 and is suitable for the types of GHG-emitting treatment activities that would be conducted under the proposed program. Thus, this analysis qualitatively evaluates whether the annual GHG emissions generated by later treatment activities would be substantial.

Additionally, this analysis assesses the proposed program's consistency with state regulatory programs designed to reduce GHG emissions, especially regarding the statewide GHG goals mandated by AB 32 of 2006 and SB 32 of 2016. This approach is consistent with one of the pathways to compliance presented in the California Supreme Court ruling, *Center for Biological Diversity v. California Department of Fish and Wildlife (2015) 62 Cal.4th 204, 229-231*. The proposed program is evaluated for its consistency with adopted regulations, plans, and policies aimed at reducing GHG emissions, including the *2017 Scoping Plan (CARB 2017a)*, *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan (CalEPA et al. 2019)*, and the *California Forest Carbon Plan (CAL FIRE, CNRA, and CalEPA 2017)*.

THRESHOLDS OF SIGNIFICANCE

Global climate change is inherently a cumulative issue. GHG emissions occurring in any location can contribute to global concentrations in the atmosphere in combination with cumulative emissions. Any individual project alone would not substantially change global GHG concentrations. Thresholds of significance are based on Appendix G and Section 15064 of the State CEQA Guidelines, professional judgment, and CEQA case law.

Per Appendix G of the CEQA Guidelines and PCAPCD, EDCAQMD, and TRPA recommendations, the proposed program would result in a cumulatively considerable contribution to climate change if it would:

- ▶ conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs; or
- ▶ generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

IMPACTS AND MITIGATION MEASURES

Impact 3.10-1: Potential to Conflict with Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of GHGs

The proposed program would be consistent with applicable plans, policies, and regulations aimed at reducing GHG emissions, including California's *2017 Climate Change Scoping Plan*, the *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan*, and the *California Forest Carbon Plan*. The purpose of the proposed program is to reduce wildfire risk, which could reduce GHG emissions and increase carbon sequestration over the long term. This impact would be **less than significant**.

Regulations, plans, and policies aimed at reducing GHG emissions from the natural lands in the treatable landscape of the proposed program include the *2017 Scoping Plan*, *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan*, and the *California Forest Carbon Plan*.

As described in Section 3.10.1, "Regulatory Setting," the 2017 Scoping Plan lays out the framework for achieving compliance with statewide GHG targets mandated by SB 32 of 2016 (i.e., 40 percent below 1990 levels by 2030). To help meet the statewide target for 2030, the 2017 Scoping Plan prescribed a 15–20 MMTCO₂e/year reduction from business-as-usual emissions from the natural and working lands sector and determined that this reduction should be achieved through increased carbon sequestration and the reduction of wildfire emissions. The treatment activities implemented under the proposed program would be consistent with the types of treatments called for in the 2017 Scoping Plan, acknowledging the important role of fuel reduction treatments and prescribed burns in managing

natural and working lands to reduce GHG emissions. SPR GHG-1 requires project proponents to provide annual information to support continued understanding of the role of forests in carbon sequestration.

The *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan* has set a goal for, at a minimum, doubling the rate of state-funded forest management and restoration efforts, which include prescribed burns, forest thinning, and understory treatments (e.g., removal of ground and ladder fuels). The implementation goals are 23,800–73,300 acres of prescribed burns per year, 59,000–73,000 acres of thinning per year, and 23,500–25,300 acres of understory treatment per year. The plan identifies CAL FIRE, who will oversee the proposed program, as one of the implementing agencies of these treatments (CalEPA et al. 2019:40–45). The proposed program aims to substantially increase the pace and scale of vegetation treatments and has set a target of 1,250 acres per year. As stated in Section 2.6, “Implementation,” approximately 1,250 acres would undergo treatment per year under the proposed program and the percentage breakdown by treatment method would be 24 percent mechanical treatments, 40 percent manual treatments, 16 percent prescribed understory burning, and 20 percent pile burning. This pace of treatment in the program areas would help meet the statewide targets set forth in the *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan*. Similarly, the proposed program would help meet the acreage targets for forest restoration and treatment activity levels for nonfederal forest lands set forth in the *California Forest Carbon Plan*.

The CALAND model was used to project the climate outcomes of implementation of the *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan*. While the CALAND model is informed by a growing body of literature on the effects of fuels treatment activities on carbon sequestration, the technical documentation supporting the CALAND model acknowledges uncertainty in net carbon effects of vegetation treatments in various landscapes. The model’s technical documentation suggests that more detailed research about wildfire and regeneration of vegetation in forested lands is needed to adequately characterize the conditions for reforestation and non-regeneration in the model (Di Vittorio and Simmonds 2018:24).

As stated in Section 2.1, “Background and Program Objectives,” the objectives of the proposed program includes reducing the risk of catastrophic wildfires, increase Lake Tahoe Basin forest resilience to effects of climate change, and increasing the pace and scale of fuel reduction projects to assist in achieving the goals of Executive Order B-52-18, which are consistent with the goals of the *California Forest Carbon Plan*, the *2017 Scoping Plan*, and *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan*. Given that the proposed program is aligned with the specific goals and strategies called out in these plans, as discussed above, the proposed program would be consistent with state plans and policies for carbon management in natural and working landscapes. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.10-2: Potential to Generate GHG Emissions through Treatment Activities

Direct GHG emissions from the proposed increase in treatment activities conducted under the proposed program would be substantial, recognizing planned levels of treatment would increase to 1,250 acres per year. At the full target rate of 1,250 acres per year, GHG emissions from treatments would be an estimated 23,298 MTCO₂e annually. Consistent with the goals of the proposed fuel treatments to decrease the occurrence of high-severity wildfires and increase the potential rates of carbon sequestration, implementation of the proposed program could result in a cumulative net carbon benefit over the long term, which is the most relevant timeframe and global context of GHG-caused, climate change-related environmental effects. However, there is uncertainty in predicting future wildfire occurrence, related emissions, and carbon sequestration rates, which are highly variable and depend on many factors. Future wildfire intensities and carbon sequestration in treated areas are the subjects of continued scientific research and debate. To meet CEQA’s mandate of good faith disclosure and acknowledge potential future impacts in light of uncertainties, this impact is considered **potentially significant**, recognizing the reliability of estimates for direct GHG emissions and the uncertainty of the intended net carbon benefits of reduced wildfire intensity and increased carbon sequestration in treated areas.

Treatment activities implemented under the proposed program would result in GHG emissions directly generated by off-road equipment, on-road vehicles, machine-powered hand tools, and potentially helicopters; and from the combustion of vegetation. Worker commute trips and hauling of equipment and materials associated with all treatment activities would also directly generate GHG emissions.

Mechanical treatments would be performed with heavy-duty off-road equipment such as wheeled tractors, crawler-type tractors, excavators, feller/bunchers, skidders, chippers, masticators or other similar equipment.

Manual treatments would typically be conducted by one or two hand crews (i.e., 20–40 crew members) using four to eight chainsaws per crew. Masticators and chippers may also be used at some manual treatment sites to assist with biomass disposition during manual treatments.

The biomass produced by mechanical or manual treatments may be processed into several products: electricity, merchantable timber, soil amendments, and firewood. This could result in additional haul truck trips to processing facilities (e.g., biomass power generation facilities, sawmills), which would generate additional GHG emissions. In limited cases, a helicopter could be used to remove merchantable timber from areas that cannot be accessed by haul trucks. Indirect emissions would also be generated through energy use at the facilities that process the raw vegetative debris.

Before implementing a prescribed burn, heavy-duty off-road equipment such as bulldozers, and masticators or track chippers may be used to create a fire containment (fuel break) perimeter. Fire engines and water trucks would be stationed on-site as a precautionary measure. Hand tools to ignite the prescribed burn could include drip torches and Terra torches, which run on a blend of diesel fuel and gasoline. Combustion of vegetation from prescribed burning would directly produce substantial GHG emissions immediately during treatment. The combustion of vegetation produces smoke, which is composed of a complex mixture of compounds, including CO₂ and methane.

To provide a general sense of the scale of emissions that may be associated with treatment activities, the rates of GHG emissions associated with each treatment activity (i.e., mechanical treatment, manual treatment, pile burning, and prescribed burning) are estimated on a per-acre basis using assumptions about the types and number of equipment that would be used by a treatment crew, the number of workers per treatment crew, and the rate at which a crew can treat an area. These GHG emission rates are summarized in Table 3.10-4. The emission rates presented in Table 3.10-4 also include emissions associated with hauling of merchantable timber and biomass to sawmills and energy generation facilities. See Appendix D for detailed input parameters and assumptions.

Table 3.10-4 Greenhouse Gas Emissions Associated with Treatment Method

Treatment Method	GHG Emissions per Acre Treated (MTCO ₂ e/acre)
Mechanical Treatment	1.69
Manual Treatment	0.94
Prescribed Understory Burning	63.2
Pile Burning	38.7

Notes: MTCO₂e/acre = metric tons of carbon dioxide–equivalent per acre.

¹ GHG emission estimates for mechanical treatments include heavy duty vehicle emissions associated with the hauling of vegetative biomass from treatments sites to either a sawmill (merchantable logs) or biomass power facility (fuel stock for electricity generation).

See Appendix D for detailed calculations, assumptions, and methods.

Source: Compiled by Ascent Environmental in 2019

As shown in Table 3.10-4, understory burning would be the most GHG-intensive treatment activity on a per-acre basis. This is because most of the carbon contained in fuels subject to prescribed burns is directly emitted into the air as either CO₂ or particulate matter, rather than staying in a sequestered state for an extended period after it is piled, chipped, masticated, spread across the ground, and/or hauled offsite to be used as mulch, a soil amendment, merchantable timber, or fuel at a biomass energy facility.

As discussed in Section 2.6, "Implementation," approximately 1,250 acres would undergo treatment per year under the proposed program, which would result in an increase of 747 acres above existing baseline conditions. This would include an estimated increase of 301 acres of manual treatments, 100 acres of mechanical treatments, 146 acres of pile burning, and 200 acres of prescribed understory burning. Applying these parameters, the level of GHG emissions generated by the increase in each treatment activity annually is summarized in Table 3.10-5. See Appendix D for detailed input parameters and assumptions.

Table 3.10-5 Annual Greenhouse Gas Emissions Generated by Treatment Method

Treatment Method	GHG Emissions (MTCO ₂ e/year)
Mechanical Treatment	169
Manual Treatment	283
Prescribed Understory Burning	12,640
Pile Burning	5,650
Total	18,742

Note: MTCO₂e/year = metric tons of carbon dioxide-equivalent per year.

See Appendix D for detailed calculations, assumptions, and methods.

Source: Compiled by Ascent Environmental in 2019

As shown in Table 3.10-5, the level of GHG emissions generated by the increase in treatment activities under the proposed program would total approximately 18,742 MTCO₂e/year. Additionally, it is estimated that GHG emissions produced by the biomass energy generation facility would total 585 MTCO₂e/year. Compared to the mass emission threshold of 10,000 MTCO₂e/year recommended by PCAPCD for evaluating stationary sources, the GHG emissions associated with the proposed program would be substantial and, in the context of legislated statewide targets, cumulatively considerable.

The effect of vegetation treatment on the carbon content of the landscape over the long term—by reducing occurrences of high-severity wildfires and/or by increasing the carbon sequestration potential of vegetated landscapes—continues to be the focus of scientific research and model development, particularly in tree-dominated landscapes. The current body of research presents various and inconsistent findings regarding the effects of treatments on the long-term carbon emission or sequestration of forested lands. A review of the scientific literature in the *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan* indicates that, in a broader context, treatment activities reduce vegetation densities and fuel loads, restore the structure and composition of ecosystems, and may lower the potential for damaging, high-severity fire, which is currently the primary source of GHG emissions and carbon loss from the natural and working lands sector (Stephens et al. 2009; Campbell et al. 2007; Hurteau et al. 2008; Hurteau and North 2009; and North et al. 2009—all cited in CalEPA et al. 2019:14). Additionally, it finds that future vegetative growth on treated acres would result in carbon sequestration over time. The *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan*, which includes treatment activities, relied on the California Natural and Working Lands Carbon and Greenhouse Gas Model (CALAND model) to evaluate the long-term effects of the draft plan.

The CALAND model is an empirically based landscape-scale carbon accounting model that assesses the projected GHG benefits of certain conservation, restoration, and management activities on California's natural and working lands. CALAND is designed to quantify the level of GHG emissions associated with treatments of different types of vegetation as well as the net change in carbon sequestration in vegetation and soils resulting from different types of treatments (Di Vittorio and Simmonds 2018:3). The technical documentation that supports the CALAND model suggests that strategies to enhance resilience to pest and disease and reduce stand density in degraded forests, including prescribed burning and thinning, are likely to benefit regional forest health and help prevent large losses of carbon (Di Vittorio and Simmonds 2018:52), although more research is warranted to be able to definitively estimate carbon sequestration. It also suggests that, while fuel reduction treatment activities require direct carbon emissions, they could also result in long-term carbon sequestration benefits and can affect vegetation carbon accumulation rates for a 20-year post-management period (Di Vittorio and Simmonds 2018). However, some key assumptions of

CALAND about the carbon dynamics associated with the utilization of harvested and collected biomass carbon for wood products and energy would not apply to the proposed program. Notably, CALAND assumes removal of 20 percent of live and dead standing trees for wood products and bioenergy resulting from “clearing of ladder fuels and debris through thinning” in forests (Di Vittorio and Simmonds 2018:12, 14, 20). Disposition of biomass created by the program treatments would likely differ from the CALAND assumptions, because the proposed program is expected to remove a combined total of 70 percent of the biomass generated through wood products and energy generation (see Section 2.4.6 in Chapter 2, “Program Description”).

Other studies address the reduction of GHG emissions from wildfire in treated areas, based on the expectation that fires would be less intense in those locations. Wildfires are especially emissions-intensive because they are uncontrolled, can burn for a long duration (weeks or months), and can result in crown fires that burn entire trees. Wildfires on untreated lands are more difficult to control and suppress than wildfires on lands that have undergone vegetation treatments. One study determined that, in some forest classes that historically had relatively frequent fire intervals, wide-scale prescribed burn application can reduce GHG emissions from wildfires by 18–25 percent in the western U.S., and by as much as 60 percent in specific forest systems as compared to a wildfire on untreated lands (Wiedinmyer and Hurteau 2010). The classes of forests in which this relationship was found include mixed conifer, Douglas-fir/ponderosa pine, and ponderosa/Jeffrey pine. As discussed in Section 3.2, “Wildfire,” there is scientific consensus that there is a correlation between certain types of forest fuel treatments and reduced wildfire severity. Other studies suggest that reducing fuels through mechanical treatments and prescribed burning is effective at reducing fire severity and annual area burned when applied at the landscape scale over an extended period (Kim et al. 2013, Prichard and Kennedy 2014). Another study found that when moderate- and high-severity wildfires encountered a previously treated area, fire severity was substantially reduced in the treated area relative to the adjacent untreated area (Lydersen et al. 2017). The findings of these studies indicate that vegetation treatments may result in a net carbon benefit in the long term, particularly in the context of avoided GHG emissions from wildfire, the severity and extent of which would be less in treated areas, and/or the potential for treated areas to sequester more carbon.

Other published studies indicate that the carbon sequestration potential for an area is highly dependent on many variables, and in some cases may not result in a net carbon benefit over the long term. For instance, a study by Campbell et al. (2011), which focused on forests in southern Oregon and northern California, did not find evidence that thinning trees and other fuel-reduction practices aimed at reducing the probability of high-severity forest fire have the added benefit of increasing terrestrial carbon stocks. This study found that reductions in carbon sequestration resulting from vegetation treatment (i.e., removal of fuels) generally exceed the level of emissions avoided should the treated area be burned in a wildfire; and that only when treatments change the equilibrium between growth and mortality can they alter the level of carbon sequestration over the long term. In addition, a modeling study by Hurteau and North (2009) suggests that the potential for treatments of a forest to result in a long-term increase in carbon sequestration is most affected by the stand structure, which generally refers to the distribution of trees by species and size, resulting from the fuel treatments (Hurteau and North 2009). Another modeling study, by Reinhardt and Holsinger (2010), determined that vegetation treatments in forests in the northern Rocky Mountains decreased fire severity and crown fire occurrence and reduced subsequent wildfire emissions, but did not increase post-wildfire carbon stored on-site. It also found, conversely, that untreated stands had greater wildfire emissions but stored more carbon.

In summary, there is uncertainty in predicting future wildfire occurrence, severity, and carbon sequestration rates that will continue to be evaluated in ongoing research and factored into future state-level planning for management of natural and working lands and in future iterations of the CALAND model and other models. As stated in the 2017 Scoping Plan, continued research and development to advance the state of science on carbon dynamics is needed (CARB 2017a:82–83). The current scientific understanding of the carbon-related effects of vegetative treatments is limited, in part, because the long timescale in which these carbon cycles need to be considered. For forests especially, an appropriate timescale is on the order of 20, 50, or 100 years, or longer. This is acknowledged in the *2017 Climate Change Scoping Plan*, the *California Forest Carbon Plan*, and *California 2030 Natural and Working Lands Climate Change Implementation Plan*, and is also acknowledged in the AB 1504 Carbon Inventory Process.

The potential exists for long-term, cumulative net carbon benefits and there is research that indicates that in some cases, immediate GHG emissions from treatment activities and the loss of carbon from removal of vegetation are greater than the positive carbon effects of reduced wildfire severity and size. To meet CEQA's mandate of good faith disclosure (*California Native Plant Society v. City of Santa Cruz, supra*, 177 Cal.App.4th at p. 979) by acknowledging potential future impacts in light of the uncertainties, this Draft PTEIR identifies this GHG impact as **potentially significant**, recognizing the reliability of estimates of direct GHG emissions and the uncertainty of the intended net carbon benefits of reduced wildfire intensity and increased carbon sequestration in treated areas. Even though the predicted long-term outcome may be beneficial, the "potentially significant" determination is intentional as an expression of CAL FIRE and partner agencies commitment to continued support of ongoing research and adjustment of carbon management approaches as the science evolves.

Mitigation Measure 3.10-2: Implement GHG Emission Reduction Techniques During Prescribed Burns

When planning for and conducting a prescribed burn, project proponents implementing a prescribed burn will incorporate feasible methods for reducing GHG emissions, including the following, which are identified in the *National Wildfire Coordinating Group Smoke Management Guide for Prescribed Fire* (NWCG 2018):

- ▶ reduce the total area burned by isolating and leaving large fuels (e.g., large logs, snags) unburned;
- ▶ reduce the total area burned through mosaic burning;
- ▶ burn when fuels have a higher fuel moisture content;
- ▶ reduce fuel loading by removing fuels before ignition. Methods to remove fuels include mechanical treatments, manual treatments, and biomass utilization; and
- ▶ schedule burns before new fuels appear.

As the science evolves, other feasible methods or technologies to sequester carbon could be incorporated, such as conservation burning, a technique for burning woody material that reduces the production of smoke particulates and carbon released into the atmosphere and generates more biochar. Biochar is produced from the material left over after the burn and can be spread with compost to increase soil organic matter and soil carbon sequestration. Technologies may also include portable units that perform gasification to produce electricity that can be placed on the grid (e.g., the Powertainer model currently being developed by All Power Labs) or pyrolysis that produces biooil that can be used as liquid fuel and/or syngas for use in electricity generation (e.g., the CM600 made by Biogreen) (All Power Labs 2019; Biogreen 2019).

The project proponent will document in the Burn Plan required pursuant to SPR AQ-3 which methods for reducing GHG emissions can feasibly be integrated into the treatment design.

Significance after Mitigation

Implementation of Mitigation Measure 3.10-2 would require project proponents conducting prescribed burns to implement GHG emission reduction techniques, as feasible. Given the potential infeasibility of implementing specific emission reduction techniques and the uncertainties associated with all the parameters and objectives of prescribed burning, it is not feasible to precisely quantify the GHG reductions that would be achieved by implementation of Mitigation Measure 3.10-2 in this programmatic evaluation. For instance, these measures may not always be feasible when the objective of a prescribed burn is to consume coarse woody debris in areas of high tree mortality. Also, the feasibility of conducting mosaic burning can depend on the size of a burn, and mosaic burning may not meet the objectives of the project proponent or the landowner. Moreover, burning fuels with a higher fuel moisture content can generate more smoke and result in less consumption, potentially reducing the longevity or effectiveness of a prescribed burn treatment. Thus, acknowledging the need for a balance between achieving treatment objectives and minimizing GHG impacts or immediate smoke impacts, the levels of GHGs emitted by prescribed burns could still be considerable. Implementation of Mitigation Measure 3.10-2 would support the development and implementation of refined treatment strategies in compliance with the *California 2030 Natural and Working Lands Climate Change Implementation Plan* to heighten the GHG benefit of this program. With the continued evolution of the body of scientific knowledge about the long-term carbon sequestration effects of vegetation treatments and application of

research-backed guidance to treatment implementation, the likelihood of net GHG benefits would be reasonably expected to grow over time. Other measures could include the purchase and retirement of carbon credits to offset the one-time GHG emissions directly associated with treatment activity; however, this approach would consume financial resources needed to achieve the wildfire risk reduction objectives of the proposed program, so offset purchases could detract from and would not contribute to feasibly meeting the key objective of increasing the pace and scale of treated acreage.

Similar to the reasons for the pre-mitigation significance determination, to meet CEQA's mandate of good faith disclosure and acknowledge potential future impacts in light of uncertainties, this Draft PTEIR classifies this GHG impact as **potentially significant and unavoidable** after implementation of mitigation. Even though the long-term outcome may yet become beneficial, the "potentially significant and unavoidable" determination alerts the public to the potential that net positive emissions of GHGs may persist over time.

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3.11 HAZARDS AND HAZARDOUS MATERIALS

This section evaluates potential health, safety, and environmental impacts related to hazardous materials that could result from implementation of the Tahoe PTEIR. It describes nature of potential impacts that could occur as a result of the vegetation treatment activities. This section also describes the existing hazards and hazardous materials in the program area and identifies the applicable federal and state plans, policies, and laws and local plans, policies, and regulations.

While it is likely that some Tahoe PTEIR treatment activities may occur within 2 miles of the South Lake Tahoe airport, activities proposed under the Tahoe PTEIR do not include the development of new structures or facilities. Therefore, the Tahoe PTEIR would not violate any structural height standards that could interfere with aircraft flight patterns or air traffic control communications. Prescribed burning is maintained at low intensities that would not generate sufficient smoke to affect air traffic. Furthermore, the Tahoe PTEIR would not pose a significant safety hazard for people residing or working within 2 miles of an airport because no new residents would result from Tahoe PTEIR implementation, and teams of workers would be small and only temporarily present within a treatment site. This issue is not discussed further in this PTEIR.

Implementation of the Tahoe PTEIR would not alter potential emergency evacuation routes or impair an adopted emergency plan, as no alterations to roadways would occur and treatment activities would be temporary and occur off road and in remote areas. There could be additional vehicle traffic (i.e. trucks hauling logs) but would not disrupt roadways. While there may be disruptions to some rural access points when vegetation treatment activities are being implemented, these disruptions would be temporary and implemented for the protection of the public during treatments (e.g., when prescribed burning is occurring) and access would be return to existing conditions once the activity is complete. Thus, the Tahoe PTEIR would not have any significant impacts on adopted emergency response or emergency evacuation plans. This issue is not discussed further in this PTEIR.

No comments received on the notice of preparation were related to hazardous materials.

3.11.1 Regulatory Setting

FEDERAL

Management of Hazardous Materials

Various federal laws address the proper handling, use, storage, and disposal of hazardous materials, as well as requiring measures to prevent or mitigate injury to health or the environment if such materials are accidentally released. The U.S. Environmental Protection Agency (EPA) is the agency primarily responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. Applicable federal regulations pertaining to hazardous materials are primarily contained in Code of Federal Regulations (CFR) Titles 29, 40, and 49. Hazardous materials, as defined in the Code, are listed in 49 CFR 172.101. Management of hazardous materials is governed by the following laws.

- ▶ The Toxic Substances Control Act of 1976 (15 U.S. Code [USC] Section 2601 et seq.) regulates the manufacturing, inventory, and disposition of industrial chemicals, including hazardous materials. Section 403 of the Toxic Substances Control Act establishes standards for lead-based paint hazards in paint, dust, and soil.
- ▶ The Resource Conservation and Recovery Act of 1976 (42 USC 6901 et seq.) is the law under which EPA regulates hazardous waste from the time the waste is generated until its final disposal (“cradle to grave”).
- ▶ The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (also called the Superfund Act or CERCLA) (42 USC 9601 et seq.) gives EPA authority to seek out parties responsible for releases of hazardous substances and ensure their cooperation in site remediation.

- ▶ The Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499; USC Title 42, Chapter 116), also known as SARA Title III or the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), imposes hazardous materials planning requirements to help protect local communities in the event of accidental release.
- ▶ The Spill Prevention, Control, and Countermeasure (SPCC) rule includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend, and implement SPCC Plans. The SPCC rule is part of the Oil Pollution Prevention regulation, which also includes the Facility Response Plan rule.

Transport of Hazardous Materials

The U.S. Department of Transportation (DOT), in conjunction with the EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to the transportation of hazardous materials. The U.S. DOT regulates transport of hazardous materials between states and is responsible for protecting the public from dangers associated with such transport. The federal hazardous materials transportation law, 49 USC 5101 et seq. (formerly the Hazardous Materials Transportation Act 49 USC 1801 et seq.) is the basic statute regulating transport of hazardous materials in the United States. Hazardous materials transport regulations are enforced by the Federal Highway Administration, the U.S. Coast Guard, the Federal Railroad Administration, and the Federal Aviation Administration.

Worker Safety

The federal Occupational Safety and Health Administration (OSHA) is the agency responsible for assuring worker safety in the handling and use of chemicals identified in the Occupational Safety and Health Act of 1970 (Public Law 91-596, 9 USC 651 et seq.). OSHA has adopted numerous regulations pertaining to worker safety, contained in CFR Title 29. These regulations set standards for safe workplaces and work practices, including standards relating to the handling of hazardous materials and those required for excavation and trenching.

Tahoe Regional Planning Agency

Tahoe Regional Plan

Goals and policies of the Regional Plan that are related to hazardous materials are located in the Water Quality section of the Land Use Element. Relevant excerpts are included below.

GOAL WQ-2: Reduce or eliminate point sources of pollutants which affect, or potentially affect, water quality in the Tahoe region.

- ▶ **Policy WQ-2.3:** Underground storage tanks for sewage, fuel, or other potentially harmful substances shall meet standards set forth in TRPA ordinances, and shall be installed, maintained, and monitored in accordance with the Best Management Practices Handbook.

Leaking underground tanks are a nationwide water quality problem. In the Tahoe Region, the environmental impacts of leaking tanks may be especially noticeable and harmful to the environment.

- ▶ **Policy WQ-2.5:** TRPA shall cooperate with other agencies with jurisdiction in the Lake Tahoe Region in the preparation, evaluation, and implementation of toxic and hazardous spill control plans.

A single spill of a toxic or hazardous material in the Region could reverse progress in attaining water quality goals gained at great local expense and effort. TRPA will cooperate with the U.S. Forest Service, the EPA, and state water quality and health agencies to prevent and control toxic and hazardous spills.

Code of Ordinances

Applicable sections of the TRPA Code of Ordinances include the following.

- ▶ **60.1.3.D Prohibition of Toxic or Hazardous Waste Discharge**

The discharge of toxic or hazardous waste to Lake Tahoe, other lakes in the region, their tributaries, the ground waters of the Tahoe region, the lands of the Tahoe region, or the Truckee River within the Tahoe region is prohibited.

▶ **60.1.6 Spill Control**

All persons handling, transporting, using, or storing toxic or hazardous substances shall comply with the applicable requirements of state and federal law regarding spill prevention, reporting, recovery, and clean-up. Sewage collection, conveyance, and treatment districts shall have sewage spill contingency, prevention, and detection plans approved by the state agency of appropriate jurisdiction and submitted to TRPA for review and approval within three years of the effective date of the Regional Plan.

▶ **80.3.2.E: Findings for All Projects. Hazardous Materials.**

TRPA must find that measures will be taken to prevent spill or discharges of hazardous materials.

STATE

Management of Hazardous Materials

In California, both federal and state community right-to-know laws are coordinated through the Governor's Office of Emergency Services. The federal law, SARA Title III or EPCRA, described above, encourages and supports emergency planning efforts at the state and local levels and to provide local governments and the public with information about potential chemical hazards in their communities. Because of the community right-to-know laws, information is collected from facilities that handle (e.g., produce, use, store) hazardous materials above certain quantities. The provisions of EPCRA apply to four major categories:

- ▶ emergency planning,
- ▶ emergency release notification,
- ▶ reporting of hazardous chemical storage, and
- ▶ inventory of toxic chemical releases.

The corresponding state law is Chapter 6.95 of the California Health and Safety Code (Hazardous Materials Release Response Plans and Inventory). Under this law, qualifying businesses are required to prepare a Hazardous Materials Business Plan, which would include hazardous materials and hazardous waste management procedures and emergency response procedures, including emergency spill cleanup supplies and equipment. At such time as the applicant begins to use hazardous materials at levels that reach applicable state and/or federal thresholds, the plan is submitted to the administering agency.

The California Department of Toxic Substances Control (DTSC), a division of the California Environmental Protection Agency, has primary regulatory responsibility over hazardous materials in California, working in conjunction with EPA to enforce and implement hazardous materials laws and regulations. As required by Section 65962.5 of the California Government Code, DTSC maintains a hazardous waste and substances site list for the state, known as the Cortese List. Individual regional water quality control boards (RWQCBs) are the lead agencies responsible for identifying, monitoring, and cleaning up leaking underground storage tanks (USTs). The Lahontan RWQCB has jurisdiction over the Tahoe PTEIR program area.

Transport of Hazardous Materials and Hazardous Materials Emergency Response Plan

The State of California has adopted U.S. Department of Transportation regulations for the movement of hazardous materials originating within the state and passing through the state; state regulations are contained in 26 California Code of Regulations (CCR). State agencies with primary responsibility for enforcing state regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol and the California Department of Transportation (Caltrans). Together, these agencies determine container types used and license hazardous waste haulers to transport hazardous waste on public roads.

California has developed an emergency response plan to coordinate emergency services provided by federal, state, and local governments and private agencies. Response to hazardous materials incidents is one part of the plan. The plan is managed by the Governor's Office of Emergency Services, which coordinates the responses of other agencies in the program area.

Management of Construction/Implementation Activities

Through the Porter-Cologne Water Quality Act and the National Pollution Discharge Elimination System (NPDES) program, RWQCBs have the authority to require proper management of hazardous materials during project construction. For a detailed description of the Porter-Cologne Water Quality Act, the NPDES program, and the role of the Lahontan RWQCB, see Section 3.12, "Hydrology and Water Quality."

Worker Safety

The California Occupational Safety and Health Administration (Cal/OSHA) assumes primary responsibility for developing and enforcing workplace safety regulations within the state. Cal/OSHA standards are typically more stringent than federal OSHA regulations and are presented in Title 8 of the CCR. Cal/OSHA conducts onsite evaluations and issues notices of violation to enforce necessary improvements to health and safety practices.

LOCAL

Types of local regulations relevant to hazardous materials include general plan policies, local emergency operation plans, and zoning requirements.

Lake Tahoe Geographic Response Plan

The Lake Tahoe Geographic Response Plan (LTGRP) is the principal guide for agencies within the Lake Tahoe watershed, its incorporated cities, and other local government entities in mitigating hazardous materials emergencies. The LTGRP establishes the policies, responsibilities, and procedures required to protect life, environment, and property from the effects of hazardous materials incidents. The LTGRP establishes the emergency response organization for hazardous materials incidents occurring within the Lake Tahoe watershed. The plan is generally intended to be used for oil spills or chemical releases that impact or could potentially impact drainages entering Lake Tahoe and the Truckee River.

Certified Unified Program Agency

The El Dorado County Department of Environmental Management, Hazardous Waste Division, is approved by Cal-EPA as the Certified Unified Program Agency (CUPA) for El Dorado County. Placer County Environmental Health (PCEH) is the designated CUPA authorized pursuant to Section 25502 of Chapter 6.95 of the California Health and Safety Code for all areas of Placer County except the City of Roseville. The Unified Program is a consolidation of state environmental programs into one program under the authority of a CUPA. Agencies participating with the county in the program include the California Environmental Protection Agency (Cal EPA), DTSC, Cal OES, Office of State Fire Marshal, and SWRCB.

El Dorado County General Plan

The July 2004 El Dorado County General Plan identifies public health and safety issues and provides guidance for protecting the health, safety, and welfare of El Dorado County residents. The goals objectives and policies within the General Plan include recognizing and reducing the threats to public health and the environment posed by the use, storage, manufacture, transport, release, and disposal of hazardous materials (Goal 6.6). This includes regulation of the use, storage, manufacture, transport, and disposal of hazardous materials in accordance with state and federal regulations (Objective 6.6.1). The Hazardous Waste Management Plan shall serve as the implementation program for management of hazardous waste to protect the health, safety, property of residents and visitors, and to minimize environmental degradation while maintaining economic viability (Policy 6.6.1.1). If contamination is found to exist by the site investigations, it shall be corrected and remediated in compliance with applicable laws, regulations, and standards before the issuance of a new land use entitlement or building permit. The Plan includes requirements to

correct and remediate contamination by hazardous materials for any permitted activity involving ground disturbance (Policy 6.6.1.2). Additionally, provision must be made for disposal of aviation generated petroleum, oils, lubricants, and solvents at the County airports (Policy 6.6.1.3).

El Dorado County Hazardous Materials Area Plan

The El Dorado County Hazardous Materials Area Plan describes the County's pre-incident planning and preparedness for hazardous materials releases. It clarifies the roles and responsibilities of federal, state, and local agencies during a hazardous materials incident. It also describes the County's hazardous materials incident response program, training, communications and post-incident recovery procedures.

Placer County General Plan

The Health and Safety Element of the Placer County General Plan includes goals and policies intended to minimize injury to people and damage to property from exposure to wildland fire hazards and hazardous materials use, transport, treatment, and disposal. Specific policies require the county to ensure that projects use, transport, store, and dispose of hazardous materials in compliance with local, state, and federal safety standards (Policies 8.G.1, 8.G.3, 8.G.5, and 8.G.6). The General Plan also includes policies to provide the county with information regarding how the project will reduce hazardous waste production, recycling of hazardous wastes, and a plan for emergency response in the event that hazardous materials are accidentally released (Policies 8.G.9 and 8.G.10).

Placer County Office of Emergency Services

The Placer County Office of Emergency Services (OES) implements the state's Right-to-Know Ordinance that gives Placer County OES the authority to inventory hazardous materials used by businesses. Placer County OES is responsible for administering the Placer County emergency management program on a day-to-day basis and during disasters. The office is charged with providing the necessary planning, coordination, response support, and communications with all agencies affected by large-scale emergencies or disasters. Placer County OES works in cooperation with other disciplines such as law enforcement, fire protection, emergency medical services, state and federal agencies, utilities, private industry, and volunteer groups to provide a coordinated response to disasters. Placer County OES becomes the single focal point for centralized management and coordination of emergency response and recovery operations during a disaster or emergency affecting the county. Placer County OES will be activated when an emergency situation occurs that exceeds local and/or in-field capabilities to adequately respond to and mitigate the incident.

Placer Operational Area East Side Emergency Evacuation Plan

Office of Emergency Services implements the Placer Operational Area East Side Emergency Evacuation Plan (Placer County 2015). This plan was developed to help increase preparedness and facilitate the efficient and rapid evacuation of threatened communities in the far eastern end of the county in the event of an emergency, probably a forest fire or flood. The plan provides details regarding evacuation alerts, evacuation emergency medical services and public information, traffic control, transportation, communication, and animal services. Interstate 80 (I80) and State Routes (SR) 28, 89, and 267 comprise the major evacuation routes in the program area. A number of emergency operations centers and evacuation centers have been identified in Kings Beach, Tahoe City, and Truckee.

City of South Lake Tahoe General Plan

The Health and safety Element of the 2011 General Plan provides the policy context to achieve its vision for future health and safety. The Plan includes Goals HS-1 to plan, train, and respond to major incidences and disasters and HS-6 to protect and maintain the safety of residents, businesses, and visitors by reducing, and where possible eliminating exposure to hazardous materials, waste, and natural substances.

3.11.2 Environmental Setting

For purposes of this section, the term “hazardous materials” refers to both hazardous substances and hazardous wastes. A “hazardous material” is defined as “a substance or material that ... is capable of posing an unreasonable risk to health, safety, and property when transported in commerce” (49 CFR 171.8). California Health and Safety Code Section 25501 defines a hazardous material as follows:

Hazardous material means any material that, because of its quantity, concentration, or physical, or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. “Hazardous materials” include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Hazardous wastes are defined in California Health and Safety Code Section 25141(b) as wastes that ... because of their quantity, concentration, or physical, chemical, or infectious characteristics, [may either] cause, or significantly contribute to an increase in mortality or an increase in serious illness [or] pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Potential hazards are summarized as hazardous materials, if present in soils, that can be disturbed and dispersed by vegetation treatment activities, particularly those using heavy equipment. Soil contamination generally occurs in areas that are or have been previously developed, especially with industrial-type uses. Soil contamination in the Tahoe PTEIR program area generally occurs in areas that are or have been previously developed, especially along SR 89, SR 28, and US 50 (SWRCB 2019). Most of the existing hazardous materials sites in the program area are from leaking underground storage tanks (LUSTs), which have been remediated. There are also documented spills of tetrachloroethylene, diesel, methyl tert-butyl ether (MTBE), and alcohols which have been remediated. There is one active tetrachloroethylene contamination area near the ‘Y’ in South Lake Tahoe but it is not located within the program area (Figure 3.11-1). Only two active LUSTs are within the program area. The active LUSTs are gasoline tanks located at Tahoe Marina Lodge Pier for the refueling of boats in Tahoe City and the former Al’s Ski Run Chevron for fueling of autos in South Lake Tahoe and are labeled on Figure 3.11-1.

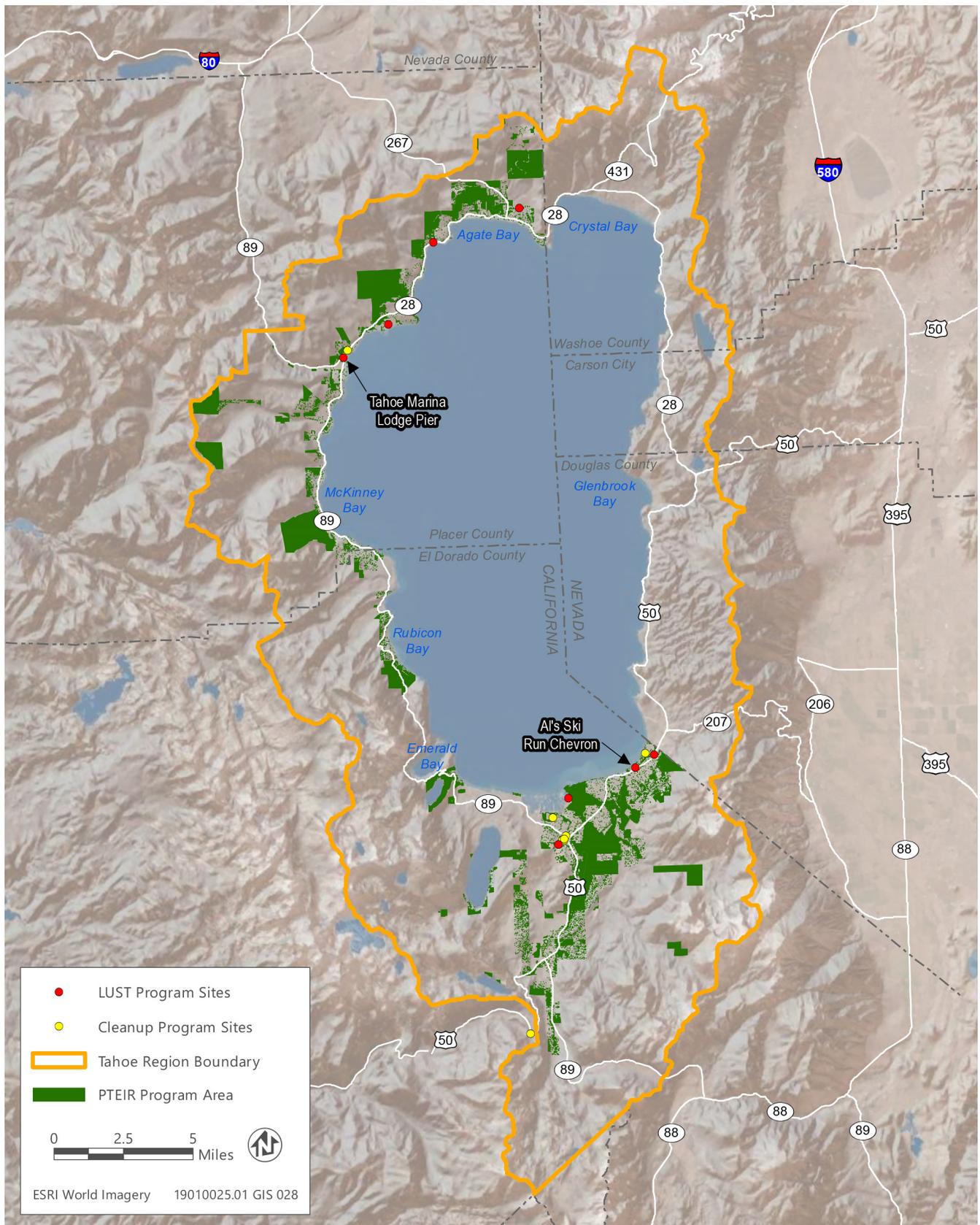
To implement the proposed program, common household hazardous materials such as fuels, oils, lubricants, solvents, and detergents would be used for equipment and vehicle use and maintenance. As described in Section 2, “Program Description,” agencies that comprise the Tahoe Fire and Fuels Team, have already treated thousands of acres to manage forest conditions in the Wildland-Urban Interface (WUI) surrounding Tahoe’s communities. Therefore, transportation, use, and storage of hazardous materials associated with treatment activities already occur in the program area under existing conditions.

3.11.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The following reports and data sources document potentially hazardous conditions at the project site and were reviewed for this analysis:

- ▶ available literature, including documents published by federal, state, county, city, and local agencies; and
- ▶ review of applicable elements from the plans listed in the regulatory setting.



Source: Data downloaded from State Water Resources Control Board in 2019

Figure 3.11-1 Active Hazardous Material Sites in or near the Program Area

Treatment activities included in the proposed program were evaluated against the hazardous materials information gathered from the sources cited above to determine whether any risks to public health and safety or other conflicts would occur. Significance determinations also assume the implementation of project SPRs relevant to hazards and hazardous materials (also included in Appendix B), including:

- ▶ **SPR HAZ-1 Maintain All Equipment:** The project implementer will maintain all diesel- and gasoline-powered equipment per manufacturer's specifications, and in compliance with all state and federal emissions requirements. Maintenance records will be available for verification. Prior to the start of treatment activities, the project implementer will inspect all equipment for leaks and inspect everyday thereafter until equipment is removed from the site. Any equipment found leaking will be promptly removed.
- ▶ **SPR HAZ-2 Require Spark Arrestors:** The project implementer will be required to use mechanized hand tools that have federal- or state-approved spark arrestors. This SPR applies only to manual treatment activities.
- ▶ **SPR HAZ-3 Require Fire Extinguishers:** The project proponent will require tree cutting crews to carry one fire extinguisher per chainsaw. Each vehicle would be equipped with one long-handled shovel and one axe or Pulaski consistent with PRC Section 4428. This SPR applies only to manual treatment activities.
- ▶ **SPR HAZ-4 Prohibit Smoking in Vegetated Areas:** The project implementer will require that smoking is only permitted in designated smoking areas barren or cleared to mineral soil at least 3 feet in diameter (PRC Section 4423.4).

THRESHOLDS OF SIGNIFICANCE

The exposure of people to smoke-related hazards, including potential respiratory effects of smoke resulting from prescribed burns, are analyzed in Section 3.5, "Air Quality." The exposure of people or structures to risks from wildland fires is addressed in Section 3.2, "Wildfire." These issues are not described further in this section of the PTEIR.

Based on Appendix G of the State CEQA Guidelines, an impact related to hazards and hazardous materials is considered significant if implementation of later treatment activities under the Tahoe PTEIR would:

- ▶ create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- ▶ create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment;
- ▶ emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; and
- ▶ be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.

IMPACTS AND MITIGATION MEASURES

Impact 3.11-1: Create a Significant Health Hazard from the Routine Transport, Use, or Disposal of Hazardous Materials or Accidental Release Into the Environment

Implementation of the Tahoe PTEIR would require the use of various types of equipment and vehicles, which require fuels, oils, and lubricants to operate. The routine use, transport, and disposal of these substances could result in an accidental upset or health hazard if released into the environment. SPR HAZ-1 would be implemented during treatment activities, which requires that all equipment be properly maintained per manufacturer's specifications, requires regular inspection of all equipment for leaks, and requires that any equipment found leaking is required to be promptly removed from a treatment site. This SPR would minimize leaks and the potential for resultant contamination to enter the environment. Additionally, the program would be required to comply with federal, state, county, and local laws that regulate the use, transport, storage, and disposal of hazardous materials. Although implementation of the Tahoe PTEIR would increase the pace and scale of vegetation treatments and thus increase the use of hazardous materials in the program area, no new or more severe significant hazards to the public would be created from implementation of the Tahoe PTEIR. This impact would be **less than significant**.

Implementation of prescribed burning, manual treatments, and mechanical treatments associated with the Tahoe PTEIR would require the transportation, use, and storage of common household hazardous materials such as fuels, oils, and lubricants. Treatment activities under the Tahoe PTEIR would utilize mechanical equipment and vehicles, such as chain saws, harvesters, forwarders, skid steers, excavators, dozers, dozer transport, loaders, tow chippers, track chippers, masticators, feller/buncher, and rubber-tired skidders, which need fuels, oils, and lubricants to operate. These types of substances are considered household hazardous materials and can adversely impact human health or the environment if released in large quantities. Equipment and vehicles are likely to be fueled, lubricated, and serviced as needed on-site during multi-day treatments. Fuels would also be used during prescribed burns for fire ignition. The use of these substances could result in an accidental release of these hazardous substances into the environment should any leaks or spills occur. SPR HAZ-1 would be implemented by later treatment activities, which requires that all equipment be properly maintained per manufacturer's specifications, requires inspection of all equipment for leaks before the start of a project and every day until the project is complete, and requires that any equipment found leaking be promptly removed from a given project site. This SPR would minimize leaks and the risk of resultant contamination from entering the environment. Although fuels would be used during prescribed burns for ignition, fuels used for prescribed burning would be completely consumed during the burning process such that no hazardous materials would persist. The federal, state, and local laws described in Section 3.11.1, "Regulatory Setting," regulate the use, transport, storage, and disposal of hazardous materials to minimize potential health risks, including the DTSC's Unified Program, and OSHA and EPA regulations. All project implementers conducting qualifying treatments under the Tahoe PTEIR would be required to comply with these regulatory requirements. In addition, the types of household hazardous materials proposed for use under the Tahoe PTEIR are currently in use under existing vegetation management activities. Although implementation of the Tahoe PTEIR would increase the pace and scale of treatments on the California side of the Tahoe Basin and thus increase the use of household hazardous materials in the program area, with implementation of SPRs and adherence to relevant regulations, no new or more severe significant hazards would be created from the use of common household hazardous materials under the Tahoe PTEIR. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.11-2: Emit Hazardous Emissions or Handle Hazardous or Acutely Hazardous Materials, Substances, or Wastes Within One-quarter Mile of an Existing or Proposed School or Other Sensitive Receptor

There are ten schools, one hospital, and many daycare centers within 0.25 miles of the program area. Treatment activities that could occur within 0.25 miles of a school would involve limited use of hazardous materials, such as fuels, oils, and lubricants. There are no known hazardous or acutely hazardous materials, substances, or waste that could be disturbed by the Tahoe PTEIR within 0.25 mile of the sensitive receptors and schools. Compliance with applicable regulations is sufficient to minimize impacts to sensitive receptors and schools. No substantial differences between the effects on schools or sensitive receptor compared to the general public are anticipated. Therefore, this impact would be **less than significant**.

All ten of the schools on the California side of the Tahoe Basin (Kings Beach Elementary, North Tahoe School, North Tahoe High School, Tahoe Lake Elementary School, Bijou Community School, Tahoe Valley Elementary School, Lake Tahoe Environmental Science Magnet School, Sierra House Elementary School, South Tahoe Middle School, and South Tahoe High School) and sensitive receptors (Barton Memorial Hospital and many daycare centers) are located within or adjacent to the program area. These sensitive receptors are located within Community Fuel Reduction Areas of the Tahoe PTEIR and are intermixed with smaller-acreage parcels that are publicly or privately owned. These areas include developed parcels and undeveloped urban lots within and surrounding developed neighborhoods. Silvicultural prescriptions within Community Fuel Reduction Areas would predominately consist of shaded fuel break/defensible space prescriptions as described in Section 2.3.1 of Chapter 2, "Program Description," and manual treatments as described in Section 2.4.1. With implementation of the proposed program, understory burning would not be a typical treatment method in the Community Fuel Reduction Areas.

Implementation of the proposed program would comply with applicable federal, state, and local regulations and would implement SPRs that would minimize the risk of a spill or accidental release of hazardous materials during treatment activities in the program area. Because such laws are established to be protective of human health and the environment, compliance with applicable regulations is sufficient to ensure that any hazardous materials used by the proposed program would not result in adverse effects because of exposure of the public or environment to hazardous materials through the routine use, storage, or transport of hazardous materials or from accidental release or upset within 0.25 miles of a sensitive receptor. No substantial differences between the effects on schools or sensitive receptor compared to the general public are anticipated. For these reasons, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.11-3: Expose the Public or Environment to Significant Hazards from Disturbance to Known Hazardous Material Sites

Soil disturbance by mechanical treatments and prescribed burning have the potential to expose workers, the public, and the environment to risks associated with existing hazardous materials if present within treatment areas. There are two known, leaking underground storage tanks of gasoline within the program area that do not have documentation of remediation. No other hazardous material sites without documentation of remediation are known within the program area. Treatment activities would typically occur on undeveloped sites, which are unlikely to contain hazardous material due to their lack of development. Because of the lack of known hazardous material sites within the program area and the likelihood that treatment activities would occur in undeveloped areas, the impact would be **less than significant**.

Hazardous materials, if present in soils, can be disturbed and dispersed by vegetation treatment activities that require soil disturbance such as mechanical and prescribed burning treatments. Forest management and fuel reduction activities included in the proposed program would be located on private, local jurisdiction, and California Tahoe Conservancy lands in the WUI and select contiguous areas of general forest outside of the WUI throughout the

California side of the Tahoe Basin. As described in Section 3.11.2 and required by Government Code Section 65962.5, there are only two documented leaking underground storage tanks and no known hazardous material sites that have not been remediated within the program area. All other hazardous material sites have documentation of remediation. Due to the lack of known hazardous material sites and undeveloped nature of the treatment sites, most of the areas to be treated are unlikely to contain active hazardous material sites from previous uses. Therefore, the impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

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3.12 HYDROLOGY AND WATER QUALITY

This section identifies the regulatory context and policies related to hydrology and water quality, describes the existing hydrologic conditions and water quality in the program area, and evaluates potential hydrology and receiving water quality impacts of the proposed program. Hydrologic resources include surface waters and groundwater. Federal, state, and local regulations related to hydrology and water quality are summarized. Potential impacts of the proposed Tahoe PTEIR implementation are analyzed, and mitigation measures are provided for those impacts determined to be significant.

The primary issues raised in comments on the notice of preparation that pertain to water quality and hydrology were:

- ▶ A request by California Department of Fish and Wildlife (CDFW) to include discussion of potential impacts related to the following:
 - Assessment of drainage impacts including pre and post project runoff, soil erosion and/or sedimentation in streams and waterbodies, and the fate of runoff; and
 - Cumulative effects analysis.
- ▶ Lahontan Regional Water Quality Control Board (Lahontan RWQCB) expressed support for the project and recognized the statewide need to address the threat of catastrophic wildfire and impacts from climate change. Implementation of later treatment activities under the Tahoe PTEIR are expected to have multiple important environmental benefits, including protection of water quality, by reducing the risk of high intensity wildfire and associated post-fire sedimentation and restoring forest health.
- ▶ A request by League to Save Lake Tahoe (League) to include discussion of potential impacts, mitigation measures, and best management practices (BMPs) including the following:
 - Return seasonal flooding to meadows and floodplains to enable natural capture and filtration of sediment and nutrients that would otherwise reduce lake clarity.
 - Detail all protection and mitigation measures needed to protect sensitive meadow and riparian habitat while conducting restoration and fuels reduction efforts.
 - Incorporate BMPs when managing, maintaining, and decommissioning access roads, minimizing erosion risk, and stabilizing all slopes and surfaces impacted by program activities.
 - Address the potential for increased generation of fine sediments through erosion, runoff, and dust (leading to atmospheric deposition).

Implementation of the proposed program would not create impermeable surfaces (i.e., new roads), build new structures, or withdraw water from groundwater supplies. Therefore, the potential for impacts related to the following significance thresholds from the State CEQA Guidelines are not discussed further: place structures that would impede or redirect flows; place structures in flood hazard, tsunami, or seiche zones; risk release of pollutants as a result of project inundation; and substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

3.12.1 Regulatory Setting

FEDERAL

Federal Antidegradation Policy

The U.S. Environmental Protection Agency (EPA) has designated Lake Tahoe an Outstanding National Resource Water (ONRW). ONRWs are provided the highest level of protection under the EPA Antidegradation Policy, stipulating that

states may allow temporary and short-term changes to water quality but that such changes should not adversely affect existing uses or alter the essential character or beneficial uses for which the water was designated an ONRW. EPA interprets this provision to mean that no new or increased discharges to ONRWs shall be permitted if that discharge would result in lower or poorer long-term water quality.

Clean Water Act

The federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation's waters. Applicable sections of the CWA are summarized below.

Section 404

Section 404 of the CWA prohibits the discharge of fill material into waters of the United States, including wetlands, except as permitted under separate regulations by the U.S. Army Corps of Engineers (USACE) and EPA. To discharge dredged or fill material into waters of the United States, including wetlands, Section 404 requires projects to receive authorization from the Secretary of the Army, acting through USACE. Waters of the United States are generally defined as "waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; territorial seas and tributaries to such waters." Under Section 404 of the CWA, Lake Tahoe is considered waters of the United States.

Section 401

Section 401 of the CWA requires certification of activities through a federal license or permit for discharges of a pollutant into waters of the United States. The certification must be obtained from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with Section 401. Water quality certification requires evaluation of potential impacts considering water quality standards and CWA Section 404 criteria governing discharge of dredged and fill materials into waters of the United States. EPA delegates water pollution control authority under Section 401 to the states. Within the project area, this authority is delegated to the Lahontan Regional Water Quality Control Board.

Section 402

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit program to regulate discharges of pollutants into waters of the United States. An NPDES permit sets specific discharge limits for point source discharges of pollutants into waters of the United States and establishes monitoring and reporting requirements, as well as special conditions. EPA delegates water pollution control authority under Section 402 to the states.

Section 303(d)

Section 303(d) of the CWA requires states to develop lists of water bodies that do not attain water quality objectives after implementation of required levels of treatment by point source dischargers (municipalities and industries). Section 303(d) requires that a state develop a total maximum daily load (TMDL) for each of the listed pollutants. A TMDL is the amount of an identified pollutant that a water body can receive and still comply with water quality objectives. A TMDL is also a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. The EPA must either approve a TMDL prepared by a state or disapprove a state's TMDL and issue its own. A TMDL represents a goal that may be implemented by adjusting pollutant discharge requirements in individual NPDES permits or by establishing nonpoint source controls. NPDES permit limits for listed pollutants must be consistent with the waste load allocation prescribed in the TMDL. After implementation of a TMDL, it is anticipated that the problems that led to placement of a given pollutant on the Section 303(d) list would be remediated.

TAHOE REGIONAL PLANNING AGENCY

Tahoe Regional Plan

Tahoe Regional Planning Agency (TRPA) was designated as an areawide planning agency under Section 208 of the CWA in 1974. Under the Tahoe Regional Planning Compact, TRPA has established environmental threshold standards, goals and policies, and ordinances directed at protecting and improving water quality in Lake Tahoe and the Tahoe Region. The focus of water quality enhancement and protection is to minimize the effects of human-made disturbances to the watershed and reduce or eliminate pollutants that result from existing and proposed development. The Tahoe Regional Planning Compact includes the following statements and direction related to water quality:

- ▶ The waters of Lake Tahoe are threatened with deterioration or degeneration, which endangers the natural beauty and economic productivity of the Region (Article (I)(a)(1));
- ▶ TRPA shall develop an enforceable land use plan for, among other purposes, the uses of water and other natural resources within the region (Article (V)(c)(1));
- ▶ The Threshold Standards Regional Plan (Regional Plan) shall provide for attaining and maintaining federal, state, or local water quality standards, whichever are the strictest, in the respective portions of the region for which the standards are applicable (Article (V)(d)); and
- ▶ The Regional Plan shall, by ordinance, identify the means and time schedule by which water quality standards will be attained (Article (V)(d)).

Goals and Policies

Goals and policies of the Regional Plan that are related to water quality are located in the Land Use Element (TRPA 2012a). Relevant excerpts are included below.

GOAL WQ-1: Federal, state, regional, local and private water quality management programs should be implemented in a coordinated manner to restore and maintain Lake Tahoe's unique transparency, color, and clarity in accordance with environmental threshold carrying capacity standards.

- ▶ **Policy WQ-1.1:** Achieve and maintain water quality thresholds through comprehensive regional planning and through coordination with other public agencies and the private sector.
- ▶ **Policy WQ-1.2:** Coordinate a multi-agency effort to prioritize and fund water quality improvement projects in the Lake Tahoe Region through the environmental improvement program (EIP).
- ▶ **Policy WQ-1.3:** Require that development and other activities in the Lake Tahoe Region mitigate anticipated water quality impacts.
- ▶ **Policy WQ-1.5:** Support the Lake Tahoe TMDL programs in California and Nevada and the TMDL pollutant/stormwater load reduction plans for each local government in the region.
- ▶ **Policy WQ-1.6:** Support federal, state, local and private water quality improvement programs that improve water quality in the region.
- ▶ **Policy WQ-1.7:** Coordinate with public and private entities to maximize the efficiency and effectiveness of water quality programs.

GOAL WQ-2: Reduce or eliminate point sources of pollutants which affect, or potentially affect, water quality in the Tahoe Region.

- ▶ **Policy WQ-2.1:** Discharge of municipal or industrial wastewater to Lake Tahoe, its tributaries, or the groundwaters of the Tahoe Region is prohibited, except for existing development operating under approved alternative plans for wastewater disposal, and for fire suppression efforts in accordance with applicable state laws.

- ▶ **Policy WQ-2.5:** TRPA shall cooperate with other agencies with jurisdiction in the Lake Tahoe Region in the preparation, evaluation, and implementation of toxic and hazardous spill control plans.

GOAL WQ-3: Reduce or eliminate nonpoint sources of pollutants which affect, or potentially affect, water quality in the Tahoe region in a manner consistent with the Lake Tahoe TMDL, where applicable.

- ▶ **Policy WQ-3.1:** Reduce loads of sediment, nitrogen, and phosphorus to Lake Tahoe; and meet water quality thresholds for tributary streams, surface runoff, and groundwater.
- ▶ **Policy WQ-3.2:** Restore at least 80 percent of the disturbed lands within the region (from the 1983 baseline; excluding hard coverage).
- ▶ **Policy WQ-3.3:** States that the implementing agencies shall restore 25 percent of the SEZ (stream environment zone) lands that have been disturbed, developed, or subdivided in accordance with the Environmental Improvement Program. SEZs have beneficial effects on the fisheries thresholds.
- ▶ **Policy WQ-3.8:** Off road motorized vehicle use is prohibited in the Lake Tahoe Region except on specified roads, trails, or designated areas where the impacts can be mitigated.
- ▶ **Policy WQ-3.10:** Implement land use, transportation and air quality measures aimed at reducing airborne nitrogen emissions and entrained dust in the Tahoe Region.
- ▶ **Policy WQ-3.11:** Require all persons who own land and all public agencies which manage public lands in the Lake Tahoe Region to install and maintain BMPs improvements in accordance with a BMP manual that shall be maintained and regularly updated by TRPA. BMP requirements shall protect vegetation from unnecessary damage; restore the disturbed soils and be consistent with fire defensible space requirements. As an alternative, area-wide water quality treatment facilities and funding mechanisms may be implemented in lieu of certain site specific BMPs where area-wide treatments can be shown to achieve equal to or greater water quality benefits.
- ▶ **Policy WQ -3.12:** Projects shall be required to meet TRPA BMP requirements as a condition of approval for all projects.

Thresholds

The TRPA Governing Board adopted Resolution 82-11, which established water quality threshold standards for six indicator categories: (1) Lake Tahoe pelagic (deep) waters, (2) Lake Tahoe littoral (nearshore) waters, (3) tributaries, (4) direct surface runoff and stormwater discharge to surface waters, (5) stormwater discharge to groundwater, and (6) other lakes (i.e., lakes in the Tahoe basin other than Lake Tahoe). Resolution 82-11 sets numerical and management standards for water quality. Some of these threshold standards are referenced to state standards, and in other cases, target reference conditions related to specific time periods are noted. The following value statements are used in setting the threshold standards and targets for water quality:

- ▶ Attain levels of water quality in the lakes and streams within the Tahoe region suitable to maintain the identified beneficial uses of Lake Tahoe.
- ▶ Restrict algal productivity (rate of growth) to levels that do not impair beneficial uses or deteriorate existing water quality conditions in the Tahoe region.
- ▶ Prevent degradation of the water quality of Lake Tahoe and its tributaries to preserve the lake for future generations.
- ▶ Restore all watersheds in the Tahoe region so that they respond to runoff in a natural hydrologic function.

Water quality threshold standards adopted by TRPA set a target to return the lake to the transparency observed in the late 1960s. Within the six major indicator categories, TRPA uses water quality standards to assess the water quality of Lake Tahoe and its tributaries. Table 3.12-1 lists indicator categories and associated threshold water quality

standards applicable to the analysis of Tahoe PTEIR impacts. The status and trend of each threshold relative to the associated numerical standard or management standard is described in Section 3.12.2, "Environmental Setting."

Table 3.12-1 Applicable TRPA Water Quality Threshold Standards for Tahoe PTEIR Impacts

Indicator Category	Standard	Numerical Standard and/or Management Standard
Pelagic Lake Tahoe (deep water)	Annual average transparency	Annual average deep-water transparency as measured by a Secchi disk shall decrease below 29.7 meters (97.4 feet).
Littoral Lake Tahoe (nearshore)	Turbidity	Decrease sediment load as required to attain turbidity values not to exceed 3 Nephelometric Turbidity Units (NTUs) in littoral Lake Tahoe. In addition, turbidity shall not exceed 1 NTU in shallow waters of Lake Tahoe not directly influenced by stream discharges.
Tributaries	Nutrients and metals	Attain applicable state standards for concentrations of dissolved inorganic nitrogen, dissolved phosphorus, and dissolved iron. ¹
Tributaries	Suspended sediment	Decrease sediment load as required to attain a 90th percentile value for suspended sediment concentration of 60 milligram per liter.
Other lakes	Water quality	Attain existing water quality standards. ²
Stormwater runoff quality	Surface discharge to surface water	Pollutant concentrations in surface runoff discharged to surface water shall not exceed the following concentrations at the 90th percentile: <ul style="list-style-type: none"> ▶ 0.5 milligram per liter dissolved inorganic nitrogen as N, ▶ 0.1 milligram per liter dissolved phosphorus as P, ▶ 2.0 milligram per liter grease and oil, ▶ 0.5 milligram per liter dissolved iron, and ▶ 250 milligram per liter suspended sediment.
Groundwater	Nutrients and metals	Surface runoff infiltration into the groundwater shall comply with the uniform Regional Runoff Quality Guidelines as set forth in Table 4-12 of the Draft Environmental Threshold Carrying Capacity Study Report, May 1982. Where there is a direct and immediate hydraulic connection between ground and surface waters, discharges to groundwater shall meet the guidelines for surface discharges, and the Uniform Regional Runoff Quality Guidelines shall be amended accordingly. ^{1,3}
Stormwater runoff quality	Surface discharge to surface water	Pollutant concentrations in surface runoff discharged to surface water shall not exceed the following concentrations at the 90th percentile: <ul style="list-style-type: none"> ▶ 0.5 milligram per liter dissolved inorganic nitrogen as N, ▶ 0.1 milligram per liter dissolved phosphorus as P, ▶ 2.0 milligram per liter grease and oil, ▶ 0.5 milligram per liter dissolved iron, and ▶ 250 milligram per liter suspended sediment.
Load reductions	Surface discharge to surface water	Reduce total annual fine sediment particle (inorganic particle size <16 micrometers in diameter), phosphorus, nitrogen, suspended sediment, dissolved phosphorus, iron, and other nutrients to achieve pelagic and littoral water quality standards.

¹ Annual mean total nitrogen concentration less than 0.15 to 0.23 milligram per liter depending on the water body. Annual mean total phosphorus concentration less than 0.005 to 0.015 milligram per liter, depending on the water body. Annual mean iron concentration less than 0.01 to 0.03 milligram per liter, depending on the water body.

² California standards for Fallen Leaf Lake: mean total nitrogen (May to October) less than 0.087 milligram per liter. Annual mean total phosphorus concentration (May to October) less than 0.008 milligram per liter. Annual mean iron concentration (May to October) less than 0.005 milligram per liter. Annual mean Secchi depth (May to October) greater than or equal to 18.5 meters (60.7 feet).

³ Attain a 90th percentile value for suspended sediment concentration 60 milligram per liter.

Source: TRPA 2016

Code of Ordinances

The TRPA Code of Ordinances (TRPA Code) contains the requirements and standards intended to achieve water quality thresholds, and the goals and policies of the TRPA Regional Plan. Chapter 60 of the TRPA Code is directed specifically at water quality protection (Table 3.12-2) (TRPA 2012b). Chapter 61 of the TRPA Code contains minimum standards related to tree cutting within stream environment zones.

Table 3.12-2 Code Requirements Related to Water Quality Protection

Code Section	Requirements
Chapter 60.1	Sets discharge standards for runoff to surface water and groundwater. Includes numerical pollutant concentrations standards for dissolved inorganic nitrogen, dissolved phosphorus, dissolved iron, grease and oil, and suspended sediment.
Chapter 60.2	Sets requirements that new residential, commercial, and public projects completely offset their water quality impacts.
Chapter 60.3	Contains regulations pertaining to recognition of source water, prevention of contamination to source water, and protection of public health relating to drinking water.
Chapter 60.4	Sets standards for installation of BMPs for the protection or restoration of water quality.
Chapter 61.1.1.6	Establishes minimum standards for tree cutting within stream environment zones.

Note: BMP = best management practice.

Source: TRPA 2012b

STATE

Lahontan Regional Water Quality Control Board

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) created the California State Water Resources Control Board (SWRCB) and nine regional water quality control boards (RWQCBs) in California. The SWRCB protects water quality by setting statewide policy, coordinating and supporting RWQCB efforts, and reviewing petitions that contest RWQCB actions. The RWQCBs issue waste discharge permits, take enforcement action against violators, and jointly administer federal and state laws related to water quality in coordination with EPA and USACE.

The Tahoe region is located within the jurisdiction of the Lahontan RWQCB. On the California side of the Tahoe region, the Lahontan RWQCB implements the CWA, the California Water Code (including the Porter-Cologne Act), the California Lake Tahoe and other regional TMDLs, and a variety of laws related to control of solid waste and toxic and hazardous wastes. The Lahontan RWQCB has authority to set and revise water quality standards and discharge prohibitions. It issues federal permits, including NPDES permits and Section 401 water quality certifications, and state waste discharge requirements or waivers of waste discharge requirements. Its planning and permitting actions require compliance with CEQA.

Water Quality Control Plan for the Lahontan Region

Water quality standards and control measures for surface water and groundwater within the Lahontan Region are contained in the Water Quality Control Plan for the Lahontan Region (Basin Plan) (Lahontan RWQCB 2016). The Basin Plan was first adopted in 1975 and was most recently updated in 2016. It designates beneficial uses for surface waters within the region, including the South Lake Tahoe, North Tahoe, and Tahoe Lake Body hydrological units. Table 3.12-3 lists the beneficial uses identified for surface water in South Lake Tahoe, North Tahoe, and Tahoe Lake Body hydrological units and ground water in the Tahoe Valley South and Tahoe Valley North Basins. The Basin Plan contains both narrative and numeric water quality objectives to protect the designated beneficial uses listed for the region. Table 3.12-4 lists applicable narrative and numeric surface water and groundwater quality objectives for waterbodies. The Basin Plan amendments include additional language related to "mixing zones" for dilution of discharged water, compliance schedules for NPDES permits, discharge prohibition exemptions, simplification of existing prohibition exemptions, and the removal of language describing programs administered by TRPA (Lahontan RWQCB 2016). Chapter 5 of the Basin Plan, "Water Quality Standards and Control Measures for the Tahoe region," summarizes a variety of control measures for the protection and enhancement of Lake Tahoe.

Table 3.12-3 Beneficial Uses of Water

Human Activity-related	Natural Habitat-related
Surface Water¹	
<ul style="list-style-type: none"> ▶ Municipal and Domestic Supply (MUN) ▶ Agricultural Supply (AGR) ▶ Ground Water recharge (GWR) ▶ Freshwater Replenishment (FRSH) ▶ Navigation (NAV) ▶ Water Contact Recreation (REC-1) ▶ Noncontact Water Recreation (REC-2) ▶ Commercial and Sport Fishing (COMM) 	<ul style="list-style-type: none"> ▶ Cold Freshwater Habitat (COLD) ▶ Wildlife Habitat (WILD) ▶ Preservation of Biological Habitats of Special Significance (BIOL) ▶ Rare, Threatened, or Endangered Species (RARE) ▶ Fish Migration (MIGR) ▶ Fish Spawning (SPWN) ▶ Water Quality Enhancement (WQE) ▶ Flood Peak Attenuation/Flood Water Storage (FLD)
Groundwater	
<ul style="list-style-type: none"> ▶ Municipal and Domestic Supply (MUN) ▶ Agricultural Supply (AGR) ▶ Industrial Process Supply (PROC)² ▶ Industrial Service Supply (IND) 	(not applicable)

¹ Beneficial uses vary by waterbody within the South Lake Tahoe, North Tahoe, and Tahoe Lake Body hydrological units.

² Beneficial use for Tahoe Valley-South Basin only.

Source: Lahontan RWQCB 2016

Table 3.12-4 Water Quality Objectives Applicable to Waterbodies within the Program Area and Additional Objectives Applied to the Truckee River and Lake Tahoe Hydrologic Units (HU)

Pollutant	Narrative Objective	Numeric Objective ¹
Surface Water		
Algal Growth Potential	—	<p><u>Truckee River HU</u>: The mean monthly algal growth potential shall not be altered to the extent that such alterations are discernible at the 10 percent significance level (excluding Martis Creek).</p> <p><u>Lake Tahoe HU</u>: the mean algal growth potential at any point in the Lake shall not be greater than twice the mean annual algal growth potential at the limnetic reference station.</p>
Ammonia	The neutral, unionized ammonia species is highly toxic to freshwater fish. The fraction of toxic to total ammonia species is a function of temperature and pH. Tables were derived from EPA ammonia criteria for freshwater. Ammonia concentrations shall not exceed the values listed for the corresponding conditions in these tables. For temperature and pH values not explicitly in these tables, the most conservative value neighboring the actual value may be used or criteria can be calculated from numerical formulas developed by the EPA.	Ammonia concentrations shall not exceed the values listed for the corresponding conditions derived from EPA ammonia criteria.
Bacteria, Coliform	Waters shall not contain concentrations of coliform organisms attributable to anthropogenic sources, including human and livestock wastes.	<p>Water Contact Recreation MCLs</p> <ul style="list-style-type: none"> ▶ Fecal Coliform <ul style="list-style-type: none"> ▪ < 20/100 milliliter (log mean of at least five samples collected within a 30-day period) ▪ < 10 percent of the total number of samples taken shall exceed 40/100 milliliter

Pollutant	Narrative Objective	Numeric Objective ¹																		
Biological Indicators	—	<u>Lake Tahoe HU</u> : Algal productivity and the biomass of phytoplankton, zooplankton, and periphyton shall not be increased beyond the levels recorded in 1967-71, based on statistical comparison of seasonal and annual means.																		
Biostimulatory Substances	Water shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.	<u>Truckee River HU</u> : The concentration of biostimulatory substances shall not be altered in an amount that could produce an increase in aquatic biomass to the extent that such increases are discernible at the 10 percent significance level (excludes Martis Creek and Truckee River downstream of Martis Creek).																		
Chemical Constituents	<p>Waters designated as MUN shall not contain concentrations of chemical constituents in excess of the MCL or secondary maximum contaminant level SMCL based upon drinking water standards specified in the following provisions of Title 22 of the California Code.</p> <p>Waters designated as AGR shall not contain concentrations of chemical constituents in amounts that adversely affect the water for beneficial uses (i.e., agricultural purposes).</p> <p>Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.</p>	<p>Municipal MCLs</p> <table border="1"> <thead> <tr> <th>Constituent</th> <th>MCL (milligram per liter dissolved)</th> </tr> </thead> <tbody> <tr> <td>Arsenic</td> <td>0.01</td> </tr> <tr> <td>Barium</td> <td>0.1</td> </tr> <tr> <td>Copper</td> <td>0.01</td> </tr> <tr> <td>Cyanide</td> <td>0.01</td> </tr> <tr> <td>Iron</td> <td>0.3</td> </tr> <tr> <td>Manganese</td> <td>0.05</td> </tr> <tr> <td>Silver</td> <td>0.01</td> </tr> <tr> <td>Zinc</td> <td>0.1</td> </tr> </tbody> </table>	Constituent	MCL (milligram per liter dissolved)	Arsenic	0.01	Barium	0.1	Copper	0.01	Cyanide	0.01	Iron	0.3	Manganese	0.05	Silver	0.01	Zinc	0.1
Constituent	MCL (milligram per liter dissolved)																			
Arsenic	0.01																			
Barium	0.1																			
Copper	0.01																			
Cyanide	0.01																			
Iron	0.3																			
Manganese	0.05																			
Silver	0.01																			
Zinc	0.1																			
Chlorine, Total Residual	—	Median value of 0.002 milligram per liter or a maximum value of 0.003 milligram per liter. Median values shall be based on daily measurements taken within any six-month period.																		
Clarity	—	<u>Lake Tahoe HU</u> : The vertical extinction coefficient shall be less than 0.08 per meter when measured below the first meter. When water is too shallow to determine a reliable extinction coefficient, the turbidity shall not exceed 3 NTU. In addition, turbidity shall not exceed 1 NTU in shallow waters not directly influenced by stream discharges.																		
Color	Waters shall be free of coloration that causes nuisance or adversely affects the water for beneficial uses.	<u>Truckee River HU</u> : The color shall not exceed an eight (8) Platinum Cobalt Unit mean of monthly means.																		
Conductivity, Electrical	—	<u>Lake Tahoe HU</u> : The mean annual electrical conductivity shall not exceed 95 micromhos per centimeter (µmhos/cm) at 25 degrees Celsius at any location in the Lake.																		
Dissolved Oxygen	—	<p>The dissolved oxygen concentration, as percent saturation, shall not be depressed by more than 10 percent, nor shall the minimum dissolved oxygen concentration be less than 80 percent of saturation.</p> <p>For waters with the beneficial uses of COLD, COLD with SPWN, the minimum dissolved oxygen concentration shall not be less than that specified in the Basin Plan Table 5.1-8.</p> <p><u>Truckee River HU</u>: The dissolved oxygen concentrations shall not be depressed by more than 10 percent, below 80 percent saturation, or below 7.0 milligram per liter at any time, whichever is more restrictive.</p>																		

Pollutant	Narrative Objective	Numeric Objective ¹
Floating Material	<p>Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect the water for beneficial uses.</p> <p>For natural high-quality waters, the concentrations of floating material shall not be altered to the extent that such alterations are discernable at the 10 percent significance level.</p>	—
Oil and Grease	<p>Waters shall not contain oils, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect the water for beneficial uses. For natural high-quality waters, the concentration of oils, greases, or other film or coat generating substances shall not be altered.</p>	—
Non-degradation of Aquatic Communities and Populations	<p>All wetlands shall be free from substances attributable to wastewater or other discharges that produce adverse physiological responses in humans, animals, or plants; or that lead to the presence of undesirable or nuisance aquatic life. All wetlands shall be free from activities that would substantially impair the biological community as it naturally occurs due to physical, chemical and hydrologic processes.</p>	—
pH	—	<p>In fresh waters with designated beneficial uses of COLD or WARM, changes in normal ambient pH levels shall not exceed 0.5 pH units. The pH shall not be depressed below 6.5 nor raised above 8.5.²</p> <p><u>Truckee River HU</u>: Changes in normal ambient pH levels shall not exceed 0.5 unit.</p> <p><u>Lake Tahoe HU</u>: The pH shall not be depressed below 7.0 nor raised above 8.4.</p>
Plankton Counts	—	<p><u>Lake Tahoe HU</u>: The mean seasonal concentration of plankton organisms shall not be greater than 100 per milliliter and the maximum concentration shall not be greater than 500 per milliliter at any point in the Lake.</p>
Radioactivity	<p>Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.</p>	<p>At a minimum, waters designated for use as domestic or MUN shall not contain concentrations of radionuclides in excess of the MCLs specified in CCR Title 22.</p>
Sediment	<p>The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect the water for beneficial uses.</p>	—
Suspended Sediment	—	<p><u>Lake Tahoe HU</u>: Suspended sediment concentrations in streams tributary to Lake Tahoe shall not exceed a 90th percentile value of 60 milligram per liter.</p>
Settleable Material	<p>Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.</p>	<p>For natural high quality waters, the concentration of settleable materials shall not be raised by more than 0.1 milliliter per liter</p>

Pollutant	Narrative Objective	Numeric Objective ¹
Species Composition	—	<u>Truckee River HU</u> : The species composition of aquatic organisms shall not be altered to the extent that such alterations are discernible at the 10 percent significance level (Excludes Martis Creek and the Truckee River stations downstream of Martis Creek).
Suspended Material	Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.	For natural high quality waters, the concentration of total suspended materials shall not be altered to the extent that such alterations are discernible at the 10 percent significance level.
Suspended Sediment	—	Suspended sediment concentrations in streams tributary to Lake Tahoe shall not exceed a 90 th percentile value of 60 milligram per liter. ³
Taste and Odors	Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses. For naturally high quality waters, the taste and odor shall not be altered. <u>Truckee River HU</u> : The taste and odor shall not be altered.	—
Temperature	The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. For waters designated COLD, the temperature shall not be altered.	A maximum increase of no more than 5 degrees Fahrenheit.
Toxicity	All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.	—
Transparency	—	<u>Lake Tahoe HU</u> : The annual average deep water transparency as measured by the Secchi disk shall not be decreased below 29.7 meters, the levels recorded in 1967-71 by the University of California, Davis.
Turbidity	Waters shall be free of changes in turbidity that cause nuisance or adversely affect the water for beneficial uses.	Increases in turbidity shall not exceed natural levels by more than 10 percent. <u>Truckee River HU</u> : The turbidity shall not be raised above 3 NTU mean of monthly means.
Groundwater		
Bacteria, Coliform	—	In ground waters designated as MUN, the median concentration of coliform organisms over any seven-day period shall be less than 1.1/100 milliliters.
Chemical Constituents	Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.	Where designated for domestic supply or MUN must not exceed pertinent MCLs defined in CCR Title 22.
Radioactivity	—	Where designated for domestic supply or MUN must not exceed pertinent MCLs.

Pollutant	Narrative Objective	Numeric Objective ¹
Tastes and Odors	Ground waters shall not contain taste- or odor producing substances in concentrations that cause nuisance or adversely affect beneficial uses. <u>Truckee River HU</u> : taste and odor shall not be altered.	Where designated for domestic supply or MUN must not exceed pertinent MCLs.

Notes: MCL = Maximum Contaminant level; SMCL = Secondary Maximum Contaminant Level.

¹ Numerical Objectives included in the Basin Plan Tables 3-12 and 3-13 are not included in this table.

² Lahontan RWQCB recognizes that some waters of the region may have natural pH levels outside of the 6.5 to 8.5 range. Compliance with the pH objective for these waters are determined on a case-by-case basis.

³ This objective is equivalent to TRPA's threshold standard for suspended sediment in tributaries. Lahontan RWQCB will consider revision of this objective in the future if it proves not to be protective of beneficial uses or if review of monitoring data indicates that other numbers would be more appropriate for some or all streams tributary to Lake Tahoe.

Source: Lahontan RWQCB 2016

Timber Waiver for the Lahontan Region

The Conditional Waiver of Waste Discharge Requirements for Waste Discharges Resulting from Timber Harvest and Vegetation Management in the Lahontan Region (Timber Waiver) (Lahontan RWQCB 2019a) was created by Lahontan RWQCB to implement the State of California Nonpoint Source Pollution Control Program. The Timber Waiver was first adopted in 2009, replaced by the 2014 Timber Waiver, and subsequently renewed for five years in 2019. The Timber Waiver waives discharge requirements resulting from eligible timber harvest and vegetation management activities, subject to certain conditions and requirements. The eligibility conditions, implementation requirements (e.g., application, notification, and reporting), and monitoring requirements are based on the activities and the potential risk to water quality. Activities are divided into six categories:

- ▶ Category 1: Defensible space, fire prevention, dead-dying-diseased tree removal, and construction activities;
- ▶ Category 2: Activities conducted by hand crews including thinning operations and prescribed fire;
- ▶ Category 3: Post-fire emergency rehabilitation;
- ▶ Category 4: Activities that rely on existing roads and may include winter-period operations;
- ▶ Category 5: CAL FIRE approved Plans (including Timber Harvest Plans, Non-industrial Management Plans, other Plans, and Amendments); and
- ▶ Category 6: Activities that do not qualify for Categories 1–5 and may include burning or equipment operations within Waterbody Buffer Zones, 100-year Floodplains, or Stream Environment Zones.

The Timber Waiver also provides for the exemption of certain timber harvest and vegetation management activities from Basin Plan waste discharge prohibitions that would otherwise apply within 100-year floodplains, SEZs, and high erosion lands (Bailey Land Capability classes 1a, 1c, or 2) in the Lake Tahoe, Truckee River, and Little Truckee River hydrologic units (Lahontan RWQCB 2019a, Attachment N). Exempt activities include timber harvest and vegetation management activities to reduce fuel loading that are identified in a community wildfire protection plan, and projects necessary to protect public health or safety or to provide essential public services. Timber harvest and vegetation management activities intended to protect forest values such as wildlife habitat, and those intended to promote aspen regeneration or improve riparian habitat would also qualify for exemption from waste discharge prohibitions. To qualify for exemption, activities must meet the eligibility criteria and comply with the conditions of the applicable waiver category.

Total Maximum Daily Load

In accordance with Section 303(d) of the CWA, Lahontan RWQCB has listed several water bodies in the vicinity of the program area as impaired for sediment, turbidity, nitrogen, phosphorus, iron, chloride, indicator bacteria, or benthic community effects (Lahontan RWQCB 2019b). This designation is assigned to waterbodies where established water quality objectives as specified in the Basin Plan are not being met or where beneficial uses are not protected (Lahontan RWQCB 2016). Placement of a waterbody on the 303(d) list acts as the trigger for developing a pollution

control plan, called a TMDL, for each water body and associated pollutant/stressor on the list. The TMDL serves as the means to attain and maintain water quality standards for the impaired water body. During each 303(d)-listing cycle, the water bodies on the list are prioritized and a schedule is established for completing the TMDLs (Lahontan RWQCB 2014). As shown in Table 3.12-5, TMDLs were developed by Lahontan RWQCB and approved by the EPA for Blackwood Creek, Heavenly Valley Creek, Truckee River, and Lake Tahoe. TMDLs for five water bodies within the program area (General Creek, Heavenly Valley Creek, Tallac Creek, Trout Creek, Ward Creek, and Upper Truckee River) have not yet been developed and one waterbody (Cold Creek) will be addressed by an action other than a TMDL. Although TMDLs do not exist for every 303(d) listed water body in the Tahoe region, some may be addressed through revisions of the water quality objectives for iron and chloride rather than through a TMDL, and others may be addressed by demonstrating that implementation of the Lake Tahoe TMDL also achieves the necessary load reductions to manage those impairments.

Table 3.12-5 303(d) Impaired Waterbodies and Total Maximum Daily Loads in the Program Area

Water Body	Sub-Watershed	Pollutant	TMDL	Expected TMDL Completion Date ¹
Blackwood Creek	Blackwood Creek	Iron ² , nitrogen, phosphorus, sedimentation/siltation	Sediment/siltation ³ (Lahontan RWQCB 2007), approved 2008	2022
General Creek	General Creek	Iron ² , phosphorus	— ⁴	2031 (iron)
Tallac Creek	Tallac Creek	Indicator bacteria	—	2031
Trout Creek (above and below US 50)	Trout Creek	Iron ² , nitrogen, Indicator bacteria, phosphorus	— ⁴	2031 (iron, Indicator bacteria)
Heavenly Valley Creek	Trout Creek	Chloride ² , sedimentation/siltation, phosphorus ⁴ , benthic community effects	Sediment/siltation (Lahontan RWQCB 2000), approved 2002	2028 (chloride), 2031 (benthic community effect)-
Cold Creek	Trout Creek	Total nitrogen	— ⁴	2031
Middle Truckee River ⁵	Truckee River	Sedimentation/siltation	Sediment/siltation ³ (Lahontan RWQCB 2008), approved 2009	—
Upper Truckee River	Upper Truckee River	Iron ² , phosphorus	— ⁴	2031 (iron)
Ward Creek	Ward Creek	Iron ² , nitrogen, phosphorus, turbidity	— ⁴	2031 (iron)
Lake Tahoe	N/A	Nitrogen, phosphorus, sedimentation/siltation	Sediment/siltation and nutrients (Lahontan RWQCB and NDEP 2010), approved 2011	—

Note: N/A = not applicable.

¹The TMDL completion date is the date the Environmental Protection Agency approved or is expected to approve the Total Maximum Daily Load

²This listing may be addressed through revision of the water quality objective rather than through a TMDL.

³TMDL will address nitrogen, phosphorus and iron.

⁴Sediment/siltation, turbidity, nitrogen, and phosphorus addressed in the Lake Tahoe TMDL.

⁵Outflow of Lake Tahoe at Tahoe City to California/Nevada state line.

Source: Lahontan RWQCB 2014, Lahontan RWQCB 2019b

LOCAL

El Dorado County General Plan

The El Dorado County General Plan includes a Conservation and Open Space Element and an Agriculture and Forestry Element that addresses the conservation, management, and utilization of the County's natural resources and open space and agricultural and forest lands, respectively.

The El Dorado County General Plan Conservation and Open Space Element includes the following statements and direction related to water quality:

GOAL 7.3 Water Quality and Quantity: Conserve, enhance, and manage water resources and protect their quality from degradation.

Objective 7.3.1 Water Resource Protection: Preserve and protect the supply and quality of the County's water resources including the protection of critical watersheds, riparian zones, and aquifers.

- ▶ **Policy 7.3.1.1:** Encourage the use of BMPs, as identified by the Soil Conservation Service, in watershed lands as a means to prevent erosion, siltation, and flooding.

Objective 7.3.2 Water Quality: Maintenance of and, where possible, improvement of the quality of underground and surface water.

- ▶ **Policy 7.3.2.1:** Stream and lake embankments shall be protected from erosion, and streams and lakes shall be protected from excessive turbidity.
- ▶ **Policy 7.3.2.2:** Projects requiring a grading permit shall have an erosion control program approved, where necessary.
- ▶ **Policy 7.3.2.5:** As a means to improve the water quality affecting the County's recreational waters, enhanced and increased detailed analytical water quality studies and monitoring should be implemented to identify and reduce point and non-point pollutants and contaminants. Where such studies or monitoring reports have identified sources of pollution, the County shall propose means to prevent, control, or treat identified pollutants and contaminants.

Objective 7.3.3 Wetlands: Protection of natural and man-made wetlands, vernal pools, wet meadows, and riparian areas from impacts related to development for their importance to wildlife habitat, water purification, scenic values, and unique and sensitive plant life.

- ▶ **Policy 7.3.3.1:** For projects that would result in the discharge of material to or that may affect the function and value of river, stream, lake, pond, or wetland features, the application shall include a delineation of all such features. For wetlands, the delineation shall be conducted using the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual.
- ▶ **Policy 7.3.3.3:** The County shall develop a database of important surface water features, including lake, river, stream, pond, and wetland resources.

Placer County General Plan

The Placer County General Plan includes a Natural Resources section and an Agriculture and Forestry Resources section that includes goals, policies, and implementation programs for natural resources and agricultural and forestry resources, respectively.

The Placer County General Plan, Chapter 6 Natural Resources includes the following statements and direction related to water quality:

GOAL 6.A: To protect and enhance the natural qualities of Placer County's rivers, streams, creeks and groundwater.

- ▶ **Policy 6.A.1.** The County shall require the provision of sensitive habitat buffers which shall, at a minimum, be measured as follows: 100 feet from the centerline of perennial streams, 50 feet from centerline of intermittent streams, and 50 feet from the edge of sensitive habitats to be protected, including riparian zones, wetlands, old growth woodlands, and the habitat of special status, threatened or endangered species. Based on more detailed information supplied as a part of the review for a specific project or input from state or federal regulatory agency, the County may determine that such setbacks are not applicable in a particular instance or should be modified based on the new information provided. The County may, however, allow exceptions, such as in the following cases:

1. Reasonable use of the property would otherwise be denied;
 2. The location is necessary to avoid or mitigate hazards to the public;
 3. The location is necessary for the repair of roads, bridges, trails, or similar infrastructure; or,
 4. The location is necessary for the construction of new roads, bridges, trails, or similar infrastructure where the County determines there is no feasible alternative and the project has minimized environmental impacts through project design and infrastructure placement.
- ▶ **Policy 6.A.10.** The County shall discourage grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of creeks and damage to riparian habitat.
 - ▶ **Policy 6.A.13.** The County shall protect groundwater resources from contamination and further overdraft by pursuing the following efforts:
 - a. Identifying and controlling sources of potential contamination;
 - b. Protecting important groundwater recharge areas;
 - c. Encouraging the use of surface water to supply major municipal and industrial consumptive demands;
 - d. Encouraging the use of treated wastewater for groundwater recharge; and
 - e. Supporting major consumptive use of groundwater aquifer(s) in the western part of the County only where it can be demonstrated that this use does not exceed safe yield and is appropriately balanced with surface water supply to the same area.
 - ▶ **Policy 6.A.14.** The County shall help ensure that open space located in reservoir is preserved and protected to assure adequate performance of those reservoirs. The watershed is defined as those lands draining into a reservoir and having an immediate effect upon the quality of water within that reservoir. Those lands located within the watershed and within 5,000 feet of the reservoir shall be considered as having an immediate effect.
 - ▶ **Policy 6.A.15.** The County shall encourage the protection of floodplain lands and, where appropriate, acquire public easements for purposes of flood protection, public safety, wildlife preservation, groundwater recharge, access and recreation.

3.12.2 Environmental Setting

REGIONAL HYDROLOGY AND CLIMATE

The Tahoe Basin was formed approximately 2–3 million years ago by geologic faulting and volcanic activity. Geologic faults running in a north-south direction allowed the formation of a valley between the uplifting Sierra Nevada and the Carson Range. The northern portion of the valley was blocked and dammed by volcanic activity that created the 506-square-mile basin that lies along the California-Nevada border. Precipitation and runoff eventually filled a portion of the basin to create Lake Tahoe, which has a water surface area covering nearly two-fifths of the total Basin area (191 square miles).

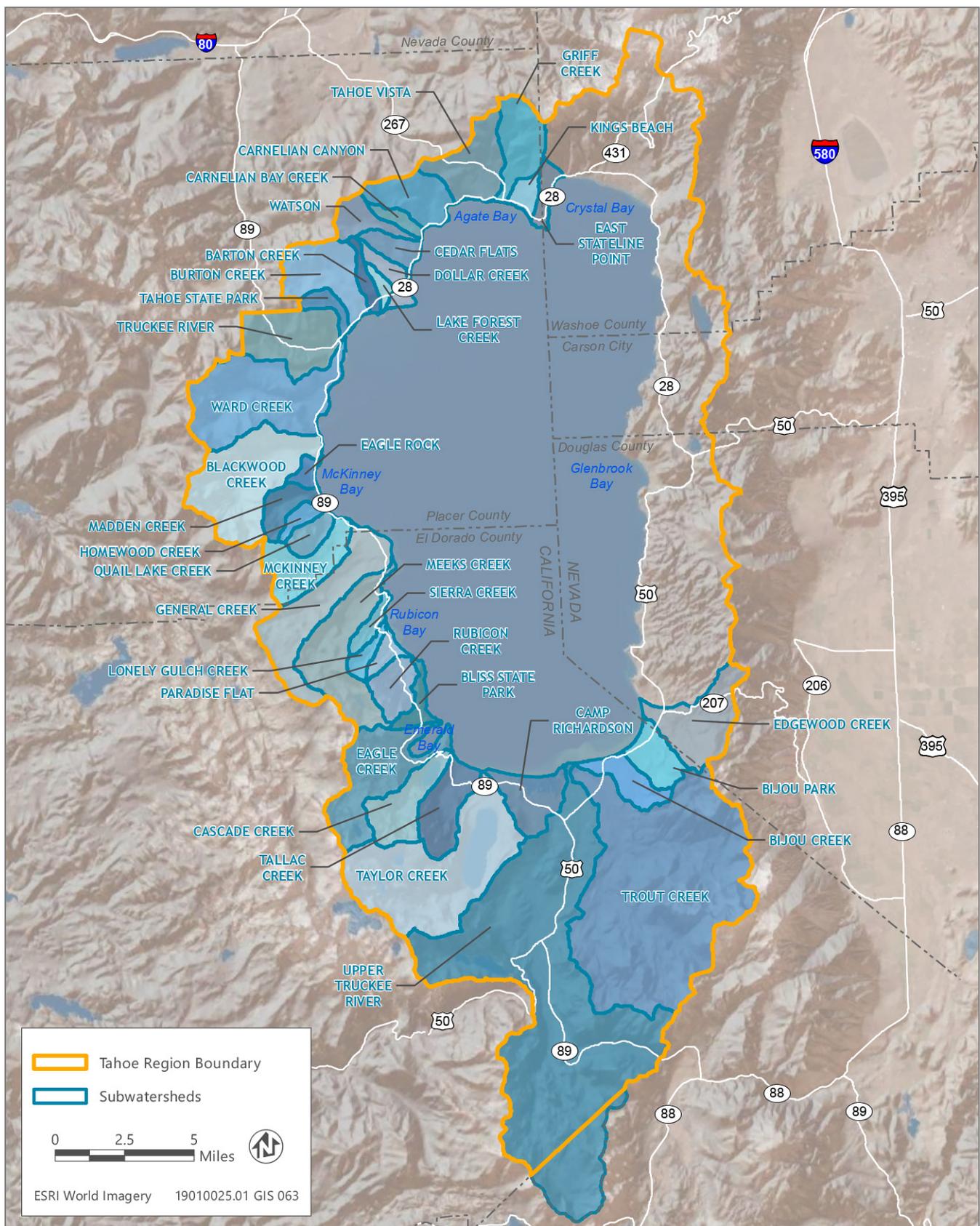
Lake Tahoe is fed by 63 tributary streams and intervening zones that drain directly to the lake. The largest tributary is the Upper Truckee River, which accounts for 25 percent of the annual inflow to Lake Tahoe (TERC 2018). The Truckee River is the lake's only outlet, flowing to Pyramid Lake in Nevada. A dam constructed at Tahoe City in the early 1900s regulates water flow to the Truckee River from the natural rim at 6,223.0 feet (1,896.8 meters) above sea level to the maximum legal lake level of 6,229.1 feet (1,898.6 meters) (Lake Tahoe Datum). Lake Tahoe's current water surface elevation is considerably higher than it was during extended historical periods when the climate was more arid (Lindstrom 1990).

Regional topography is characterized by steep mountain slopes at higher elevations, transitioning to more moderately sloped terrain near the lakeshore. Average minimum and maximum air temperatures in 2017 were 32.8 degrees Fahrenheit (0.4 degrees Celsius) and 57.1 degrees Fahrenheit (13.9 degrees Celsius), respectively (TERC 2018). Average precipitation, measured at almost 32 inches (81.3 centimeters) annually at Tahoe City (TERC 2018), generally falls as snow in the higher elevations and as snow and rain in the lower elevations, including the lake shore from October to May. The fraction of precipitation that is snow has declined in the Lake Tahoe Basin from an average of 52 percent in 1910 to 32 percent in 2017 (TERC 2018). Peak stream runoff in the watersheds of interest is typically triggered by spring snowmelt in March through July (TERC 2018) or by rain-on-snow events (Berg et al. 1991). The snowpack near the lakeshore predominantly melts before the peak in snowmelt and runoff from the higher elevations. Land cover within the Lake Tahoe Basin is primarily forest, with areas of granitic outcrops and meadows.

LOCAL HYDROLOGY

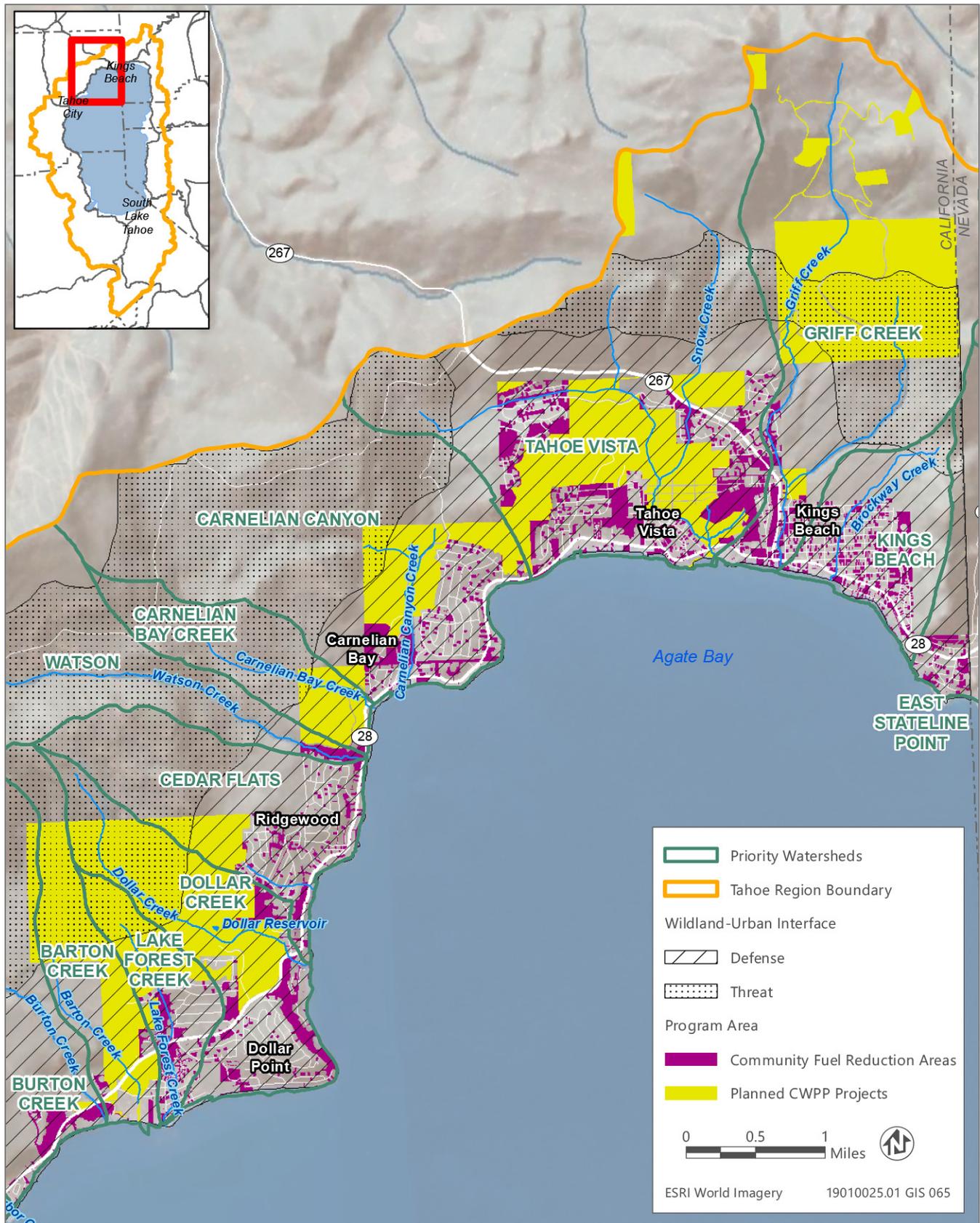
Surface Water

The program area overlaps with 38 subwatersheds within the Lake Tahoe Basin (Figures 3.12-1 through 3.12-7). Table 3.12-6 lists characteristics of the sub-watersheds including elevation range, total area, area of the watershed within the program area (both square miles and percent), drainage density, and total length of streams within the program area. The program area contains 183.5 miles of stream, including segments of Rubicon Creek, Truckee River, Incline Creek, Edgewood Creek, and Blackwood Creek (Table 3.12-6). These subwatersheds and associated streams vary in slope, geology, surrounding land-use, and precipitation resulting in variable susceptibility to erosion, pollutants (i.e., sediments and nutrients) and water quality degradation. Other waterbodies in the program area include 20.8 miles of shoreline along the perimeter of 49 lakes, including Lake Tahoe, Cascade Lake, Fallen Leaf Lake, Lake Louise, Dollar Reservoir, Lake Christopher, and Lower Echo Lake. Table 3.12-7 presents lake elevations and the total perimeters in the program area. The Truckee Marsh comprises approximately 220.4 acres of the program area (wetland area defined by National Hydrography Dataset (NHD) (USGS 2019a). Disturbances in the watersheds surrounding streams, lakes, and wetlands may lead to increased erosion and nutrient pollution (i.e., nitrogen and phosphorus), which may result in degraded water quality (Lahontan RWQCB and NDEP 2010).



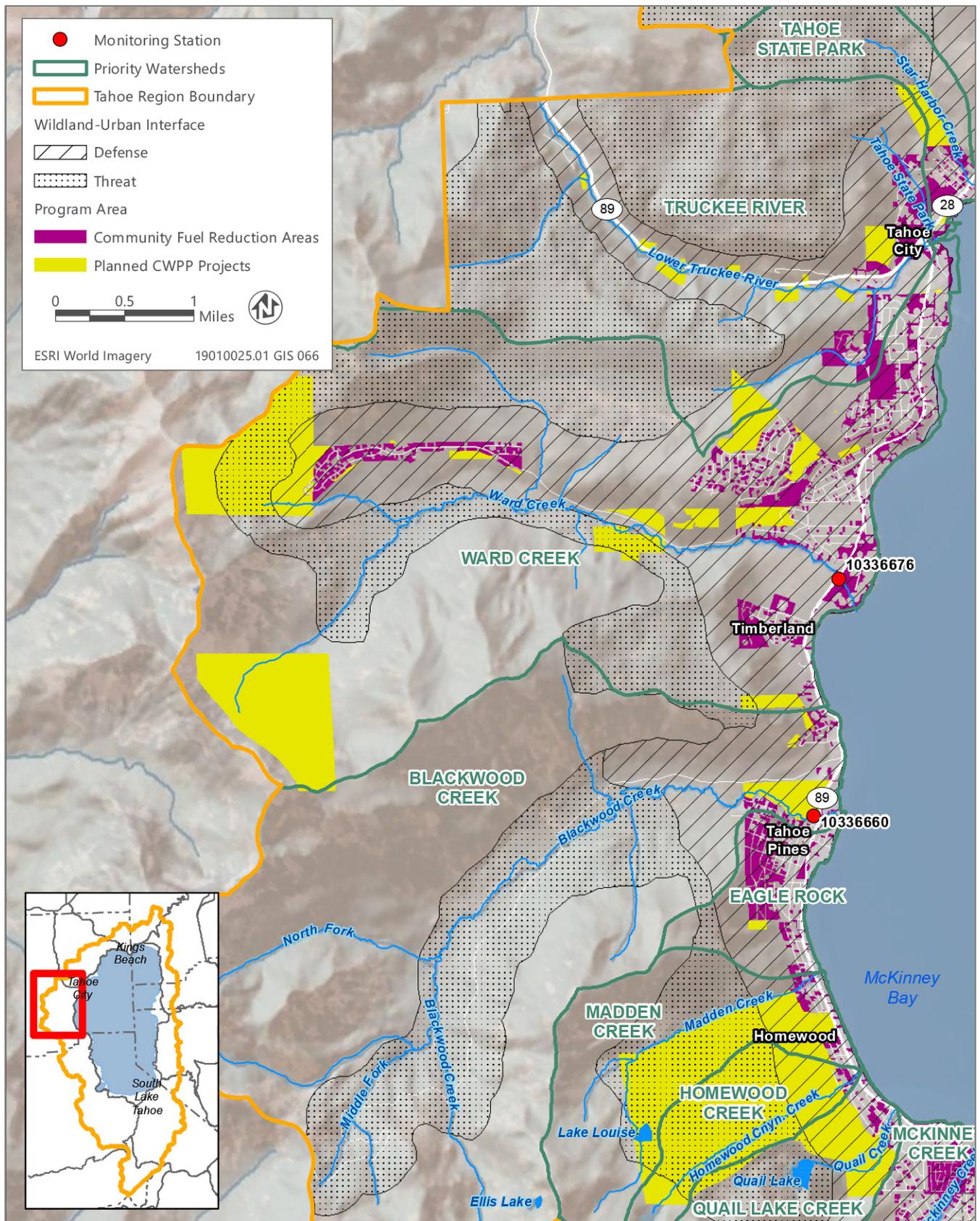
Source: Data received from Stillwater in 2019

Figure 3.12-1 Overview of the Subwatersheds and Hydrological Features within the Program Area



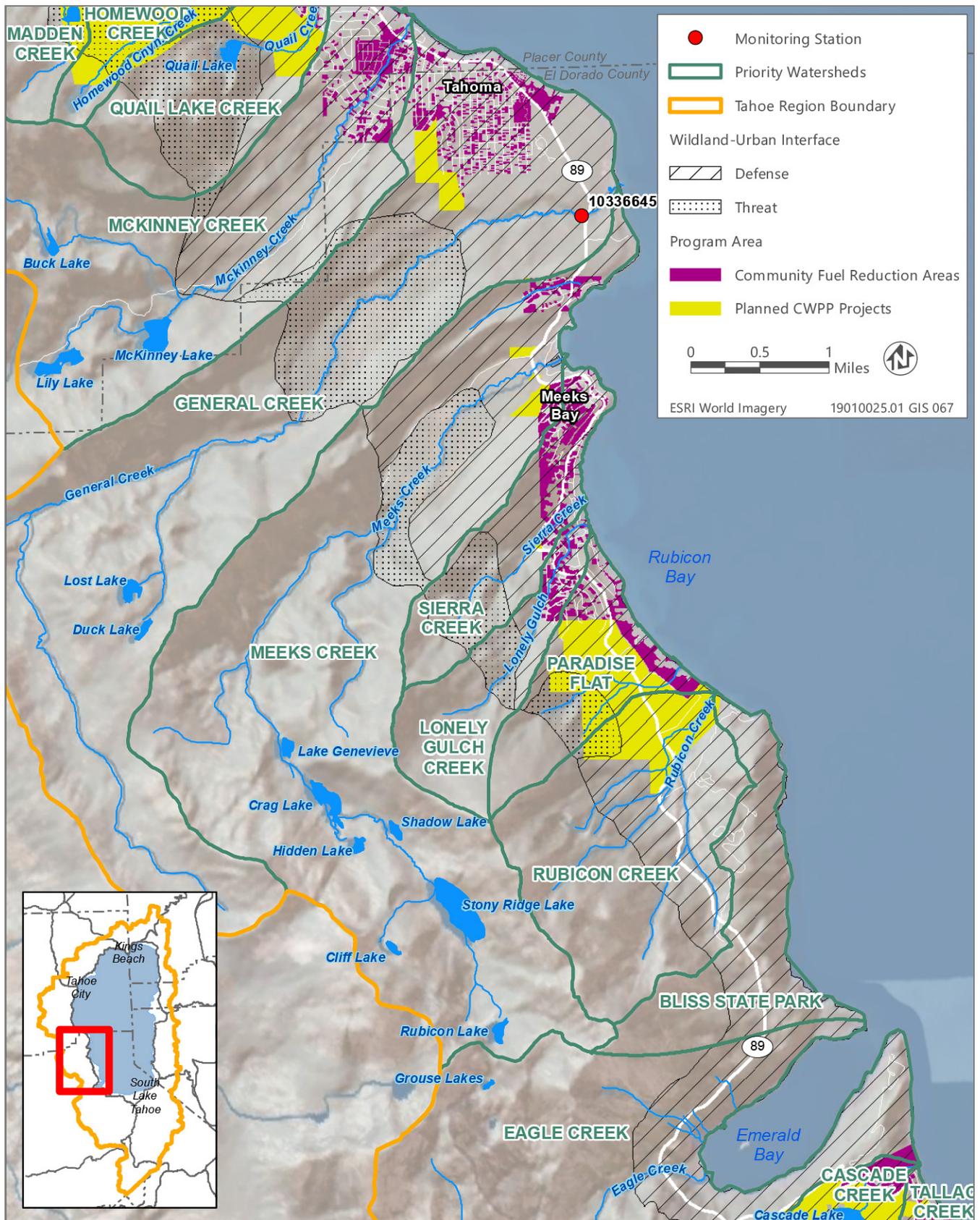
Source: Data received from CTC, Stillwater, and TRPA in 2019

Figure 3.12-2 Subwatersheds, Hydrological Features, and Lake Tahoe Interagency Monitoring Program Stations within the Program Area: Kings Beach to Dollar Point



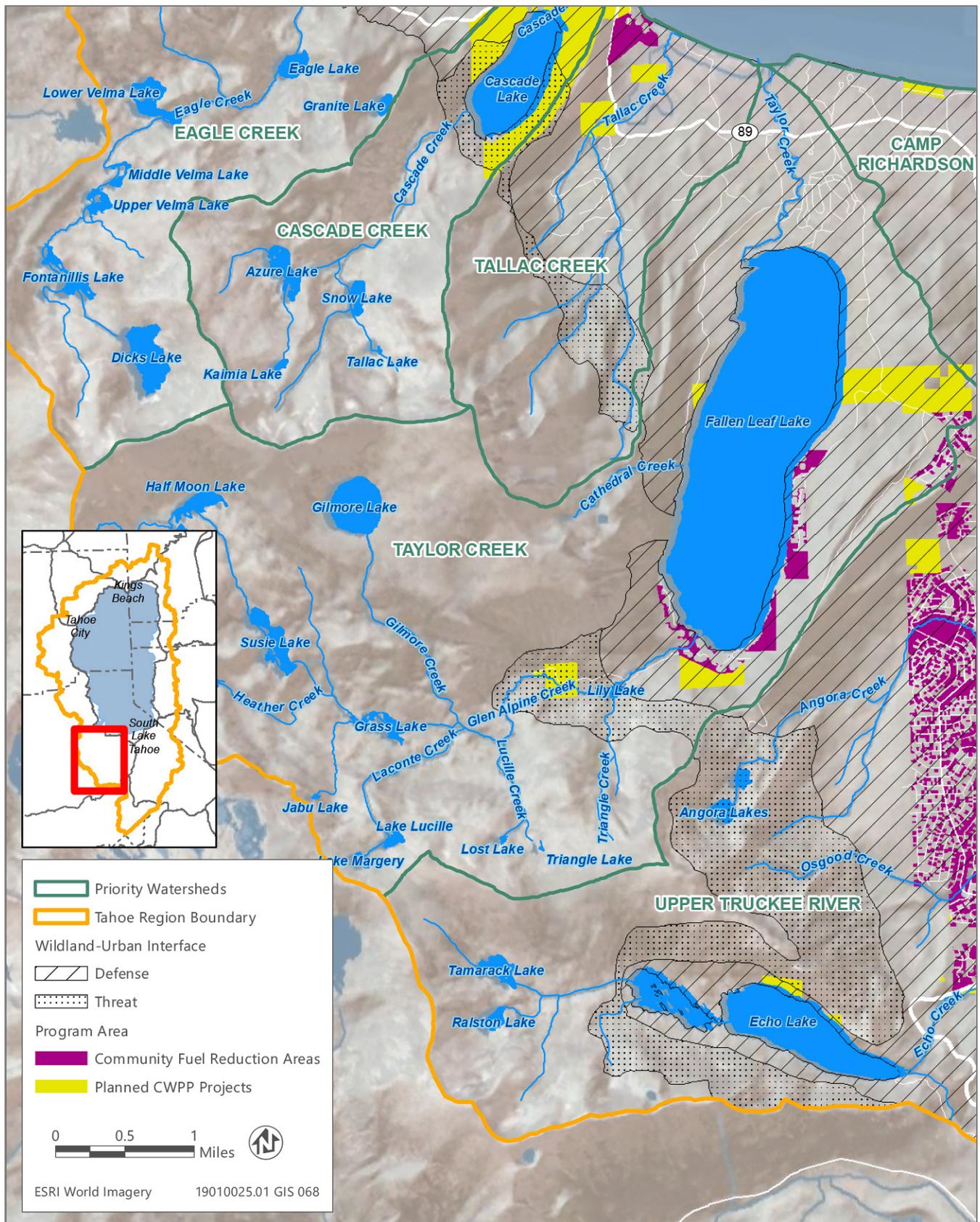
Source: Data received from CTC, Stillwater, and TRPA in 2019

Figure 3.12-3 Subwatersheds, Hydrological Features, and Lake Tahoe Interagency Monitoring Program Stations within the Program Area: Tahoe City to Homewood



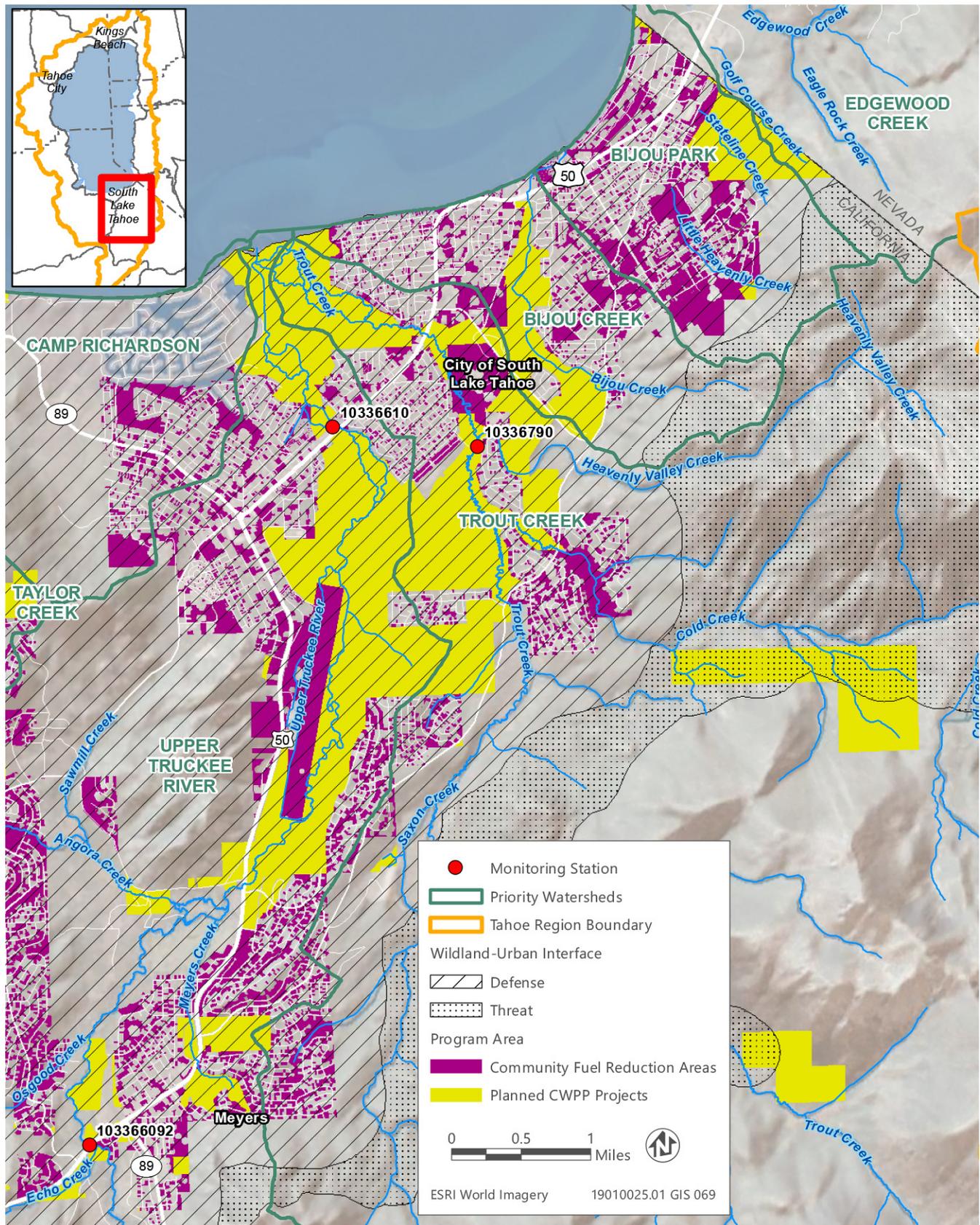
Source: Data received from CTC, Stillwater, and TRPA in 2019

Figure 3.12-4 Subwatersheds, Hydrological Features, and Lake Tahoe Interagency Monitoring Program Stations within the Program Area: Tahoma to Emerald Bay



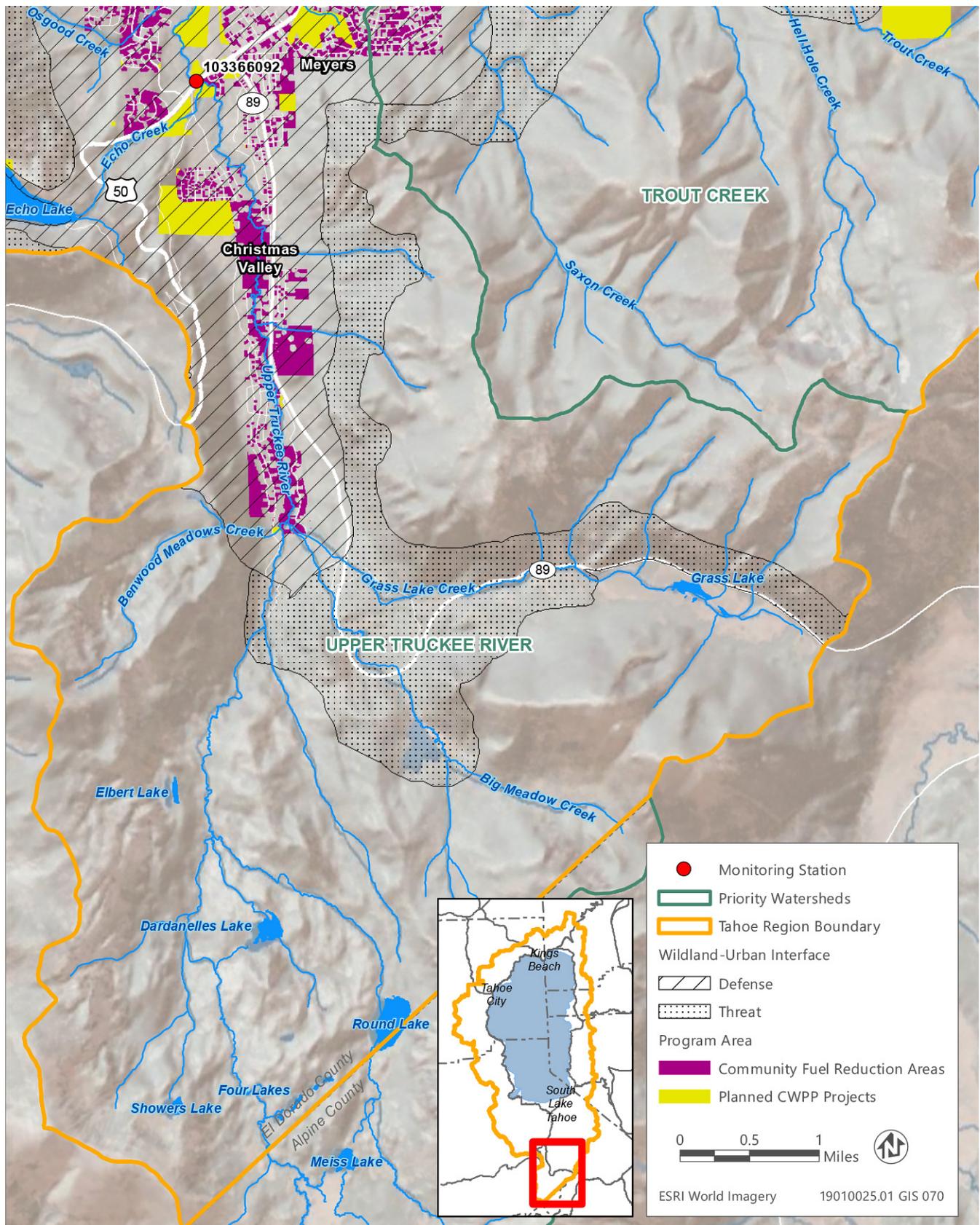
Source: Data received from CTC, Stillwater, and TRPA in 2019

Figure 3.12-5 Subwatersheds, Hydrological Features, and Lake Tahoe Interagency Monitoring Program Stations within the Program Area: Cascade Lake to North Upper Truckee



Source: Data received from CTC, Stillwater, and TRPA in 2019

Figure 3.12-6 Subwatersheds, Hydrological Features, and Lake Tahoe Interagency Monitoring Program Stations within the Program Area: South Lake Tahoe



Source: Data received from CTC, Stillwater, and TRPA in 2019

Figure 3.12-7 Subwatersheds, Hydrological Features, and Lake Tahoe Interagency Monitoring Program Stations within the Program Area: Christmas Valley

Table 3.12-6 Subwatershed Elevation, Total Area, Area within the Program Area, Drainage Density and Total Length of Streams in the Program Area

Subwatershed	Elevation (feet)	Total Sub-Watershed Area (square mile)	Sub-Watershed Area within the Program Area (square mile)	Percent Sub-Watershed Area within the Program Area	Drainage Density (mile stream/square mile watershed area)	Total Length of Streams in Program Area (miles)
Barton Creek	6,226–8,294	1.1	0.6	56.9	2.6	2.9
Bijou Creek	6,225–8,364	2.8	0.9	30.9	0.9	2.6
Bijou Park	6,225–9,200	3.1	1.1	36.3	1.0	3.1
Blackwood Creek	6,228–8,826	11.6	0.2	1.5	0.1	1.5
Bliss State Park	6,225–9,164	1.5	0.01	0.4	0.0	0.0
Burton Creek	6,231–8,424	5.7	0.2	2.8	0.2	1.0
Camp Richardson	6,225–7,244	4.2	0.4	8.9	0.0	0.01
Carnelian Bay Creek	6,240–8,097	1.0	0.2	22.1	0.8	0.8
Carnelian Canyon	6,228–8,331	4.2	0.7	16.3	0.7	2.9
Cascade Creek	6,238–9,698	4.7	0.5	11.3	0.7	3.3
Cedar Flats	6,228–7,951	1.8	0.3	15.2	1.1	2.0
Dollar Creek	6,227–7,950	1.8	1.1	60.5	4.0	7.4
Eagle Creek	6,225–9,972	8.8	0.04	0.4	0.0	0.01
Eagle Rock	6,227–7,727	0.8	0.2	20.9	3.0	2.5
East Stateline Point	6,228–7,881	1.3	0.1	3.5	0.0	0.1
Edgewood Creek	6,226–9,591	6.7	0.1	1.2	0.1	0.6
General Creek	6,228–8,705	9.0	0.3	3.6	0.2	1.4
Griff Creek	6,227–9,196	4.6	1.6	35.1	2.8	12.6
Homewood Creek	6,230–8,456	1.0	0.9	88.0	4.9	4.9
Kings Beach	6,227–7,362	1.2	0.2	14.4	1.1	1.3
Lake Forest Creek	6,234–7,080	0.7	0.4	63.1	2.8	1.9
Lonely Gulch Creek	6,228–9,177	1.1	0.1	6.5	0.5	0.5
Madden Creek	6,229–8,734	2.3	0.7	31.3	1.0	2.4
McKinney Creek	6,228–8,631	4.9	0.2	3.6	0.3	1.3
Meeks Creek	6,225–9,285	8.8	0.1	1.3	0.1	0.5
Paradise Flat	6,225–9,152	1.1	0.5	45.7	4.5	5.1
Quail Lake Creek	6,229–8,399	1.6	0.3	19.4	1.4	2.3
Rubicon Creek	6,225–9,252	2.9	0.4	13.2	1.8	5.1
Sierra Creek	6,225–8,196	1.2	0.2	14.2	0.4	0.5
Tahoe State Park	6,229–7,566	1.2	0.2	12.4	0.8	1.0
Tahoe Vista	6,225–8,425	5.5	1.7	30.4	1.6	8.7
Tallac Creek	6,225–9,730	4.6	0.2	5.0	0.6	2.9
Taylor Creek	6,225–9,975	18.4	0.6	3.3	0.4	7.3
Trout Creek	6,225–10,880	41.3	3.6	8.8	0.6	24.1
Truckee River	5,884–7,730	6.8	0.4	6.2	0.2	1.4
Upper Truckee River	6,225–10,060	56.6	5.9	10.3	0.6	35.0
Ward Creek	6,227–8,880	12.8	2.3	18.0	2.5	31.8
Watson	6,235–8,611	2.3	0.1	2.4	0.4	0.8
Total	—	443.2	27.32	—	—	183.5

Note: Sub-watersheds defined by TRPA. Stream length defined by SFEI.

Source: Prepared by Stillwater Sciences in 2020, TRPA 2017, SFEI 2016

Table 3.12-7 Lake Elevations and Total Perimeters in the Program Area

Lake	Elevation (feet)	Total Perimeter of Lakes within the Program Area (miles)
Cascade Lake	6,467	0.66
Dollar Reservoir	6,566	0.14
Echo Lake	7,414	0.04
Fallen Leaf Lake	6,379	0.40
Lake Christopher	6,273	0.65
Louise, Lake	7,711	0.27
Tahoe, Lake	6,226	11.3
Unnamed Lakes ¹	6,228–6,826	7.3
Total	—	20.8

Note: Lake perimeter defined by National Hydrography Dataset (NHD).

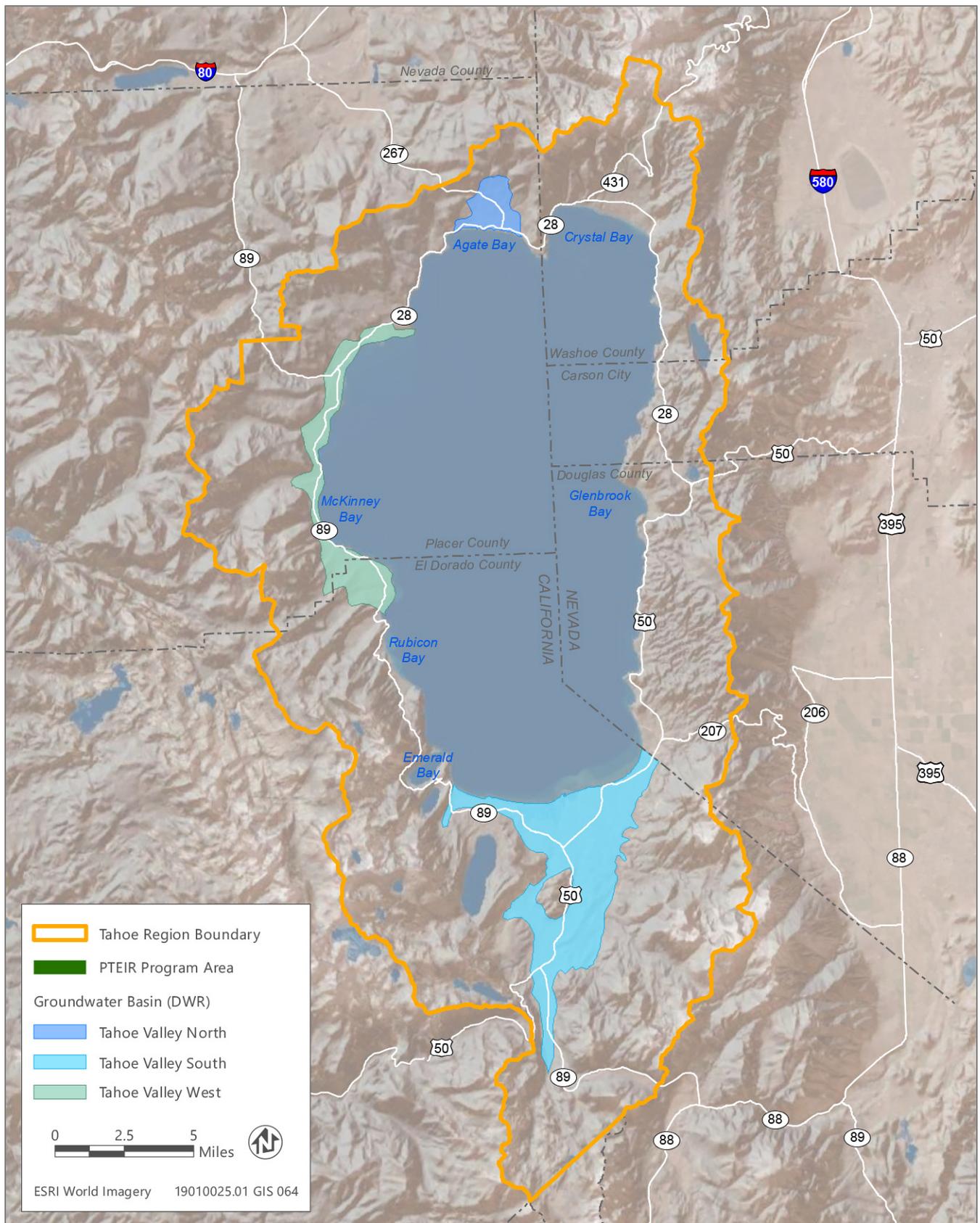
¹Includes 42 lakes within the program area.

Source: Prepared by Stillwater Sciences in 2020; USGS 2019a

Groundwater

The program area is located within the Lake Tahoe Hydrological Basin, which includes three groundwater subbasins: Tahoe Valley South (Basin Number 6-005.01), Tahoe Valley West (Basin Number 6-005.02), and Tahoe Valley North (Basin Number 6-005.03) (DWR 2016; Figure 3.12-8). Of these basins, Tahoe Valley South is the largest, with a 14,800-acre (23-square mile) surface area and an estimated groundwater storage of 936,760 acre-feet (DWR 2003). Primary boundaries bordering the subbasin are Lake Tahoe, the Sierra Nevada, and the California-Nevada state line. The second largest subbasin is Tahoe Valley West which has a surface area of more than 6,000 acres (9 square miles) and an estimated ground water storage of 827,627 acre-feet (DWR 2003). Primary boundaries bordering the subbasin include Lake Tahoe, Sierra Nevada, Dollar Point, and Meeks Bay. The smallest subbasin is Tahoe Valley North, which extends over 2,000 acres (4 square miles) and its boundaries include Lake Tahoe and the Sierra Nevada mountains (DWR 2003). The general direction of groundwater flow in the subbasin is into Lake Tahoe.

Groundwater is the primary source of municipal and domestic water supply and supplies water to Lake Tahoe. Groundwater is recharged by direct infiltration of precipitation and streamflow (DWR 2003, DWR 2016). Long-term reductions in groundwater have not been observed within the Lake Tahoe groundwater subbasins (DWR 2003, DWR 2016, STPUD 2018). Annual fluctuations in groundwater elevation occur seasonally, with rising groundwater elevations during winter, highest groundwater levels during the spring (early April through mid-June) and lowest groundwater levels during the summer and fall when precipitation is low and groundwater demands are high (STPUD 2018).



Source: Data received from Stillwater in 2019

Figure 3.12-8 Lake Tahoe Groundwater Subbasins within the Program Area

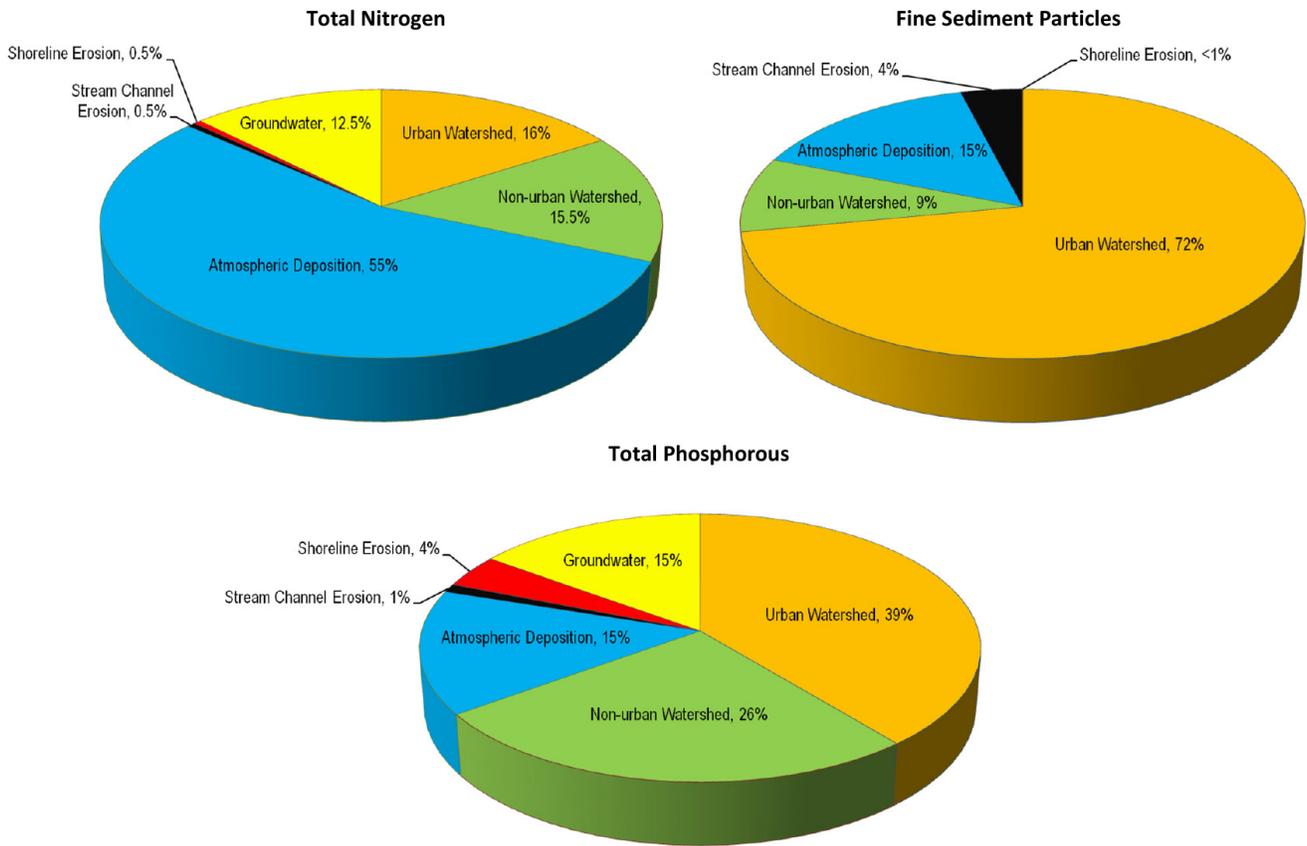
WATER QUALITY

Lake Tahoe, an ONRW under the CWA, is classified as an oligotrophic lake, which means the lake has very low concentrations of nutrients that can support algal growth, leading to clear water and high levels of dissolved oxygen (TERC 2011). The exceptional transparency of Lake Tahoe results from naturally low inputs of nutrients and sediment from the surrounding watersheds. Currently, water managers in Lake Tahoe are concerned about the tributary nutrient and suspended sediment concentrations and loads observed under existing conditions (status), the trends in nutrient and sediment concentrations and loads (trends), and the factors that influence the observed status and trends (USGS 2019b).

Pollutants of Concern

Primary pollutants of concern in the Tahoe region are fine sediment particles (<16 micrometers) and nutrients that support algal growth (nitrogen and phosphorus) (TRPA 2016). These are considered pollutants of concern in the Tahoe Region because of the negative impact on transparency (Lahontan RWQCB and NDEP 2010) and, in the case of nutrients, the blueness of the lake (Watanabe et al. 2016). Additionally, many components of the aquatic system are thought to be adversely affected by these pollutants (Reuter et al. 2009).

Research for the Lake Tahoe TMDL included an analysis of pollutant sources to identify the magnitude of pollutant loads to Lake Tahoe from various source categories. These pollutant sources are defined as surface runoff from urban watershed, atmospheric deposition, non-urban watershed, stream channel erosion, groundwater, and shoreline erosion. Figure 3.12-9 displays the relative distribution of average annual pollutant loading to Lake Tahoe for each pollutant of concern among the source categories (Lahontan RWQCB and NDEP 2010). As shown in Figure 3.12-9, the Lake Tahoe TMDL identifies surface runoff from urban watershed as the most significant source of pollutant loading for fine sediment particles (the primary pollutant of concern) and phosphorus. Surface runoff from urban watersheds is estimated to deliver 72 percent of the average annual fine sediment particle load and roughly 39 percent of the average annual phosphorus load to the lake. For nitrogen, atmospheric deposition is identified as the most significant source of loading to the lake, contributing 55 percent of the average annual nitrogen load, with urban watershed only contributing 16 percent of the average annual nitrogen load.



Source: Adapted by Ascent from Lahontan RWQCB and NDEP 2010

Figure 3.12-9 Sources of Pollutants of Concern to Lake Transparency

Lake Tahoe Water Quality

This section summarizes the Lake Tahoe TMDL, load reduction milestones, and status and trends of TRPA indicator categories and associated standards applicable to Lake Tahoe water quality.

Total Maximum Daily Load

The Lake Tahoe TMDL was developed collaboratively by the Lahontan RWQCB and Nevada Department of Environmental Protection (NDEP) as the framework for comprehensive water quality restoration planning to address identified pollutant sources and ultimately achieve the Lake Tahoe transparency and clarity water quality objectives for pelagic waters (Lahontan RWQCB and NDEP 2010).

The Lake Tahoe TMDL indicates that to achieve TRPA’s transparency standard, total basinwide loads of fine sediment particles, phosphorus, and nitrogen need to be reduced by 65 percent, 35 percent, and 10 percent, respectively (Lahontan RWQCB and NDEP 2010). Load reductions are expressed as a percentage of baseline pollutant loads calculated for conditions in the year 2004.

Through the Lake Tahoe TMDL, Lahontan RWQCB and NDEP have established 5-year load reduction milestones to help assess progress toward meeting overall load reduction goals. The Lake Tahoe TMDL sets an interim goal for the year 2026, termed the Clarity Challenge, to reduce basinwide loading from all sources for fine sediment particles, phosphorus, and nitrogen by 32 percent, 17 percent, and 4 percent, respectively. Attainment of the Clarity Challenge is estimated to return the lake to an average annual transparency of 78.7 feet (24 meters) (Lahontan RWQCB and NDEP 2010).

Given that the majority of pollutant loads for fine sediment particles and phosphorus are delivered to the lake from urban watershed (developed lands), the Lahontan RWQCB and NDEP have prioritized this source category as the

greatest opportunity for pollutant control. Pollutant load allocations and load reduction targets are specified for each jurisdiction in the Tahoe region through NPDES permits for El Dorado County, Placer County, the City of South Lake Tahoe, and the California Department of Transportation. For local jurisdictions in Nevada (Washoe County and Douglas County), NDEP has developed Memoranda of Agreements (MOAs) that set load reduction goals and guide the implementation of projects and actions to achieve Lake Tahoe TMDL milestones. NDEP defines pollutant load allocations and load reduction targets for the Nevada Department of Transportation through an NPDES permit. Through either an NPDES permit or a MOA, each jurisdiction has developed stormwater/pollutant load reduction plans that prioritize water quality projects and actions to reduce loading from developed lands to meet Lake Tahoe TMDL milestones. The 2017 Lake Tahoe Report Card indicates that the conditions are improving in Lake Tahoe, including the achievement of the first 5-year load reduction milestone in fine sediment particles for local government and state highway departments (5 percent reduction) and continued clarity improvement (Lahontan RWQCB 2017). Upcoming milestones are provided in Table 3.12-8.

Table 3.12-8 Upcoming Load Reduction Milestones from Developed Lands¹

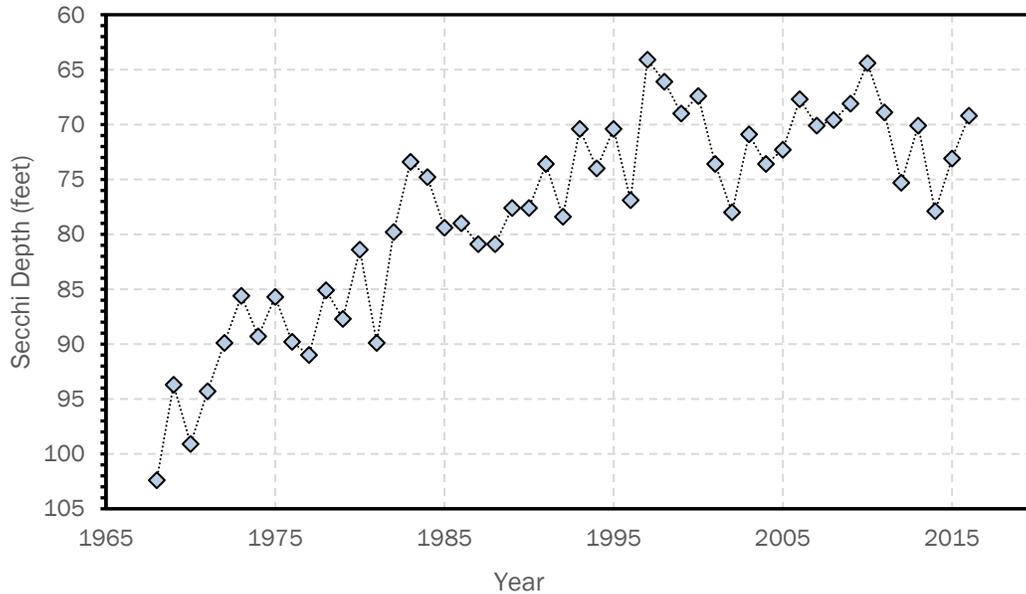
Pollutant of Concern	2021 Target	2026 Clarity Challenge	Standard Attainment
Fine sediment particles	21%	34%	71%
Total phosphorus	14%	21%	46%
Total nitrogen	14%	19%	50%

¹ Load reductions are expressed as percent reductions of baseline pollutant loads calculated for conditions in 2004. Percent reductions shown are for the developed lands source category (i.e., stormwater runoff), which differs from load reductions expressed as percent reductions for basinwide loads from all sources.

Source: Adapted from Lahontan RWQCB and NDEP 2010 by Ascent in 2020

Pelagic Lake Tahoe Water Quality: Secchi Depth Transparency

Transparency in the lake is measured every 7–10 days by submerging a Secchi disk, a 10-inch (25.4 centimeters) white, circular plate, and recording the depth at which the plate is no longer visible to the human eye. These readings, or Secchi depths, suggest the relative transparency of the lake increases with deeper measurements of Secchi depth. Lower readings of Secchi depths occur as the plate's visibility is impaired by the light-scattering effects of inorganic particles (e.g., sediment) and the light absorption of organic particles (e.g., algae) in the lake. The TRPA numerical standard for average annual Secchi depth is 97.4 feet (29.7 meters). Researchers from TERC have collected measurements of Secchi depth since 1968. Average annual values for Secchi depth from 1968 through 2016 are presented in Figure 3.12-10.



Source: Adapted from TERC 2017 by Ascent in 2018

Figure 3.12-10 Average Annual Secchi Depth in Lake Tahoe

The 2016 value of 69.2 feet (21.1 meters) is 5.1 feet (1.6 meter) greater than the lowest average annual Secchi depth (64.1 feet, 19.5 meters) recorded in 1997. The 2016 value is approximately 28 feet (8.5 meters) below attainment of the TRPA numerical standard. The 2015 TRPA Threshold Evaluation (TRPA 2016) reports the status of Secchi depth for the TRPA numerical standard as somewhat worse than the target, with the trend categorized as having little or no change. Statistical analysis of the data shown in Figure 3.12-10 indicates that the decline in Lake Tahoe's transparency has slowed in recent years. For over a decade, the average annual transparency has hovered around 70 feet (21.3 meters), but sizable interannual and seasonal variability is observed.

Littoral Water Quality: Turbidity

The quality of water in the nearshore area is tracked by measuring turbidity, which is an indication of the cloudiness of water expressed in NTUs. Higher turbidity measurements indicate cloudier water. TRPA maintains standards for nearshore turbidity of 3 NTU in areas influenced by stream discharge and 1 NTU in areas not influenced by stream discharge.

Pilot-scale implementation of optical (clarity and transmissivity) monitoring protocols recommended in the Lake Tahoe Nearshore Evaluation and Monitoring Framework Report (Heyvaert et al. 2013) were conducted in 2014 and 2015 (Heyvaert et al. 2016). The pilot monitoring effort completed five nearshore surveys from November 2014 through November 2015, using flow-through (*in situ*) sensors mounted to a research vessel that followed a consistent path-line around the nearshore at approximately the 7-meter (23 feet) depth contour. The following findings and observations were reported (Heyvaert et al. 2016):

- ▶ No single turbidity measurement exceeded the existing TRPA threshold standard of 1 NTU. However, the measurements were conducted during non-storm periods, and elevated turbidity would likely be expected during times of increased stormwater runoff.
- ▶ The highest turbidity, while still below the existing TRPA threshold standard, was typically observed near urban areas along the south shore, northeast shore, and northwest shore. However, attempts to correlate the density of urban development to turbidity measurements within the nearshore produced a weak correlation ($R^2 = 0.214$). The weak correlation could be influenced by a lack of notable stormwater runoff from urban areas during the monitoring period.

- ▶ Transmissivity measurements used to identify the status and trend of nearshore clarity are theoretically promising given the near linear relationship between transmissivity and clarity. However, the collected transmissivity data demonstrated disparate results in certain areas from unknown factors.

Based primarily on the data summarized above, the 2015 TRPA Threshold Evaluation reports the status of turbidity as somewhat better than the target, with insufficient data to determine a trend attributable to a lack of a long-term monitoring program and associated data (TRPA 2016).

Tributaries

All the tributary streams within the Tahoe Basin deliver sediment and nutrients to Lake Tahoe. The Lake Tahoe Interagency Monitoring Program (LTIMP) monitors streamflow and water quality at six locations in Lake Tahoe Basin tributaries to estimate nutrient and sediment loads entering Lake Tahoe and assess trends in stream water quality. The six LTIMP monitoring stations are within five California streams: Trout Creek, General Creek, Blackwood Creek, Ward Creek, and the Upper Truckee River. These five streams produce approximately 45 percent of the total tributary inflow into Lake Tahoe (TRPA 2016). LTIMP routinely monitors these stream sites for flow, *in situ* parameters (temperature, specific conductivity, pH, dissolved oxygen), fine sediment, turbidity, nutrients (nitrogen and phosphorus), and suspended sediment, as listed in Table 3.12-9. Monitoring stations are shown in Figures 3.12-1 through 3.12-5. This section summarizes the status and trends of TRPA indicator categories and associated applicable standards related to tributary water quality, including suspended sediments and nutrients (i.e., nitrogen and phosphorus).

Table 3.12-9 Lake Tahoe Interagency Monitoring Program Tributary Water Quality Monitoring Stations

Station Name (ID)	USGS Gage	Latitude/ Longitude	Selected Parameters Monitored
Blackwood Creek near Tahoe City, CA	10336660	39°06'27"N 120°09'40"W	Streamflow, stage, temperature, specific conductivity, pH, dissolved oxygen, fine sediment, turbidity, nitrogen, phosphorus, suspended sediment, continuous temperature, continuous suspended sediment
General Creek near Meeks Bay, CA	10336645	39°03'07"N 120°07'03"W	Streamflow, stage, temperature, specific conductivity, pH, dissolved oxygen, fine sediment, turbidity, nitrogen, phosphorus, suspended sediment, continuous suspended sediment
Trout Creek near Tahoe Valley, CA	10336790	38°55'12"N 119°58'17" W	Streamflow, stage, temperature, specific conductivity, pH, dissolved oxygen, fine sediment, turbidity, nitrate, phosphorus, suspended sediment, continuous suspended sediment
Upper Truckee River at South Lake Tahoe, CA	10336610	38°55'21"N 119°59'26"W	Streamflow, stage, temperature, specific conductivity, pH, dissolved oxygen, fine sediment, turbidity, nitrogen, phosphorus, suspended sediment, continuous suspended sediment
Upper Truckee River at Highway 50 above Meyers, CA	103366092	38°50'55"N 120°01'34" W	Streamflow, stage
Ward Creek at Highway 89 near Tahoe Pines, CA	10336676	39°07'56"N 20°09'24" W	Streamflow, stage, temperature, specific conductivity, pH, dissolved oxygen, fine sediment, turbidity, nitrogen, phosphorus, suspended sediment, continuous suspended sediment

Note: LTIMP= Lake Tahoe Interagency Monitoring Program.

Source: USGS 2019c

Suspended Sediment

Sedimentation is a result of erosion and the transport of eroded fine materials to a waterbody and may result in elevated levels of turbidity, total dissolved solids and total suspended solids. Erosion and sedimentation are natural phenomena but are influenced by land management practices and land disturbance activities. Several factors control suspended sediment in streams, including climate, hydrology, geology, fire regimes, and land management practices. As discussed in Section 3.8, Geology, Soils, and Land Capability, sediment can also be eroded through erosion of riverbanks which remove floodplain soils and transport that material downstream. Sediment budgets calculated by Nolan and Hill (1991) found that nearly all mobilized sediments were derived from stream channels (i.e., stream banks or streambeds) and that hillslope erosion was a minor component of these sediment budgets (< 5 to 11 percent). Additional research by Simon (2006) suggested that a substantial portion of the fine sediment eroding from Tahoe

Basin drainages originated from stream bank erosion. Bank erosion could occur due to either direct disturbance and tree removal along streams or changes to the watershed that increase the magnitude of peak flows. Sediment in surface runoff would potentially increase turbidity in receiving water bodies. Degradation of stream environment zones can contribute to sediment and nutrient inputs into Lake Tahoe and its tributaries. High sediment loads are detrimental to beneficial water uses of water and aquatic habitat.

Fine sediment particles (particles less than 16 micrometers in diameter) tend to stay suspended in the water column for an extended time which causes reduced visibility. These particles are considered to be a primary driver of the observed decline in Lake Tahoe clarity (Lahontan RWQCB and NDEP 2010).

The suspended sediment concentration standard for both California and TRPA states that the stream must attain a 90th percentile value for suspended sediment concentration of 60 milligram per liter. This is interpreted to mean that no more than ten percent of the stream's suspended sediment concentration measurements for the water year can exceed 60 milligrams per liter. Generally, Trout Creek and General Creek meet the water quality standards while Blackwood Creek, Upper Truckee River, Ward Creek usually exceed the standards (TRPA 2016). Based on the 2015 TRPA Threshold Evaluation, trends in monitored riverine sediment concentrations in Trout Creek, General Creek, Blackwood Creek, Ward Creek, and the Upper Truckee River exhibited little or no change in suspended sediment concentrations between 1980 and 2014 (TRPA 2016).

The watersheds that are the greatest contributors of fine sediment in the Lake Tahoe Basin are the Upper Truckee River, Blackwood Creek, Trout Creek, and Ward Creek (Simon 2006, TRPA 2016). Sediment loads based on the 2015 TRPA Threshold Evaluation are presented in Table 3.12-10.

Table 3.12-10 Annual Average Fine Sediment Particle Yield and Load for California Streams in the Lake Tahoe Basin

Stream	Drainage Area (square kilometers)	Average Fine Sediment Particle Yield Expressed as Log (Fine Sediment Particles) ¹ (number of particles per square kilometer per year)	Average Total Fine Sediment Particle Load Expressed as Log (Fine Sediment Particles) ¹ (number of particles per year)	Percent Annual Fine Sediment Particle Load to Lake Tahoe ²
Blackwood	28.8	17.3	18.7	18%
Upper Truckee	139.9	17.1	19.2	51%
Ward	25.3	17.0	18.4	8%
General	19.1	16.7	18.0	3%
Trout	104.6	16.6	18.6	14%

¹ The log (Fine Sediment Particles) can be expressed as the number of fine sediment particles by calculating 10 to the power of the specified log (Fine Sediment Particles) (i.e., $10^{\log(\text{Fine Sediment Particles})}$).

² Percent annual fine sediment loads included other major tributaries in Nevada (i.e., Incline Creek and Third Creek); therefore, the total percent included in the table are less than 100 percent.

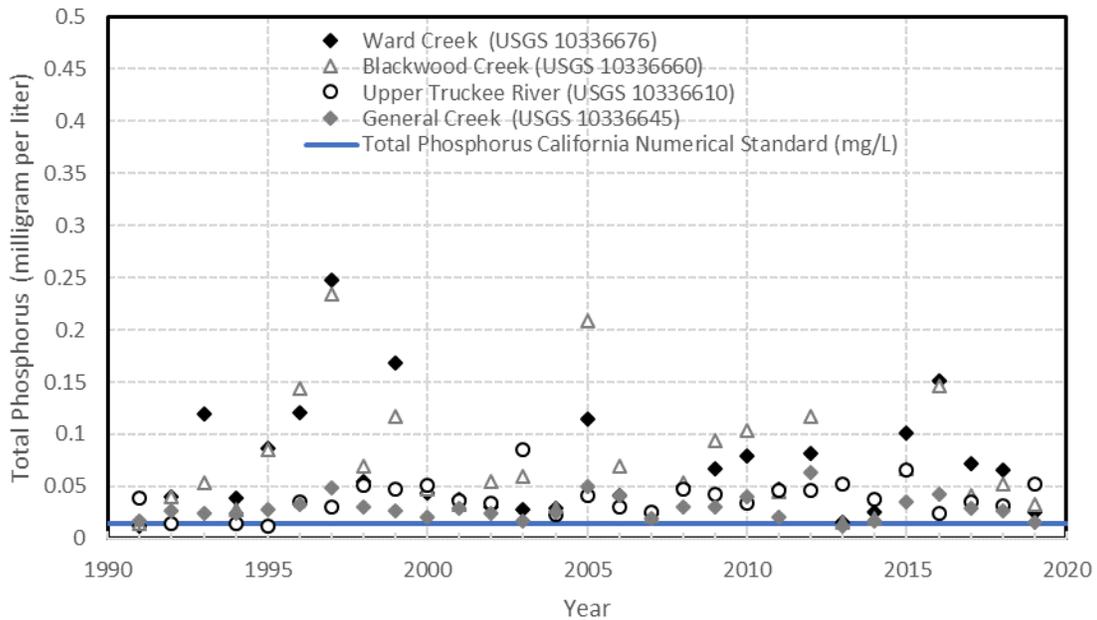
Source: Adapted from TRPA 2016

Nutrients

Phosphorus and nitrogen are naturally occurring in the Lake Tahoe Basin and provide a pathway to support the food web; however, high nutrient loads can cause water quality degradation. Elevated nutrient concentrations cause increased algae (i.e., phytoplankton and periphyton) and thus reduce lake transparency and nearshore aesthetics. Reduced transparency and increased nutrients have resulted in phosphorus and nitrogen becoming pollutants of concern in the Lake Tahoe Basin (Lahontan RWQCB and NDEP 2010). Average annual values for phosphorus and total nitrogen at tributary sites from 1991 through 2019 are presented in Figures 3.12-9 and 3.12-10, respectively.

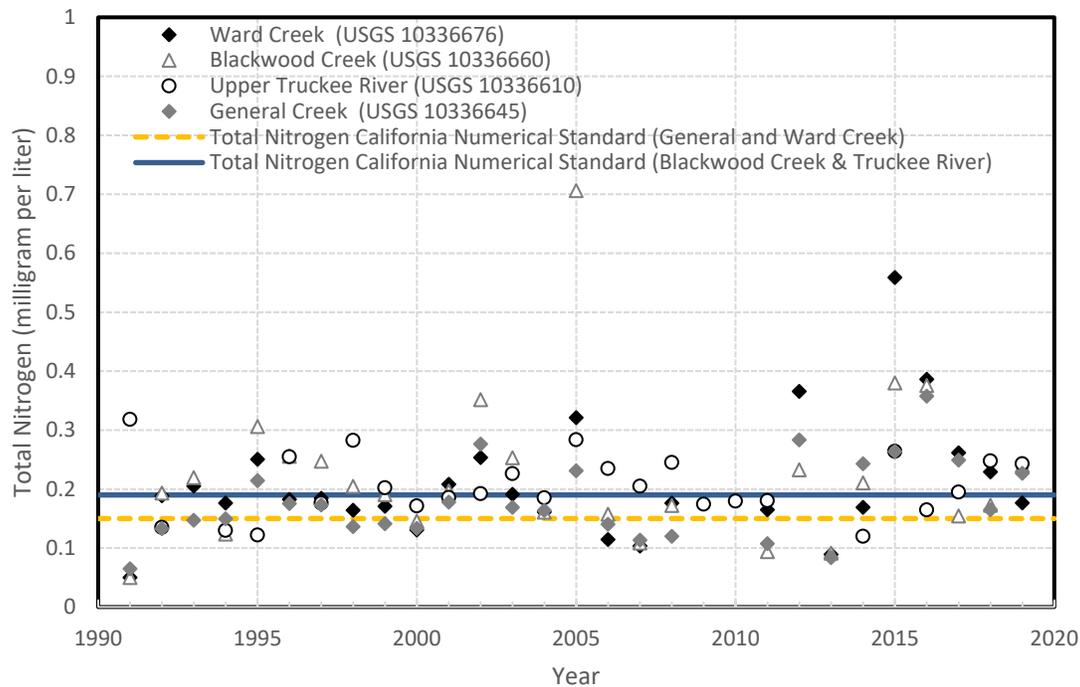
The California and TRPA numerical standards for total phosphorus state that the stream must attain a 90th percentile phosphorus concentration of 0.015 milligram per liter (Lahontan RWQCB 2016), so no more than ten percent of the stream's total phosphorus concentration measurements for a year can exceed 0.015 milligram per liter. Figure 3.12-11 presents average annual total phosphorus concentrations data collected by the LTIMP along with the California and

TRPA numerical standard for phosphorus. Analysis by TRPA indicates that the Upper Truckee River, Trout Creek, and Blackwood Creek generally exceed the target for total phosphorus and General Creek is near the target (TRPA 2016). For total nitrogen, the California and TRPA numerical target is 0.15 milligram per liter for General Creek and Ward Creek and 0.19 milligram per liter for Blackwood Creek, Trout Creek, and the Upper Truckee River. Figure 3.12-12 presents average annual total nitrogen concentrations. Generally, Upper Truckee River, and General Creek exceed the numerical standards for total nitrogen and Blackwood Creek and Wood Creek are better than this target. Based on the 2015 TRPA Threshold Evaluation (TRPA 2016) and data presented in Figure 3.12-11 through 3.12-12, riverine phosphorus and total nitrogen concentrations exhibited little or no change during the monitoring period. Of the seven tributaries regularly monitored the Lake Tahoe Basin, the five California tributaries (i.e., Upper Truckee Creek, Blackwood Creek, Trout Creek, Ward Creek, and General Creek) were the largest contributors of phosphorus and nitrogen loads within the Tahoe Basin between 1981 and 2014 (TRPA 2016).



Source: USGS 2019c

Figure 3.12-11 Average Annual Total Phosphorus Concentrations in Ward Creek, Blackwood Creek, Upper Truckee River, and General Creek as Measured by USGS and California Numerical Standards



Source: USGS 2019c

Figure 3.12-12 Average Annual Total Nitrogen Concentrations in Ward Creek, Blackwood Creek, Upper Truckee River, and General Creek as Measured by USGS and California Numerical Standards

Other Lakes

The lakes in the Tahoe Basin other than Lake Tahoe are evaluated using a separate TRPA indicator category based on water quality and ecology of these systems. Impacts to other lakes include development impacts, land management activities, recreation, and other watershed impacts (i.e., atmospheric deposition). Data collection in other lakes is limited and the few data that exist are only for the larger lakes within the program area (i.e., Fallen Leaf Lake and Echo Lake). Data collected in the 1990s indicate that nutrients (i.e., nitrate, ammonia, Total Kjeldahl nitrogen, orthophosphate, total phosphorus) and iron concentrations are low (Lico 2004). Trend analysis for other lakes was not included in the 2015 TRPA Threshold Evaluation due to insufficient data (TRPA 2016).

Groundwater

Groundwater quality in the Lake Tahoe subbasins is generally excellent. Sources of nutrient pollution in groundwater include fertilizers, septic systems, and human and animal waste. Nutrient (i.e., nitrogen and phosphorus) concentrations are generally low in groundwater within the Lake Tahoe subbasins; however, it remains a source of nutrients into Lake Tahoe (USGS 2012, Naranjo et al. 2017). The delivery of nutrients from groundwater has been correlated with nearshore periphyton growth in Lake Tahoe (Naranjo et al. 2017).

Man-made contaminants and naturally occurring inorganic constituents are occasionally detected in groundwater above numerical standards. Man-made contaminant sources include historical contamination from regulated industrial and commercial chemicals. Naturally occurring inorganic constituents include trace elements and materials that are present in minerals and rocks and radioactivity that is emitted from decay of unstable radionuclides. Contaminants and naturally occurring inorganic constituents that have been occasionally detected above numerical standards include: arsenic, iron, manganese, radionuclides (uranium), petroleum and chlorinated hydrocarbons (i.e., Methyl-tertiary-Butyl Ether [MTBE], and Tetrachloroethylene [PCE]), and total dissolved solids (TDS) (USGS 2012, STPUD 2018).

3.12.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

Analysis of potential impacts of the Tahoe PTEIR on hydrology and water quality is based on a review of documents and modeling results pertaining to the Lake Tahoe Basin, including previous studies of hydrology and water quality in Lake Tahoe and tributaries, Lake Tahoe West Restoration Partnership (Lake Tahoe West) Water Erosion Prediction Project (WEPP) and LANDIS-II modeling results, previous environmental impact statements/reports, and existing regulations and ordinances. The information obtained from these sources was reviewed and summarized to understand existing conditions and to identify potential environmental effects, based on the significance criteria defined below. In determining the level of significance, the analysis assumes that the project would implement the standard project requirements (SPRs) developed for the project and the following analysis assumes their incorporation into later treatment activities under the Tahoe PTEIR; it also assumes that the project would comply with relevant federal and state laws, regulations, and ordinances. The SPRs would also include applicable California Forest Practice Rules (CFPRs) that apply to timber operations for commercial purposes (PRC Section 4527(a)), as well as additional measures that apply to all projects. Relevant SPRs include the following:

- ▶ **SPR AQ-3 Create Burn Plan:** The project proponent or project implementer will create a burn plan using the CAL FIRE burn plan template for all prescribed burns. The burn plan will include a fire behavior model output of First Order Fire Effects Model and BEHAVE or other fire behavior modeling simulation and that is performed by a qualified fire behavior technical specialist that predicts fire behavior, calculates consumption of fuels, tree mortality, predicted emissions, greenhouse gas emissions, and soil heating. The project implementer will minimize soil burn severity from understory burning to reduce the potential for runoff and soil erosion. The burn plan will be created with input from a qualified technician or certified State burn boss. This SPR applies only to prescribed burning.
- ▶ **SPR AQ-4 Minimize Dust:** To minimize dust that has the potential to transport fine sediment to waterbodies during treatment activities, the project implementer will implement the following measures:
 - Limit the speed of vehicles and equipment traveling on unpaved areas to 15 miles per hour to reduce fugitive dust emissions, in accordance with the California Air Resources Board (CARB) Fugitive Dust protocol.
 - If road use creates excessive dust, the project implementer will wet appurtenant, unpaved, dirt roads using water trucks or treat roads with a non-toxic chemical dust suppressant (e.g., emulsion polymers, organic material) during dry, dusty conditions. Any dust suppressant product used will be environmentally benign (i.e., non-toxic to plants and will not negatively impact water quality) and its use will not be prohibited by CARB, EPA, or SWRCB. The project implementer will not over-water exposed areas such that the water results in runoff. The type of dust suppression method will be selected by the project implementer based on soil, traffic, site-specific conditions, and air quality regulations.
 - Remove visible dust, silt, or mud tracked-out on to public paved roadways where sufficient water supplies and access to water is available. The project implementer will remove dust, silt, and mud from vehicles at the conclusion of each workday, or at a minimum of every 24 hours for continuous treatment activities, in accordance with Vehicle Code Section 23113.
 - Suspend ground-disturbing treatment activities, including land clearing and bulldozer lines, when there is visible dust transport (particulate pollution) outside the treatment boundary, if the particulate emissions may "cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any of those persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property," per Health and Safety Code Section 41700.

- ▶ **SPR BIO-1 Review and Survey Project-Specific Biological Resources:** The project proponent will require a qualified RPF or biologist to conduct a data review and reconnaissance-level survey prior to treatment. The data reviewed will include the biological resources setting, species and sensitive natural communities tables, and habitat information in this PTEIR for the ecoregion(s) where the treatment will occur. It will also include review of the best available, current data for the area, including vegetation mapping data, species distribution/range information, California Natural Diversity Database, California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California, relevant BIOS queries, and relevant general and regional plans. Reconnaissance-level biological surveys will be general surveys that include visual and auditory inspection for biological resources to help determine the setting present on a treatment site. The qualified surveyor will 1) identify and document sensitive resources, such as riparian or other sensitive habitats, sensitive natural community, wetlands, or wildlife nursery site or habitat (including bird nests); and 2) assess the suitability of habitat for special-status plant and animal species. The surveyor will also record any incidental wildlife observations. Habitat assessments will be completed at a time of year that is appropriate for identifying habitat and no more than one year prior to the submittal of the Project Consistency Checklist (Appendix A) for each treatment activity, unless it can be demonstrated that habitat assessments older than one year remain valid. Based on the results of the data review and reconnaissance-level survey, the project proponent, in consultation with a qualified RPF or biologist, will determine which one of the following best characterizes the treatment:
 1. **Suitable Habitat Is Present but Adverse Effects Can Be Clearly Avoided.** If, based on the data review and reconnaissance-level survey, the qualified RPF or biologist determines that suitable habitat for sensitive biological resources is present but adverse effects on the suitable habitat can clearly be avoided through one of the following methods, the avoidance mechanism will be implemented prior to initiating treatment and will remain in effect throughout the treatment:
 - a. by physically avoiding the suitable habitat, or
 - b. by conducting treatment outside of the season when a sensitive resource could be present within the suitable habitat or outside the season of sensitivity (e.g., outside of special-status bird nesting season, during dormant season of sensitive annual or geophytic plant species, or outside of maternity and rearing season at wildlife nursery sites).

Physical avoidance will include flagging, fencing, stakes, or clear, existing landscape demarcations (e.g., edge of a roadway) to delineate the boundary of the avoidance area around the suitable habitat. For physical avoidance, a buffer may be implemented as determined necessary by the qualified RPF or biologist.
 2. **Suitable Habitat is Present and Adverse Effects Cannot Be Clearly Avoided.** Further review and surveys will be conducted to determine presence/absence of sensitive biological resources that may be affected, as described in the SPRs below. Further review may include contacting U.S. Department of Fish and Wildlife, National Oceanic and Atmospheric Administration Fisheries, CDFW, CNPS, or local resource agencies as necessary to determine the potential for special-status species or other sensitive biological resources to be affected by the treatment activity. Focused or protocol-level surveys will be conducted as necessary to determine presence/absence. If protocol surveys are conducted, survey procedures will adhere to methodologies approved by resource agencies and the scientific community, such as those that are available on the CDFW webpage at: <https://www.wildlife.ca.gov/Conservation/Survey-Protocols>. Specific survey requirements are addressed for each resource type in relevant SPRs (e.g., additional survey requirements are presented for special-status plants in SPR BIO-7).
- ▶ **SPR BIO-4 Design Treatment to Avoid Loss or Degradation of Riparian Habitat Function:** The project proponent, in consultation with a qualified RPF or qualified biologist, will design treatments in riparian habitats to retain or improve habitat functions by implementing the following within riparian habitats:
 - Retain at least 75 percent of the overstory and 50 percent of the understory canopy of native riparian vegetation within the limits of riparian habitat identified and mapped during surveys conducted pursuant to SPR BIO-3. Native riparian vegetation will be retained in a well distributed multi-storied stand composed of a diversity of species similar to that found before the start of treatment activities.

- Treatments will be limited to removal of uncharacteristic fuel loads (e.g., removing dead or dying vegetation), trimming/limbing of woody species as necessary to reduce ladder fuels, and select thinning of vegetation to restore densities that are characteristic of healthy stands of the riparian vegetation types characteristic of the region. This includes hand removal (or mechanized removal where topography allows) of dead or dying riparian trees and shrubs, invasive plant removal, selective thinning, and removal of encroaching upland species.
 - Removal of large, native riparian hardwood trees (e.g., willow, ash, maple, oak, alder, sycamore, cottonwood) will be minimized to the extent feasible and 75 percent of the pretreatment native riparian hardwood tree canopy will be retained. Because tree size varies depending on vegetation type present and site conditions, the tree size retention parameter will be determined on a site-specific basis depending on vegetation type present and setting; however, live, healthy, native trees that are considered large for that type of tree and large relative to other trees in that location will be retained.
 - Removed trees will be felled away from adjacent streams or waterbodies and piled outside of the riparian vegetation zone (unless there is an ecological reason to do otherwise that is approved by applicable regulatory agencies, such as adding large woody material to a stream to enhance fish habitat, e.g., see *Accelerated Wood Recruitment and Timber Operations: Process Guidance from the California Timber Harvest Review Team Agencies and National Marine Fisheries Service*).
 - Vegetation removal that could reduce stream shading and increase stream temperatures will be avoided.
 - Ground disturbance within riparian habitats will be limited to the minimum necessary to implement effective treatments.
 - The project proponent will notify CDFW pursuant to California Fish and Game Code Section 1602 prior to implementing any treatment activities in riparian habitats. Notification will identify the treatment activities, map the vegetation to be removed, identify the impact avoidance identification methods to be used (e.g., flagging), and appropriate protections for the retention of shaded riverine habitat, including buffers and other applicable measures to prevent erosion into the waterway.
 - In consideration of spatial variability of riparian vegetation types and condition and consistent with CFPR (14 CCR Section 956.9[v]), a different set of vegetation retention standards and protection measures from those specified in the above bullets may be implemented on a site-specific basis if the qualified RPF and the project proponent demonstrate through substantial evidence that alternative design measures provide a more effective means of achieving the treatment goals and would result in effects to the Beneficial Functions of Riparian Zones equal or more favorable than those expected to result from application of the above measures. Deviation from the above design specifications, different protection measures and design standards will only be approved when the treatment plan incorporates an evaluation of beneficial functions of the riparian habitat and with written concurrence from CDFW.
- **SPR BIO-5 Water Drafting:** Water drafting involves drawing water from sources such as a lake, pond, or stream into a pump and could serve to provide a supply of water for dust abatement or fire suppression in treatment areas that are inaccessible to water trucks or are not in close proximity to fire hydrants. The project proponent and project implementer, as applicable, will comply with the following requirements and best management practices:
- Water drafting operations shall follow CFPR requirements in 14 CCR Section 963.7(l), which are intended to apply to water drafting operations in watersheds with listed anadromous salmonids but for this PTEIR are proposed to apply throughout the program area.
 - Vehicles used for water drafting shall only access drafting sites through existing watercourse crossings and will not enter WLPZs/SEZs where they would otherwise be prohibited.
 - Water drafting shall be subject to all applicable requirements of Fish and Game Code Section 1600, as determined in consultation with CDFW.

- Water drafting will not impact beneficial uses listed in the Water Quality Control Plan for the Lahontan Region (Basin Plan) (Lahontan RWQCB 2016).
- In addition to the above (if not required for Section 1600 compliance), the following requirements shall be met for all water drafting operations in the program area:
 - a. The project proponent shall consult with CDFW prior to any water drafting operation to convey and receive any information relevant to the drafting operation.
 - b. Water shall not be drafted by more than one truck simultaneously at the same site.
 - c. In Class I watercourses, streambed or bank material shall not be excavated for intakes or any other purposes related to drafting.
 - d. All water drafting vehicles shall be checked each day used, and shall be repaired as necessary to prevent leaks of deleterious materials from entering the watercourse, the Watercourse and Lake Protection Zone (WLPZ), or the stream environment zone (SEZ).
 - e. Pumps used for drafting shall be capable of being adjusted to comply with specified withdrawal rates.
 - f. Operators shall follow all applicable requirements and guidelines to prevent the introduction and spread of aquatic invasive species (AIS). This shall include: (i) inspecting truck tires, hoses, screens, and any equipment entering the water before and after each drafting operation and removing and properly disposing of any aquatic plants or other aquatic organisms; (ii) decontaminating prior to initiation of drafting any truck or equipment that has come into contact with any waterbody outside the Tahoe Basin; and (iii) applying water only within the same watershed in which it originated. Inspection and decontamination shall follow the latest protocols endorsed by the Lake Tahoe Aquatic Invasive Species Coordination Committee, and may be accomplished at existing boat decontamination stations located throughout the Tahoe Basin.
 - g. Intake screens shall be kept in good repair and shall be used wherever water is drafted. Intakes shall be inspected periodically and kept clean and free of accumulated algae, leaves, or other debris that could block portions of the screen surface and increase approach velocities at any point on the screen.
 - h. Intakes shall be at least 6 inches above the bottom of the channel and away from submerged vegetation, where practicable. Where not practicable, intakes shall maximize these clearances.
 - i. At the end of drafting operations, intakes shall be completely removed from the watercourse and disturbed ground, including exposed soil, shall be treated according to CFPR requirements or Fish and Game Code Section 1600 requirements to minimize erosion.
- ▶ **SPR GEO-1 Suspend Disturbance during Heavy Precipitation:** The project implementer will suspend mechanical treatments if the National Weather Service forecast is a "chance" (30 percent or more) of rain within the next 24 hours. Activities that cause mechanical soil disturbance may resume when precipitation stops and soils are no longer saturated (i.e., when soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur). Indicators of saturated soil conditions may include, but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials. This SPR applies only to mechanical treatment methods.
- ▶ **SPR GEO-2 Limit High Ground Pressure Vehicles:** The project implementer will use heavy equipment only where the ground is dry, frozen, or covered in snow to limit soil disturbance or compaction. Machinery will be kept off moist soils to reduce compaction and/or damage to soil structure. Saturated soil means that soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur. If use of heavy equipment is required in moist areas, other measures such as operating on organic debris, using low ground pressure vehicles, or operating on frozen soils/snow covered soils will be implemented to minimize soil

compaction. Existing compacted road surfaces are exempt as they are already compacted from use. This SPR applies only to mechanical treatment methods.

- ▶ **SPR GEO-3 Stabilize Disturbed Soil Areas:** The project implementer will stabilize soil disturbed during mechanical treatments with mulch or equivalent immediately after treatment activities, to the maximum extent practicable, to minimize the potential for substantial sediment discharge. If mechanical treatment activities could result in substantial sediment discharge from soil disturbed by machinery or animal hooves, organic material from mastication or mulch will be incorporated onto at least 75 percent of the disturbed soil surface where the soil erosion hazard is moderate or high, and 50 percent of the disturbed soil surface where soil erosion hazard is low to help prevent erosion. Where slash mulch is used, it will be packed into the ground surface with heavy equipment so that it is sufficiently in contact with the soil surface to disrupt overland flow but does not compact the soil.
- ▶ **SPR GEO-4 Erosion Monitoring:** The project implementer will inspect treatment areas for the proper implementation of erosion control SPRs and mitigations before the rainy season. Additionally, the project proponent will inspect for evidence of erosion a sufficient number of times during the extended wet weather period, particularly after large winter storm events (i.e., ≥ 1.5 inches in 24 hours) and at least once annually, to evaluate the function of drainage facilities and structures. Any area of erosion that will result in substantial sediment discharge will be remediated. This SPR applies to mechanical and understory burning treatment methods.
- ▶ **SPR GEO-5 Drain Stormwater via Water Breaks:** The project proponent will drain compacted and/or bare linear treatment areas capable of generating storm runoff (i.e., roads and skid trails) via water breaks using the spacing and erosion control guidelines contained in Section 954.6 of the CFPR. Where waterbreaks cannot effectively disperse surface runoff, including where waterbreaks cause surface runoff to be concentrated on downslopes, other erosion controls will be installed as needed to comply with 14 CCR Sections 954 et seq.
- ▶ **SPR GEO-6 Minimize Burn Pile Size:** The project proponent will not create burn piles that exceed 20 feet in length, width, or diameter, except when on landings, road surfaces, or on contour to minimize the spatial extent of soil damage. In addition, burn piles will not occupy more than 15 percent of the total treatment area. The project proponent will not locate burn piles in a WLPZ as defined in 14 CCR Section 956.5 of the CFPR, in a SEZ as defined in TRPA Code of Ordinances Section 61.1.6.C, or in another area where existing regulations limit ground disturbance to reduce erosion and protect beneficial uses of water.
- ▶ **SPR GEO-7 Minimize Erosion on Steep Slopes:** To minimize erosion, the project proponent will limit mechanical treatments on steep slopes. If TRPA regulations are not changed, mechanical treatments as described will not occur in slopes exceeding 30 percent. If TRPA regulations are changed, mechanical treatments will not occur in slopes exceeding the new threshold, or the CFPR for the Southern District, whichever is lower.
- ▶ **SPR GEO-8 Unstable Soils and Active and Dormant Landslide Exclusion:** The project proponent will require a Registered Professional Forester (RPF) or licensed geologist to evaluate treatment areas for unstable areas and unstable soils including active or dormant landslides. If unstable areas or soils are identified within the treatment area, are unavoidable, and will be potentially directly or indirectly affected by the treatment, a licensed geologist (P.G. or C.E.G.) will determine the potential for landslide, erosion, or other issue related to unstable soils and identify measures that will be implemented by the project proponent such that substantial erosion or loss of topsoil would not occur.
- ▶ **SPR GEO-10 Limit Intensity of Prescribed Burns:** To limit erosion following prescribed burns by maintaining $>50\%$ litter and duff, prescribed burns will be limited to the fall through spring months when forest duff is sufficiently moist to maintain low severity fires. This SPR applies to pile and understory burning.
- ▶ **SPR HAZ-1 Maintain All Equipment:** The project implementer will maintain all diesel- and gasoline-powered equipment per manufacturer's specifications, and in compliance with all state and federal emissions requirements. Maintenance records will be available for verification. Prior to the start of treatment activities, the project implementer will inspect all equipment for leaks and inspect everyday thereafter until equipment is

removed from the site. Any equipment found leaking will be promptly removed. This SPR applies to all treatment activities and treatment methods.

- ▶ **SPR HYD-1 Comply with Water Quality Regulations:** The project implementer will comply with all applicable water quality requirements adopted by Lahontan Regional Water Quality Control Board (Lahontan RWQCB) and approved by the SWRCB (i.e., Basin Plan). If applicable, this includes compliance with the conditions of general waste discharge requirements (GWDR) and waste discharge requirement waivers for timber or silviculture activities where these waivers are designed to apply to non-commercial fuel reduction and forest health projects. In general, GWDR and Conditional Waiver of Waste Discharge Requirements for Waste Discharges Resulting From Timber Harvest and Vegetation Management Activities in the Lahontan Region (Timber Waiver; Lahontan RWQCB 2019a) for fuel reduction and forest health activities require that wastes, including petroleum products, soil, silt, sand, clay, rock, felled trees, slash, sawdust, bark, ash, and pesticides must not be discharged to surface waters or placed where it may be carried into surface waters; and that Lahontan RWQCB staff must be allowed reasonable access to the property in order to determine compliance with the waiver conditions.
- ▶ **SPR HYD-2 Avoid Construction of New Roads:** The project implementer will not construct or reconstruct (i.e., cutting or filling involving less than 50 cubic yards/0.25 linear road miles) any new roads (including temporary roads). This SPR applies to all treatment activities and treatment methods.
- ▶ **SPR HYD-3 Identify and Protect Watercourse and Lake Protection Zones and Waterbody Buffer Zones:** The project proponent will establish WLPZs as defined in 14 CCR Section 956.5 of the CFPR and Waterbody Buffer Zones as defined in Attachment B of the Timber Waiver (Lahontan RWQCB 2019a). WLPZs and Waterbody Buffer Zones are classified based on the uses of the stream and the presence of aquatic life. Wider zones are required for steep slopes. Waterbody Buffer Zone widths for Class I and II watercourses are equivalent to WLPZs. Whereas WLPZ widths or other watercourse protections for Class III and IV watercourses are determined on a site-specific basis (see 14 CCR Section 956.4), Waterbody Buffer Zone widths for Class III and IV watercourses are fixed and correspond with the steepness of adjacent slopes, as defined in Attachment B of the Timber Waiver (Lahontan RWQCB 2019a). The following protections will be applied for all treatments:
 - Treatment activities within Waterbody Buffer Zones and WLPZs will meet the overstory and understory vegetation retention guidelines and ground disturbance limitations described in the Timber Waiver (Lahontan RWQCB 2019a) and in 14 CCR Section 956.4 Subsection (b) and Section 956.5, including retention of at least 75 percent surface cover and undisturbed area.
 - Equipment, including tractors and vehicles, must not be driven in wet areas, Waterbody Buffer Zones, or WLPZs, except over existing roads or watercourse crossings where vehicle tires or tracks remain dry.
 - Equipment used in vegetation removal operations will not be serviced in Waterbody Buffer Zones or WLPZs, within wet meadows or other wet areas, or in locations that would allow grease, oil, or fuel to pass into lakes, watercourses, or wet areas.
 - Watercourses will be kept free of slash, debris, and other material that harm the beneficial uses of water. Accidental deposits will be removed immediately.
 - Burn piles will be located outside of WLPZs or other applicable watercourse protection zones unless all applicable Timber Waiver and/or Basin Plan exemption requirements are met.
 - No fire ignition will occur within WLPZs or other applicable watercourse protection zones unless all applicable Timber Waiver and/or Basin Plan exemption requirements are met; however, low intensity backing fires may be allowed to enter or spread into watercourse protection zones.
 - Within the WLPZs, mulch treatments to stabilize soils, minimize soil erosion, and prevent significant sediment discharge, as described in 14 CCR Section 956.9(n)(1), will be as follows:
 - Soil stabilization is required for areas where timber operations have exposed bare soil exceeding 100 contiguous square feet.

- Where straw or slash mulch is used, the minimum straw coverage shall be 90 percent, and any treated area that has been reused or has less than 90 percent surface cover shall be treated again by the end of timber operations.
- Where slash mulch is packed into the ground surface through the use of a tractor or equivalent piece of heavy equipment the minimum slash coverage shall be 75 percent.
- Equipment limitation zones (ELZs) will be designated adjacent to Class III and Class IV watercourses with minimum widths of 25 feet where side-slope is less than 30 percent and 50 feet where side-slope is 30 percent or greater. An RPF will describe the limitations of heavy equipment within the ELZ and, where appropriate, will include additional measures to protect the beneficial uses of water.
- ▶ **SPR HYD-4 Identify and Protect Stream Environment Zones:** Prior to conducting treatment activities, an RPF or qualified biologist or botanist will flag SEZ areas within the treatment site. Project implementers will comply with TRPA requirements for tree cutting within SEZ areas. These requirements, described in detail under TRPA Code of Ordinances Section 61.1.6.C and Attachment N of the Timber Waiver (Lahontan RWQCB 2019a), include:
 - Vehicle use is restricted in SEZs with exceptions for use of vehicles in over-snow tree removal operations and use of “innovative technology” vehicles or “innovative techniques,” provided that no significant soil disturbance or significant vegetation damage will result from the use of equipment;
 - Work within SEZs shall be limited to times of the year when soil conditions are dry and stable, when conditions are adequate for over-snow tree removal operations, or when conditions are consistent with TRPA and Lahontan RWQCB standards for tree removal operations on frozen ground;
 - Felled trees and harvest debris will be kept out of all watercourses classified as Class I through IV including perennial streams, intermittent streams, man-made waterbodies, and ephemeral (unclassified) streams;
 - Crossings of perennial streams or other wet areas, shall be limited to improved crossings meeting Best Management Practices or to temporary bridge spans that can be removed upon project completion or at the end of the work season, whichever is sooner;
 - New waterholes will not be constructed within the 100-year floodplain or SEZ;
 - Permanent disturbance or fill within SEZs will be avoided;
 - Activities conducted within 100-year floodplains or in SEZs that would require a Timber Waiver exemption granted by the Lahontan RWQCB include: enlargement of existing permanent watercourse crossings and/or roads, construction of temporary roads, construction of temporary watercourse crossings and associated approaches in place longer than one season, construction of skid trails, slash piling and burning not conducted in accordance with Timber Waiver, and conventional equipment operated off-road in SEZs or floodplains; and
 - Discharge or threatened discharge, attributable to human activities, of solid or liquid waste materials including soil, silt, clay, sand, and other organic or earthen materials to lands within the highwater rim of Lake Tahoe or 100-year floodplains of any tributary (including the Truckee River and Little Truckee River and tributaries) to Lake Tahoe and to SEZs in the Lake Tahoe Basin is prohibited.
- ▶ **SPR HYD-5 Protect Existing Drainage Systems:** If a treatment activity is adjacent to a roadway with stormwater drainage infrastructure, the existing stormwater drainage infrastructure will be marked prior to ground disturbing activities. If a drainage structure or infiltration system is inadvertently disturbed or modified during treatment activities, the project proponent will coordinate with owner of the system or feature to repair any damage and ensure that pre-project drainage conditions are restored.

THRESHOLDS OF SIGNIFICANCE

The thresholds of significance are based on Appendix G of the State CEQA Guidelines, applicable TRPA threshold standards, and the water quality and hydrology criteria from the TRPA Initial Environmental Checklist, as applicable, and other factors.

An impact on hydrology or water quality would be significant if implementation of later fuel reduction activities under the Tahoe PTEIR would:

- ▶ violate any water quality standards or waste discharge requirements (WDRs) or otherwise substantially degrade surface water or groundwater quality;
- ▶ conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan;
- ▶ substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would:
 - result in substantial erosion, siltation, or flooding on- or off-site;
 - substantially increase the rate or amount of surface runoff in a manner that would create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
 - impede or redirect flood flows.
- ▶ substantial change in the amount of surface water in any water body;
- ▶ discharge pollutants into surface waters, or in any substantial adverse alteration of indicators of surface water quality, including but not limited to nutrients, temperature, dissolved oxygen, or turbidity, that would result in an exceedance of federal, TRPA, state, or local water quality numerical standards;
- ▶ discharge contaminants to the groundwater or cause substantial adverse alteration of groundwater quality; or
- ▶ result in an effect on drinking water sources.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.12-1: Substantially Degrade Water Quality Through the Implementation of Manual or Mechanical Treatment Activities

The proposed program includes manual and mechanical (i.e., cut-to-length, whole-tree yarding, and mastication) treatment activities to reduce wildfire risk mostly within the Wildland Urban Interface (WUI). All manual and mechanical treatments implemented under the Tahoe PTEIR would integrate SPRs into treatment design to protect water bodies, limit equipment use on wet soils and steep slopes, stabilize highly disturbed areas, and prevent spills or leaks from equipment. Implementation of SPRs would minimize the risk of substantial degradation to water quality from manual or mechanical treatment activities. Therefore, this impact would be **less than significant**.

Vegetation treatment activities may alter water quality within a watershed since these activities would potentially disturb soils, transport nutrients as disturbed soils erode, accelerate nutrient leaching due to increased infiltration, and increase the rate of nitrogen mineralization as soils are exposed to more direct sunlight. Surface water quality is most likely to be altered by silviculture practices when erosion of soils following timber harvest transports suspended sediment and nutrients (i.e., nitrogen and phosphorus) into waterbodies (Stednick 2010). The magnitude of sediment and nutrient exports to waterbodies and associated water quality impacts is influenced by the specific timber harvest practices (e.g., selective cutting and thinning or clear cutting) and vegetation (e.g., streamside buffers), with more intensive timber harvest practices (i.e., clear cutting) typically increasing surface runoff, soil erosion, and associated transport of sediment and nutrients and more vegetation decreasing the transport of sediment and nutrients into

waterbodies. Manual and mechanical treatment activities generally result in much less soil disturbance and associated soil erosion than more intensive timber harvest practices since these activities have less repeated traffic that would compact or disturb soils. For example, cut-to-length methods on slopes less than 35 percent can result in spatially dispersed traffic patterns that show fewer surface impacts (e.g., soil displacement or visible machine tracks) if operators can choose their route to a landing (Page-Dumrose et al. 2010). Monitoring of the Heavenly Creek SEZ Fuels Reduction Project indicates that treatment with cut-to-length forwarder/harvester technology in many areas of the Tahoe Basin classified as SEZ can be implemented under dry soil conditions without causing adverse impacts to soils and water quality (Norman et al. 2008). Furthermore, mastication appears to be an effective thinning treatment for overstocked forests with few discernible negative impacts on soil compaction or lake-polluting runoff in the Lake Tahoe Basin (Hatchet et al. 2006).

Ground cover/soil litter also is frequently increased by manual and mechanical treatment activities as chippers and mulchers reduce woody material to an organic layer. Soil disturbance and erosion is more likely to occur on bare soil, so the increase in the organic layer generally reduces the magnitude of soil disturbance from timber harvest activities, including equipment traffic. The increase of ground cover/soil litter would increase surface roughness and protect the surface from impact of raindrops, decreasing the velocity of surface runoff, increasing infiltration of surface runoff, and ultimately decreasing soil particle detachment and soil erosion that would transport sediment and nutrients to water bodies (Stednick 2010, Harrison et al. 2016, Neary et al. 2005, Robichaud et al. 2010). Riparian vegetation is also especially effective at reducing water quality impacts to streams in forested areas by intercepting surface runoff and filtering fine sediment, removing sediments that would contribute to suspended sediments and turbidity (Dwire et al. 2010, Stednick 2010) and removing sediment associated phosphorus that would cause nutrient enhancement (Rashin et al. 2006, Liquori and Benda 2008, Stednick 2010). Sediment filtration distances from several studies show a rapid rise in effectiveness of filtration within riparian zones at 35–50 feet (11–15 meters) wide and a leveling off at longer distances (up to about 150 feet [46 meters] wide) (CH2M Hill and Western Watershed Analysts 1999). Additionally, nitrogen uptake can occur through the riparian root zone, further reducing bioavailable forms of nitrogen (i.e., nitrate, ammonium) that would otherwise move directly into streams through groundwater (Dahlgren 1998, Castelle et al. 1994).

Lake Tahoe West used the WEPP model to evaluate how different vegetation management and fire scenarios would impact surface water quality (i.e., sediment and phosphorus loads) in 20 watersheds in the Lake Tahoe West planning area, which overlaps the PTEIR program area, over a 100-year period (Dobre and Long 2020, Eliot et al. 2019). These models incorporated current conditions, thinning, prescribed fire, wildfire, and road system management. Modeled results indicate that thinning of forests in the WUI and across the landscape would result in little risk to surface water quality when analyzed at large landscapes over long periods. Modeled results also suggest a small increase in very fine (<16 micron) sediments and total phosphorus yields following uniform thinning without the implementation of SPRs. Sediment delivery supplied by traffic on access roads to support thinning operations increased during active use and loads returned to undisturbed levels shortly after activities ceased. Treatments could pose localized risks to surface water quality in some highly erodible watersheds (e.g., Blackwood, Ward, Meeks, General, and Eagle) that produce large sediment loads under current conditions; however, careful analysis, design, and monitoring specific to site conditions would help to offset risks and reduce the uncertainty associated with treatments. While modeling indicated that treatment could pose a minor risk to surface water quality, these models incorporated treatment scenarios over watershed scales rather than the Tahoe PTEIR program scale (900–1,300 acres per year and typical maximum number of acres to be treated would be 1,250 acres), small watersheds, program-specific SPRs to reduce significant adverse effects to surface water quality, and restoration of aspen, meadow, riparian, and wet areas (e.g., removal of conifers in these areas). These program-specific scenarios would reduce the impacts of thinning of forests and traffic on access roads associated with manual and mechanical treatment activities.

Later treatment activities under the proposed program would include manual and mechanical treatment activities to reduce fuel loading within the program area. Manual treatment activities are unlikely to result in substantial ground disturbance or adverse effects to surface water quality since chipped woody material would create ground cover/soil litter that would protect the forest floor from disturbance. Mechanical treatment activities would potentially disturb and/or compact soils, resulting in soil erosion that would transport sediment and nutrients, but implementation of SPRs, riparian protection measures for WLPZs and other watercourse protection zones included in the CFPRs and

Timber Waiver (Lahontan RWQCB 2019a) (SPR HYD-3), and TRPA and Timber Waiver (Lahontan RWQCB 2019a) requirements for SEZs (SPR HYD-4) would substantially avoid or minimize suspended sediment and nutrient transport following treatment activities by minimizing soil disturbance and preserving riparian vegetation buffers that filter suspended sediments and associated nutrients from surface runoff.

The mechanical vegetation removal activities used for forest fuel reduction would involve the use of heavy equipment and would likely create ground disturbance. Vegetation removal, equipment traffic, and yarding and transport activities within the program area could loosen and disturb soils and remove ground surface litter in some areas, exposing the soil surface and facilitating erosion. Heavy equipment may compact soils in some areas, reducing the capacity to infiltrate or filter runoff. The SPRs incorporate relevant elements of the CFPRs pertaining to erosion control and protection of waterbodies to ensure these protections are implemented consistently in both commercial and non-commercial operations.

SPR HYD-3 specifies later treatment activities would adhere to multiple requirements that would minimize the soil disturbance, compaction, and potential soil erosion from manual and mechanical treatment activities. The use of heavy equipment would be limited to loading logs onto trucks or the use of backhoes during some treatments to minimize soil disturbance and compaction. Burn piles created by hand treatment crews would not be placed within WLPZs to prevent the production of hydrophobic compounds from burning of organic material that would limit infiltration, to prevent the production of fine organic particles or ash near water bodies, and to avoid altering vegetation conditions within WLPZs that contribute to filtering surface runoff into water bodies and protecting water quality (SPR HYD-3 and SPR GEO-7). As described in the protection measure for WLPZs (SPR HYD-3), large areas of bare soil following treatment activities within WLPZs would be stabilized with mulch, grass seeding, or soil stabilizers. Such actions to reduce bare soil and increase surface roughness and protect the surface from impact of raindrops would decrease the velocity of surface runoff, increase infiltration of surface runoff, decrease soil particle detachment, and minimize soil erosion that could transport sediment and nutrients (Stednick 2010, Harrison et al. 2016, Neary et al. 2005, Robichaud et al. 2010).

The proximity of the program area to surface waters is an important factor in controlling sediment delivery. Past research on stream buffers found that the majority of erosion features within 30 feet of a stream delivered sediment to the stream, while 95 percent of erosion features further than 30 feet from a stream did not (Rashin et al. 2006). Therefore, the most effective water quality protections are avoidance of sensitive areas and providing undisturbed buffers between work areas and water bodies. Later treatment activities under the proposed program would incorporate the watercourse protections defined in 14 CCR Section 916.5 of the CFPRs and Attachment B of the Timber Waiver (Lahontan RWQCB 2019a) (SPR HYD-3) and SEZ requirements (SPR HYD-4) defined under TRPA Code of Ordinances Section 61.1.6.C. and Attachment N of the Timber Waiver (Lahontan RWQCB 2019a). These rules establish work buffers based on beneficial uses of the water body and slope, with larger buffers established on water bodies with more beneficial uses and steeper slopes. Additionally, SPR BIO-1 requires that a qualified RPF or biologist identify sensitive habitats such as wetlands, wet meadows, or riparian areas as well as a suitable buffer area for avoidance during project activities. This buffer would act as a filter to slow runoff from adjacent treatment areas, allow infiltration of stormwater, and trap sediment and nutrients that could otherwise be carried into surface waters.

Furthermore, SPRs would be implemented to reduce erosion in treatment areas and minimize impacts related to mechanical treatments on steep slopes. SPR GEO-1 and SPR GEO-2 limit ground disturbance during precipitation and restrict heavy equipment operation over saturated soils, when such activity could produce ruts where sediment-laden runoff could concentrate. Equipment operation would be limited on steep or unstable slopes (SPR GEO-7). If treatment is proposed on a slope greater than 50 percent, an RPF or licensed geologist would evaluate the treatment area for unstable areas, determine the potential for erosion and landslide, and identify measures that would be implemented to reduce erosion (SPR GEO-8). Additionally, highly disturbed areas would be stabilized with mulch and/or slash generated by vegetation management activities (SPR GEO-3) and treatment areas would be inspected for erosion and remediated prior to the rainy season and following the first large storm or rainfall event (SPR GEO-4) to minimize soil erosion and the potential transport of sediment and nutrients.

Manual and mechanical treatment activities would thin trees and remove understory, but not all trees would be removed within the treatment area and overstory and understory canopy within WLPZs and SEZs would be

maintained in accordance with CFPR requirements (14 CCR Sections 956.4 and 956.5) (see Section 2.5, "Standard Project Requirements and Forest Practice Rules"). Preservation of sufficient overstory and understory canopy would decrease surface runoff and minimize transport of associated sediment and nutrients by intercepting precipitation, releasing it as throughfall, and providing more time for precipitation to infiltrate into soils (Stednick 2010). To further protect streams and riparian habitats and avoid increases in water temperature, later treatment activities under the PTEIR would implement SPR BIO-4, which would avoid or minimize streamside vegetation loss. These WLPZ and SEZ protections would maintain riparian shading, reduce or eliminate the effects of shade reduction on stream water temperatures, and continue to support beneficial uses of the surface waters in the program area.

The equipment used for mechanical vegetation removal treatments would require the use of fuels and lubricants. Treatments implemented under the Tahoe PTEIR would control the potential risks of spills and leaks through application of SPRs, including SPR HYD-3, which requires that equipment be fueled and serviced outside of WLPZs/SEZs and wet areas, and SPR HAZ-1, which requires that all equipment be maintained and regularly inspected for leaks. Implementation of these SPRs would prevent spills of fuels and lubricants onto soils that could be carried by runoff into adjacent waterbodies or groundwater.

Finally, the Tahoe PTEIR and later treatment activities would not alter any applicable federal, TRPA, state, or local water quality regulations. Later treatment activities under the Tahoe PTEIR would comply with all applicable water quality regulations (SPR HYD-1), including the specific conditions in the Timber Waiver (Lahontan RWQCB 2019a) for fuel reduction and fire prevention activities. General requirements and prohibitions specified in the Timber Waiver include: prohibitions on the discharge of wastes (e.g., petroleum products, soil, silt, sand, clay, rock, felled trees, slash, sawdust, bark, ash, and pesticides) to surface waters and the deposition of wastes in locations where such materials may be discharged to surface waters; a requirement to notify the Water Board of detections of discharge within 24 hours; mandatory compliance with category-specific eligibility including monitoring and reporting requirements; required monitoring of equipment for leaks and removal from service if necessary to protect water quality; immediate containment of all spills and spilled materials and/or proper disposal of contaminated soils; and a requirement to keep an adequate emergency spill kit at the project site at all times that equipment is used. The Lahontan RWQCB enforces the Timber Waiver and staff will be allowed reasonable access onto property as required under the Timber Waiver. The Timber Waiver includes supplemental requirements for water quality protection (e.g., prohibitions on creating or causing erosion, destabilizing streambanks, increasing water temperature, disturbing non-target riparian vegetation, concentrating surface runoff, or burning slash in SEZs, and limits on equipment use in SEZs and on saturated soils) to ensure that project activities do not conflict with the Basin Plan. In addition, timber harvest and vegetation management activities conducted under the Timber Waiver must be conducted in accordance with any design features, management actions, mitigation measures, and monitoring plans developed as part of complying with CEQA, NEPA, the FPRs, and/or TRPA environmental analysis requirements. Many of the Timber Waiver conditions and requirements are similar to and consistent with applicable SPRs and CFPR requirements described previously.

While manual and mechanical treatment activities would potentially disturb and/or compact soils and potentially transport sediment and nutrients due to subsequent soil erosion, SPRs and other applicable requirements to protect water bodies, WLPZs, and SEZs, limit equipment use on wet soils and steep slopes, stabilize highly disturbed areas, and prevent spill or leaks from equipment would minimize the transport of sediment, nutrients, and chemicals to water bodies. The SPRs, CFPRs, and Timber Waiver requirements and the conditions prescribed by them have been designed by regulatory and land management agencies specifically to protect water quality and meet applicable standards, so manual and mechanical activities implementing these required measures would not be anticipated to degrade surface or groundwater quality or to result in alterations of water quality indicators that would exceed numerical standards. Thus, manual and mechanical treatments implemented under the PTEIR would have a **less-than-significant** impact on water quality.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.12-2: Substantially Degrade Water Quality Through the Implementation of Prescribed Burning

The proposed program includes prescribed burning (i.e., pile burning and understory burning) treatment activities to reduce wildfire risk, mostly within the WUI. All prescribed burn treatments implemented under the proposed program would integrate SPRs into treatment design to protect water bodies, reduce the size and placement of burn piles, limit intensity of prescribed burns, and maintain the overstory and understory canopy. Implementation of SPRs would minimize the risk of substantial degradation to water quality from prescribed burning activities. Therefore, this impact would be **less than significant**.

Later treatment activities may include pile burning (i.e., burning of materials that have been removed during manual or mechanical treatment) and understory burning (i.e., removal by fire of understory fuels and downed wood). Understory burns are designed to be low-severity burns in confined areas, which leave fine fuels such as litter and small woody debris partially charred and consumed, and little mineral soil exposed (Lewis et al. 2006, Cawson et al. 2012). Unburned areas with litter adjacent to patches of understory burn areas with exposed mineral soils retain the capacity to control erosion by trapping sediment in surface runoff and reducing runoff through infiltration (Harrison et al. 2016).

Nutrient concentrations in surface waters (e.g., nitrogen and phosphorus) and subsurface waters have remained low after prescribed fires and pile burning during case studies in the Lake Tahoe Basin (Stevens et al. 2004, Busse et al. 2001). Although the nutrients in streams have remained low in case studies, changes in the soil properties after pile burning and prescribed fire are expected to include: lower total carbon and total nitrogen; increased calcium, magnesium, potassium, and inorganic nitrogen; and higher pH (Busse et al. 2014). Lake Tahoe West WEPP Model results, as previously described in Impact 3.12-1, indicate that understory and pile burns across the landscape would result in minimal risk to surface water quality when analyzed at large landscapes over long periods (Dobre and Long 2020). Fine sediment and phosphorus loads due to prescribed burning were lower than wildfires. The reduced loads were attributed to low burn severities and increased residual ground cover. Treatments could pose localized risks to surface water quality in some highly erodible watersheds (e.g., Blackwood, Ward, Meeks, General, and Eagle) that produce large sediment loads under current conditions; however, careful analysis, design, and monitoring specific to site conditions could help to mitigate risks and reduce the uncertainty associated with treatments. While modeling results indicated that treatment could pose little risk to surface water quality, these models did not incorporate treatment scenarios at the Tahoe PTEIR program scale (900–1,300 acres per year and typical maximum number of acres to be treated would be 1,250 acres), small watersheds, program specific SPRs to reduce significant adverse effects to surface water quality, and restoration of aspen, meadow, riparian, and wet areas that would involve conifer removal in these areas. These program-specific scenarios would reduce the impacts of thinning and prescribed burning. The proposed program would include prescribed burning treatments in a manner that minimizes the potential for degradation of water quality. The goal of understory burns is to conduct a low intensity burn that only burns the targeted fuel types (i.e., ground and litter fuels) and preserves overstory and understory canopy. The existing groundcover vegetation would be partially retained in a mosaic pattern in forest and shrub communities. While the amount of vegetation remaining following a prescribed burn varies, up to 70 percent of the vegetation typically remains (described in Section 2.4.4, "Prescribed Burning"), so there would be sufficient surface roughness for the remaining vegetation to reduce runoff velocities, protect the surface from impact of raindrops, provide time for infiltration, and minimize erosion of soils. Although pile burning would result in localized high severity burn conditions that may produce hydrophobic compounds on soils and locally reduce infiltration, pile burn sites would be limited in size (SPR GEO-6) and dispersed throughout the landscape with unburned areas between each pile to act as buffers to reduce hydrologic connectivity and to provide sufficient area for surface runoff to infiltrate into soil between pile sites. SPR HYD-1 would require compliance with all applicable Basin Plan requirements and other provisions within the Timber Waiver adopted by the Lahontan RWQCB, including pile burning specifications to ensure a less than significant impact on water quality, the requirement to leave areas burned within a Waterbody Buffer Zone (WBBZ; i.e., riparian buffer similar to a WLPZ, as defined in the Timber Waiver, Attachment B) in a condition such that waste, including ash, soils, and/or debris will not discharge into a waterbody, and general conditions as described in Impact 3.12-1. Additionally, SPR HYD-3 and the Timber Waiver prohibit the placement of burn piles

within WLPZs, as defined by 14 CCR Section 956.5 of the CFPRs, to prevent fine organic particle or ash production near water bodies. SPR HYD-4 and the Timber Waiver prohibit the alteration of vegetation within SEZs that filter surface runoff into water bodies to protect surface water quality.

Understory burning would be conducted when fuel moisture and environmental conditions allow for effective understory and ladder fuel control while reducing the risk of high severity burns (SPR GEO-10). All prescribed burns also would include the development and implementation of a CAL FIRE burn plan with fire behavior modeling and submittal of the burn plan to appropriate air quality management districts (described in Section 3.4 "Air Quality" and SPR AQ-3). No ignition points would be located within WLPZs (SPR HYD-3). Overall, the SPRs and other requirements would reduce the potential for escaped fire or severe burns and preserve unburned vegetated islands, WLPZs, and SEZs that reduce sediment and nutrient transport from runoff originating in treatment areas by providing surface roughness to reduce runoff velocities, area for runoff to infiltrate into soils, and vegetation to filter fine sediment and nutrients from runoff before it reaches water bodies. Additionally, the Tahoe PTEIR and later treatment activities implemented under the proposed program would not alter any applicable federal, TRPA, state, or local water quality regulations. Later treatment activities would comply with all TRPA and State water quality regulations (SPR HYD-1), including conditions of the Timber Waiver that are applicable to fuel reduction and fire prevention activities. These waivers include supplemental requirements for water quality protection to ensure that project activities do not conflict with the Basin Plan.

Flammable liquids (i.e., gasoline and diesel) and iron/phosphorous based hydrocarbon gelling agents would be used to assist with fire ignition. All accelerants used are assumed to fully combust during the ignition phase of prescribed burning and therefore would not be carried by runoff into adjacent waterbodies or groundwater. Potential risks of spills and leaks would be reduced by implementation of SPR HYD-3, which requires that no fire ignition will occur within watercourse protection zones, and SPR HAZ-1, which requires that all equipment be maintained and regularly inspected for leaks.

Later treatment activities under the Tahoe PTEIR would include prescribed understory burning and pile burning within the program area. Later treatment activities would implement SPRs that include fire behavior modeling (for understory burns); limiting burning to times when fuel moisture and environmental conditions allow for effective fuel reduction while reducing the risk of high severity burns; and measures to protect water bodies. While later treatment activities using prescribed burning would potentially increase sediment and nutrient transport in runoff from burned areas, implementation of SPRs and other requirements described above would preserve unburned areas and vegetation. Preservation of these areas will intercept and filter sediment and nutrients in runoff before it reaches water bodies and minimize the potential for surface and ground water quality degradation and alterations of water quality indicators that would exceed numerical standards. Thus, prescribed understory burning and pile burning implemented under the proposed program have a **less-than-significant** impact on water quality.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.12-3: Substantially Alter the Existing Drainage Pattern of a Treatment Site or Area

Treatments implemented under the Tahoe PTEIR would involve ground disturbing activities, including the construction of skid trails and compaction of the ground by heavy equipment, which could temporarily alter surface water runoff. To avoid or minimize these effects, later treatment activities would incorporate SPRs to protect the soil and vegetation in WLPZs and SEZs, stabilize exposed soil near water bodies prior to the beginning of rain, and maintain existing drainage systems. With inclusion of the SPRs, treatments implemented under the proposed program could result in minor, temporary disturbance to surface drainage but would not substantially alter the existing drainage pattern of a treatment site or area. This impact would be **less than significant**.

Silviculture activities (e.g., reconstruction or grading of existing roads, compaction of surfaces, and canopy removal) have the potential to alter the hydrology of a watershed by compacting soils, potentially creating areas of imperviousness, and concentrating and increasing road surface runoff (Lewis et al. 2001, EPA 2005, Reid and Lewis

2007). The magnitude of the silviculture and fuel management activities affects runoff and erosion rates. Commercial thinning and yarding have a greater potential to increase runoff, erosion, and sediment yields because of the more extensive removal of the forest canopy; greater ground disturbance due to skid trails, cable rows, and landings; greater ground disturbance due to more intensive harvest; need for extensive road access; and increase in heavy truck traffic (Robichaud et al. 2010). Impacts to runoff and associated sediment production are lower when the scale of projects is smaller, as with non-commercial thinning operations which have relatively small and short-term impacts on runoff and associated sediment production even over large areas (Robichaud et al. 2010). Low severity prescribed burns have a low potential for increasing peak flows and erosion rates (Robichaud et al. 2010). Furthermore, the potential increases in erosion and sediment yield can be minimized by reducing the area and amount of soil disturbance, establishing buffer strips along stream channels, and minimizing overland flow by restoring severely disturbed areas (Robichaud et al. 2010).

As previously discussed, treatments implemented under the Tahoe PTEIR would not alter the course of any river, stream, or drainage feature and would not require temporary or permanent road construction, so there would be no changes to existing drainage patterns from these activities. Later treatment activities including the construction of skid trails and compaction of the ground by heavy equipment would alter surface water runoff locally, but the area that would potentially experience compaction would be relatively small compared to the surrounding uncompacted area, and implementation of SPRs would further minimize the potential for compaction and alterations to drainage patterns within those areas. SPR HYD-1 would require compliance with all applicable requirements of the Timber Waiver adopted by the Lahontan RWQCB as described in Impact 3.12-1 and 3.12-2, including operable soil conditions and equipment ground pressures that would protect water quality by preventing soil compaction and deformation. Compliance with the Timber Waiver would also include limits on the use of new or existing skid trails. SPR GEO-1 and SPR GEO-2 would limit ground disturbance during precipitation or heavy equipment operation over saturated soils, when such activity would be more likely to compact soils or produce ruts where runoff could concentrate. SPR HYD-3 and SPR HYD-4 prohibit equipment driven in wet areas or WLPZs and SEZs except over existing roads or watercourse (water body) crossings to further limit soil compaction that would alter the existing drainage conditions or adversely impact water quality. SPR HYD-3 and SPR GEO-3 also require stabilization mulching, rip-rap, grass seeding, or soil stabilizers, prior to the beginning of the rainy season, of areas within WLPZs and SEZs that are exposed to treatment activities. Such stabilization methods would counteract potential soil compaction and changes to site drainage patterns by increasing surface roughness, reducing the surface runoff velocity, and increasing infiltration. Potential compaction and associated changes in the drainage patterns would be limited on steep or unstable slopes since SPR GEO-7 limits the operation of equipment in these areas. Potential changes in the drainage patterns also would be minimized by SPR GEO-5 that prescribes waterbreaks on compacted and/or bare linear treatment areas capable of generating surface runoff to divert surface runoff into adjacent areas where it can infiltrate naturally. SPR GEO-5 would address potential unavoidable changes in soil compaction due to later treatment activities by limiting the extent surface runoff from compacted soil would travel and preventing potential unavoidable compaction from substantially altering the overall existing drainage pattern within a treatment area. Finally, SPR HYD-5 prohibits the diversion of runoff or disturbance of existing drainage systems to avoid impacts from program activities adjacent to roadways, which typically have existing roadway drainage or stormwater management systems. Overall, there would be only minor or temporary changes in surface drainage patterns from later treatment activities under the Tahoe PTEIR with the protections provided by these SPRs, such that there would not be a substantial change in the drainage pattern of a treatment site or area and there would be a **less-than-significant** impact.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.12-4: Substantially Change the Amount of Surface Water in Any Water Body or Substantially Reduce the Amount of Water Otherwise Available for Public Water Supplies

Later treatment activities may include water drafting for dust abatement during dry season projects. While water drafting would alter the amount of water in a water body, implementation of SPR BIO-5 would require that water drafting operations follow requirements, including minimum flow requirements of the stream, maximum diversion rates, and maximum pool volume reduction. Therefore, later treatment activities that involve water drafting would not substantially change the amount of surface water in any water body or reduce the amount of water available for public water supply. This impact would be **less than significant**.

Later treatment activities may require a water supply for dust abatement during some projects. The water supplied for dust abatement typically would be supplied from municipal sources (i.e., fire hydrants) in the urban interface. On rare occasions water drafting from water bodies may be required. Water drafting involves the siphoning of stream flow into a water truck. Pools are often targeted for water drafting sites because they have sufficient volume to permit the necessary diversion rates. Water drafting would temporarily alter the amount of surface water in a water body as it is withdrawing water from the stream. However, implementation of SPR BIO-5 requires water drafting operations to follow CFPR requirements in 14 CCR Section 963.7(l), which includes protections to avoid dewatering waterbodies and maintain aquatic life downstream, measures to minimize generation or transport of sediment by water drafting operations, and streamflow monitoring requirements. The standards require that the source stream during drafting shall be at least 2 cubic feet per second, the diversion rate shall not exceed 10 percent of the surface flow, and pool volume reduction shall not exceed 10 percent. Thus, implementation of SPR BIO-5 would protect the beneficial uses of domestic and municipal water supply and aquatic life. Overall, with implementation of SPR BIO-5, later treatment activities that include water drafting would not substantially change the amount of surface water in any water body or substantially reduce the amount of water available for public water supplies by limiting water drafting to only occasional small volumes of water. The Tahoe PTEIR also would not include the creation of any impervious surfaces that would interfere with groundwater recharge and result in decreased public groundwater supply. Proposed vegetation treatment activities would reduce the number of trees within the program area that could result in minimal localized increases in groundwater recharge within the program area (Troendle et al. 2010).

Lake Tahoe West model results indicate that forest thinning would increase water yield, which could result in small increases in water availability in streams, groundwater, wetlands, and Lake Tahoe (Lake Tahoe West 2020). Additionally, the Tahoe PTEIR and later treatment activities would not alter any applicable federal, TRPA, state, or local regulations pertaining to surface water management, and implementation of SPR HYD-1 would require later treatment activities to comply with surface water management or other public water supply protections specified by these regulations. For these reasons, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.12-5: Discharge Pollutants into Surface Waters, or Any Substantial Alteration of Surface Water Quality, Including but Not Limited to Nutrients, Temperature, Dissolved Oxygen, or Turbidity

Later treatment activities would have no direct discharge into surface waters and treatments would retain 75 percent surface cover within riparian areas and restore degraded aspen, meadow, and riparian areas (i.e., conifer removal in these areas) that would intercept and filter surface runoff that may contain sediment and nutrients following treatments, so there would not be a substantial alteration of surface water quality. Retention of 75 percent surface cover and preservation of overstory and understory canopy would minimize changes in solar radiation that would alter temperature conditions in water bodies. The retention of surface cover and preservation of canopy would also minimize and filter surface runoff that would potentially transport sediment or nutrients from treatment areas and provide more time for runoff to infiltrate. While there is potential for surface runoff from treatment areas to contain concentrations of pollutants greater than background conditions and alter surface water quality, later treatment activities under the proposed program would implement SPRs to minimize the surface runoff and transport of these pollutants into water bodies. Additionally, incorporation of SPRs into all treatments would further minimize the risk of detrimental water quality alterations, including nutrients, temperature, dissolved oxygen, and turbidity. This impact would therefore be **less than significant**.

Later treatment activities would potentially include manual treatments, mechanical treatments, prescribed burning, retreatments, biomass disposal, and access and hauling activities. There would be no direct discharge of wastes into surface waters from these treatment activities.

Water temperature effects in managed forest ecosystems are primarily associated with summer stream temperature increases, particularly if silviculture is conducted near streams. In small to intermediate-sized streams in forested regions, incoming solar radiation represents the dominant form of energy input during the summer (Beschta et al. 1987, Sullivan et al. 1990). Stream heating in excess of natural levels associated with silviculture arises primarily from local increases in the amount of solar radiation directly on streams due to either the removal of streamside vegetation or to stream widening caused by increased sedimentation (EPA 1999). As discussed under Impacts 3.12-1 and 3.12-2, WLPZ and SEZ would be delineated based on CFPRs and TRPA Code of Ordinance and SPRs would be implemented to minimize any potential impacts to water temperature from treatment activities. SPR HYD-1 would require compliance with all applicable general requirements and other provisions within the Timber Waiver adopted by the Lahontan RWQCB as described in Impact 3.12-1, including requirements to retain and protect vegetation along water bodies, or within or bordering meadows and wet areas. SPR HYD-3 specifies later treatment activities would also adhere to overstory and understory vegetation retention guidelines, including retention of 75 percent of surface cover and undisturbed area in WLPZs. SPR HYD-4 includes similar requirements to minimize streamside disturbance and protect vegetation within SEZs. As such, the removal of vegetation near surface water that would change water temperatures in water bodies would be minimized. Additionally, later treatment activities would implement SPR HYD-3, SPR HYD-4, and SPR BIO-4 to retain or improve riparian habitat function and minimize streamside vegetation loss that could reduce stream shading and increase temperatures. Overall, preservation of vegetation in WLPZs and SEZs through implementation of SPRs in later treatment activities would maintain riparian shading, reducing or eliminating potential shade reductions on stream water temperature and continue to support beneficial uses of water and aquatic life.

Surface runoff from burned areas may carry increased levels of sediment, nutrients, metals, and certain organic pollutants. As previously described in Impacts 3.12-1 and 3.12-2, Lake Tahoe West model results, which overlap the program area, indicate that thinning, prescribed burns, and traffic on access roads in the WUI would result in small increases of fine sediment and phosphorus loads which over the long-term would be of minimal risk to water quality (Dobre and Long 2020, Eliot et al. 2019). Studies in the Lake Tahoe Basin indicate that the concentrations of soluble reactive phosphorus did not significantly increase in stream waters after prescribed fires (Stevens et al. 2004). Combustion of plants and natural materials releases metals, nitrogen compounds, phosphorus, calcium, magnesium, and potassium and toxic organic and inorganic compounds (Wallbrink et al. 2004, Crouch et al. 2006). The vegetation removal and mechanical yarding and transport activities also would potentially loosen and disturb soils, remove

ground surface litter in some areas, and expose the soil surface to erosion by surface runoff. Phosphorus is associated with sediments, so sediment increases in surface runoff would also potentially increase nutrients (i.e., phosphorous) concentrations in receiving water bodies (Stednick 2010). Heavy equipment that compacts soils would also potentially increase the amount of surface runoff by reducing infiltration of runoff. Overall, surface runoff would potentially alter water quality if the concentrations of sediment, nutrients, metals, and/or organic and inorganic compounds in surface runoff is greater than typical background conditions following treatment activities. Elevated nutrient concentrations in runoff would potentially increase phytoplankton or periphyton (i.e., algae) growth in water bodies, leading to increased variations in pH and dissolved oxygen from photosynthesis and respiration by the algae. Potential water quality changes would be greatest in small, shallow water bodies where surface runoff comprises a larger percentage of the water.

While there is potential for surface runoff from treatment areas to contain concentrations of sediment, nutrients, metals, and certain organic pollutants greater than background conditions and alter surface water quality, later treatment activities under the PTEIR would implement SPRs to minimize the surface runoff and transport of sediment, nutrients, metals, and certain organic pollutants into water bodies. As previously discussed under Impacts 3.12-1, 3.12-2, and 3.12-3, compliance with Timber Waiver and other water quality requirements of the Lahontan RWQCB (SPR HYD-1) would limit the locations where and conditions when treatment activities would occur to protect water quality. SPR HYD-3 and SPR HYD-4 require later treatment activities to identify and protect WLPZs and SEZs and adhere to multiple requirements that would minimize the soil disturbance, compaction, and potential soil erosion from treatment activities. Other SPRs would limit when treatment activities could occur and limit heavy equipment operation over saturated soils and on steep and unstable slopes to reduce erosion from treatment areas (SPR GEO-1, SPR GEO-2, SPR GEO-7, and SPR GEO-8). In addition to implementation of SPRs minimizing the production of pollutants (e.g., sediment, fuels and lubricants) from treatment areas, SPRs incorporated into later treatment activities under the PTEIR would also minimize the transport of pollutants outside of treatment areas where they could alter water quality. Potential risks of equipment spills and leaks would be reduced by implementation of SPR HYD-3, which requires that equipment be fueled and serviced outside of WLPZs, SEZs and wet areas, and SPR HAZ-1, which requires that all equipment be maintained and regularly inspected for leaks. SPR BIO-1 requires that a qualified RPF or biologist identify sensitive habitats such as wetlands, wet meadows, or riparian areas as well as a suitable buffer area for avoidance during project activities. SPR HYD-3 and SPR HYD-4 also both contain provisions that require establishment of buffer zones around water bodies, with larger buffers established on water bodies with more beneficial uses and steeper slopes. Vegetated buffer zones have been shown to be effective at reducing surface runoff and transport of sediment, nutrients, metals, and certain organic pollutants that would alter water quality by increasing surface roughness, slowing runoff, providing time for runoff to infiltrate into soil, and trapping sediment and nutrients that would otherwise be carried into water bodies (Rashin et al. 2006). SPR HYD-3 and SPR GEO-6 would also limit the size of burn piles and their distribution within a treatment area so there would be unburned areas between pile sites for surface runoff to infiltrate into soil and minimize the surface runoff that would need to be filtered by vegetated buffer zones along water bodies.

Later treatment activities would also potentially provide an ecological benefit to the program area by implementing restoration of aspen, meadow, riparian, and wet areas. Protection and enhancement of these habitats would potentially minimize water quality degradation from treatment activities since they function to reduce surface runoff velocities, increase the retention of surface runoff and its infiltration into soils, and increase the filtration of surface runoff to minimize transport of sediment and nutrients into water bodies. An increase in aspen, meadow, riparian, and wet areas under later treatment activities would potentially improve water quality by increasing the infiltration and trapping more sediment than occurs under existing conditions. Finally, later treatment activities would potentially result in a long-term benefit to water quality by significantly reducing the threat of high severity wildfire in treated areas that would a) potentially produce significant amounts of erosion and transport sediments into water bodies during storm events after high severity burns; and b) eliminate vegetated areas that minimize transport of sediments into water bodies.

Furthermore, the Tahoe PTEIR would not alter or revise any applicable federal, TRPA, state, or local regulations pertaining to discharge into surface waters and surface water quality, so later treatment activities would be required to meet discharge standards specified by these regulations (SPR HYD-1). Overall, with the implementation of SPRs, the treatment activities used in later treatment activities under the PTEIR would not substantially alter water quality. All existing protections for

surface water would remain in place and later treatment activities would minimize changes in riparian shading of water bodies and the production and transport of sediments from treatment areas that could otherwise alter water temperature, nutrients, dissolved oxygen, and turbidity. As a result, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.12-6: Discharge Contaminants to Groundwater or Any Alteration of Groundwater Quality

Later treatment activities would integrate SPRs into treatment design to prevent discharge of contaminants into groundwater and protect groundwater quality. Therefore, this impact would be **less than significant**.

As discussed above under Impacts 3.12-1, 3.12-2, and 3.12-5 later treatment activities would avoid or minimize the potential risks of spills and leaks of equipment through application of SPRs (SPR HYD-3 and SPR HAZ-1), preventing the risk of groundwater contamination and alter groundwater quality. Dust suppressants (i.e., non-toxic chemical dust suppressant emulsion polymers and organic materials) used to minimize dust during treatment activities would be non-toxic and would not negatively impact water quality because the project implementer will not over-water exposed areas such that application results in run-off of the suppressants (SPR AQ-4). Additionally, flammable liquids (i.e., gasoline and diesel) and iron/phosphorous based hydrocarbon gelling agents are assumed to fully combust during the ignition phase of prescribed burning. The Tahoe PTEIR would not alter any applicable federal, TRPA, state, or local regulations pertaining to discharge to groundwater and groundwater quality and later treatment activities would be required to meet discharge standards specified by these regulations. For these reasons, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.12-7: Result in an Effect on Drinking Water Sources

Later treatment activities would integrate effective SPRs into treatment design to protect drinking water sources. Therefore, this impact would be **less than significant**.

Beneficial uses of surface water and groundwater in the Lake Tahoe Basin include domestic water supply (i.e., drinking water). Drinking water supplies within the program area include groundwater, streams, other lakes, and Lake Tahoe. As discussed in Impacts 3.12-1, 3.12-2, 3.12-5, and 3.12-6, the implementation of SPRs would protect surface and groundwater drinking water sources. These measures also include controlling the potential risks of spills and leaks of equipment, protection of WLPZs and SEZs, avoiding construction of new roads, and compliance with water quality regulations. The Tahoe PTEIR would not alter any applicable federal, TRPA, state, or local regulations pertaining to source water protection. Implementation of SPR HYD-1 would require later treatment activities to comply with the source water protections specified by these regulations. For these reasons, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

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3.13 NOISE AND VIBRATION

This section includes a summary of applicable regulations related to noise and vibration, a description of ambient-noise conditions, and an analysis of potential noise impacts associated with the proposed program. Additional data is provided in Appendix D, "Noise Calculations."

Implementation of treatment activities under the program would not result in the operation of any substantial source of ground vibration, such as pile driving, drilling, boring, or rock blasting. Thus, treatments under the program would not result in the exposure of sensitive receptors to levels of excessive vibration or groundborne noise levels.

Implementation of treatment activities under the program would also not result in the long-term operation of any stationary noise sources or land use development, result in a permanent increase in noise-generating vehicle trips or other long-term or permanent noise-generating activity. Therefore, implementation of the program would not result in a permanent, ongoing increase in ambient noise levels anywhere in the program area. Finally, implementation of treatments under the program would not result in the siting of noise-sensitive land uses or receptors in the vicinity of a private airstrip, airport land use plan, or within two miles of a public airport. Therefore, groundborne vibration, permanent increases in ambient noise, and airport noise exposure are not discussed further.

No comments received on the notice of preparation were related to noise and vibration.

3.13.1 Regulatory Setting

FEDERAL

U.S. Environmental Protection Agency Office of Noise Abatement and Control

The U.S. Environmental Protection Agency (EPA) Office of Noise Abatement and Control was originally established to coordinate federal noise control activities. In 1981, EPA administrators determined that subjective issues such as noise would be better addressed at more local levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to state and local governments. However, documents and research completed by the EPA Office of Noise Abatement and Control continue to provide value in the analysis of noise effects.

Tahoe Regional Planning Agency

Tahoe Regional Plan

The elements of the Tahoe Regional Planning Agency (TRPA) Tahoe Regional Plan related to noise include the following: Noise Subelement of the Goals and Policies of the Regional Plan (TRPA 2012a); the TRPA Code of Ordinances, Chapter 68, "Noise Limitations" (TRPA 2012b); and plan area statements, community plans, and area plans. These elements are described below, followed by a summary of TRPA's region-wide traffic noise mitigation program.

Goals and Policies

The Regional Plan Noise Subelement of the Goals and Policies includes a goal to attain and maintain community noise equivalent level (CNEL) standards that are relevant to the proposed program (Goal N-2) (TRPA 2012a:2-26 through 2-28). The CNEL is 24-hour metric. More specifically, the CNEL is the energy average of the sound levels occurring over a 24-hour period, with a 10-decibel (dB) penalty applied to sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m. and a 5-dB penalty applied to the sound levels occurring during evening hours between 7 p.m. and 10 p.m. The transportation corridor CNEL values override land use-based CNELs within 300 feet of the applicable roadway (TRPA 2012a:2-26).

Code of Ordinances

Chapter 68, "Noise Limitations," of the TRPA Code is intended to implement the Noise Subelement of the Goals and Policies document and to attain and maintain TRPA's noise-related threshold standards (shown below) (TRPA 2012b:68-1 to 68-5).

TRPA Code Section 68.4, "Community Noise Levels," states that TRPA shall use CNELs to measure community noise levels and that individual plan area statements shall set forth CNELs that shall not be exceeded by any one activity or combination of activities. The CNELs set forth in the plan area statements and area plans are based on the land use classification, the presence of transportation corridors, and the applicable threshold standard. Area plans and plan area statements essentially provide plan CNELs and other standards specific to a local area within the Tahoe Region.

Table 3.13-2 shows the CNEL thresholds established by TRPA for different land use types.

TRPA Code Section 68.9 states that the standards of this chapter shall not apply to noise from TRPA-approved construction or maintenance projects or the demolition of structures provided such activities are limited to the hours between 8:00 a.m. and 6:30 p.m.

Thresholds

TRPA has established threshold standards for nine resources, including noise. There are two noise threshold indicators: single noise events and cumulative noise events. Both types of noise thresholds are summarized below as context for the current environmental analysis.

Single Noise Events

A noise event can be defined as an unexpected increase in acoustic. Single Noise Event Threshold Standards adopted by TRPA are based on the numerical value associated with the maximum measured level in acoustical energy during an event. This threshold establishes maximum noise levels for aircraft, watercraft, motor vehicles, motorcycles, off-road vehicles, and snowmobiles (TRPA 2012a:13–14).

Cumulative Noise Events

TRPA adopted CNEL standards for different zones within the Tahoe Basin to account for expected levels of serenity. The standards, established in the Goals and Policies, apply to the entire Lake Tahoe region (TRPA 2012a:14–15) and are shown in Table 3.13-1. These standards are referred to as "land use-based CNEL thresholds." TRPA's transportation corridor CNEL thresholds override land use-based CNELs within 300 feet of the applicable roadway (TRPA 2012a:2-26). TRPA's transportation corridor noise thresholds for US 50 and State Routes (SRs) 431, 28, 89, 207, and 267 override TRPA's land use based CNEL thresholds at all locations within 300 feet from the edge of the roadway.

Table 3.13-1 TRPA Noise Thresholds

Single Noise Events	Noise Measurement
[Land Use-Based] Community Noise Equivalent Levels:	
Background levels shall not exceed the following:	
Land Use Category	CNEL, dB
High Density Residential	55
Low Density Residential	50
Hotel/motel facilities	60
Commercial area	60
Industrial	65
Urban Outdoor Recreation	55
Rural Outdoor Recreation	50
Wilderness and Roadless Areas	45
Critical Wildlife Areas	45

Single Noise Events	Noise Measurement
Policy Statement: It shall be a policy of the TRPA Governing Board in the development of the Regional Plan to define, locate, and establish CNEL levels for transportation corridors.	
Transportation [Corridor Noise Standards]¹	
US 50	65 dB CNEL
State Routes 89, 207, 28, 267 and 431	55 dB CNEL
South Lake Tahoe Airport	60 dB CNEL ²

Notes: CNEL = community noise equivalent level measurements are weighted average of sound level gathered throughout a 24-hour period; dB = decibels; dB = A-weighted decibels; mph = miles per hour; rpm = revolutions per minute.

¹ This transportation corridor noise threshold overrides the land use based CNEL thresholds and is limited to an area within 300 feet from the edge of the road.

² This threshold applies to those areas impacted by the approved flight paths.

Source: TRPA 2012b

Table 3.13-2 Placer County Allowable L_{dn} Noise Levels Within Specified Zone Districts¹ Applicable to New Projects Affected by or Including Non-Transportation Noise Sources

Zone District of Receptor	L_{dn} (dB) at Property Line of Receiving Use	Interior Spaces (dB) ²
Residential Adjacent to Industrial ³	60	45
Other Residential ⁴	50	45
Office/Professional	70	45
Transient Lodging	65	45
Neighborhood/General Commercial/Shopping Center	70	45
Heavy Commercial/Limited Industrial/Highway Service	75	45
Industrial	—	45
Industrial Park	75	45
Industrial Reserve	—	—
Airport	—	45
Unclassified	—	—
Farm/Agriculture Exclusive ⁵	—	—
Recreation and Forestry	70	—

Notes: L_{dn} = Day-Night Noise Level; dB = decibels.

Except where noted otherwise, noise exposures will be those which occur at the property line of the receiving use.

Where existing transportation noise levels exceed the standards of this table, the allowable L_{dn} shall be raised to the same level as that of the ambient level.

If the noise source generated by, or affecting, the uses shown above consists primarily of speech or music, or if the noise source is impulsive in nature, the noise standards shown above shall be decreased by 5 dB.

Where a use permit has established noise level standards for an existing use, those standards shall supersede the levels specified in this table. Similarly, where an existing use which is not subject to a use permit causes noise in excess of the allowable levels in this table, said excess noise shall be considered the allowable level. If a new development is proposed which will be affected by noise from such an existing use, it will ordinarily be assumed that the noise levels already existing or those levels allowed by the existing use permit, whichever are greater, are those levels actually produced by the existing use.

Existing industry located in industrial zones will be given the benefit of the doubt in being allowed to emit increased noise consistent with the state of the art⁶ at the time of expansion. In no case will expansion of an existing industrial operation because to decrease allowable noise emission limits. Increase emissions above those normally allowable should be limited to a one-time 5 dB increase at the discretion of the decision-making body.

The noise level standards applicable to land uses containing incidental residential uses, such as caretaker dwellings at industrial facilities and homes on agriculturally-zoned land, shall be the standards applicable to the zone district, not those applicable to residential uses.

Where no noise level standards have been provided for a specific zone district, it is assumed that the interior and/or exterior spaces of these uses are effectively insensitive to noise.

¹ Overriding policy on interpretation of allowable noise levels: Industrial-zoned properties are confined to unique areas of Placer County, and are irreplaceable. Industries which provide primary wage-earner jobs in the county, if forced to relocate, will likely be forced to leave the county. For this reason, industries operating upon industrial zoned properties must be afforded reasonable opportunity to exercise the rights/privileges conferred upon them by their zoning. Whenever the allowable noise levels herein fall subject to interpretation relative to industrial activities, the benefit of the doubt shall be afforded to the industrial use.

Where an industrial use is subject to infrequent and unplanned upset or breakdown of operations resulting in increased noise emissions, where such upsets and breakdowns are reasonable considering the type of industry, and where the industrial use exercises due diligence in preventing as well as correcting such upsets and breakdowns, noise generated during such upsets and breakdowns shall not be included in calculations to determine conformance with allowable noise levels.

² Interior spaces are defined as any locations where some degree of noise-sensitivity exists. Examples include all habitable rooms of residences, and areas where communication and speech intelligibility are essential, such as classrooms and offices.

³ Noise from industrial operations may be difficult to mitigate in a cost-effective manner. In recognition of this fact, the exterior noise standards for residential zone districts immediately adjacent to industrial, limited industrial, industrial park, and industrial reserve zone districts have been increased by 10 dB as compared to residential districts adjacent to other land uses.

For purposes of the Noise Element, residential zone districts are defined to include the following zoning classifications:

AR, R-1, R-2, R-3, FR, RP, TR-1, TR-2, TR-3, and TR-4.

⁴ Where a residential zone district is located within an -SP combining district, the exterior noise level standards are applied at the outer boundary of the -SP district. If an existing industrial operation within an -SP district is expanded or modified, the noise level standards at the outer boundary of the -SP district may be increased as described above in these standards.

Where a new residential use is proposed in an -SP zone, an Administrative Review Permit is required, which may require mitigation measures at the residence for noise levels existing and/or allowed by use permit as described under "NOTES," above, in these standards.

⁵ Normally, agricultural uses are noise insensitive and will be treated in this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within agricultural zone districts. Therefore, where effects of agricultural noise upon residences located in these agricultural zones are a concern, an L_{dn} of 70 dB will be considered acceptable outdoor exposure at a residence.

⁶ State of the art should include the use of modern equipment with lower noise emissions, site design, and plant orientation to mitigate offsite noise impacts, and similar methodology.

Source: Placer County 2013:145

STATE

California General Plan Guidelines

The State of California General Plan Guidelines 2017, published by the California Governor's Office of Planning and Research (OPR), provides guidance for the compatibility of projects within areas of specific noise exposure. Acceptable and unacceptable community noise exposure limits for various land use categories have been determined to help guide new land use decisions in California communities (OPR 2017). Many local jurisdictions use these guidelines to derive local noise standards and guidance.

LOCAL

Placer County

The Placer County General Plan Noise Element contains noise policies and standards (e.g., exterior and interior noise-level performance standards for new projects affected by or including non-transportation noise sources, and maximum allowable noise exposure levels for transportation noise sources) (Placer County 2013). The Placer County Noise Ordinance (Article 9.36 of the Placer County Code) contains noise limits for sensitive receptors (Placer County 2004). The applicable policies and standards contained in the General Plan and Ordinance are summarized below. Placer County land use noise standards are shown in Table 3.13-2.

Placer County General Plan

Policies from the Placer County General Plan that are relevant to the proposed program are described below.

- ▶ **Policy 9.A.2:** The county shall require that noise created by new non-transportation noise sources be mitigated so as not to exceed the noise level standards [as shown below in Table 3.13-2] as measured immediately within the property line of lands designated for noise-sensitive uses.

- **Policy 9.A.5:** Where proposed non-residential land uses are likely to produce noise levels exceeding performance standards [as shown in Table 3.13-2] at existing or planned noise-sensitive uses, the county shall require submission of an acoustical analysis as part of the environmental review process so that noise mitigation may be included in the project design.

The maximum allowable noise exposure limits for transportation noise sources in Placer County are summarized in Table 3.13-3.

Table 3.13-3 Placer County Maximum Allowable Noise Exposure for Transportation Noise Sources

Land Use	Outdoor Activity Areas ¹ L _{dn} /CNEL	Interior Spaces L _{dn} /CNEL	Interior Spaces L _{eq} dB ²
Residential	60 ³	45	
Transient Lodging	60 ³	45	
Hospitals, Nursing Homes	60 ³	45	
Theaters, Auditoriums, Music Halls			35
Churches, Meeting Halls	60 ³		40
Office Buildings			45
Schools, Libraries, Museums			45
Playgrounds, Neighborhood Parks	70		

Note: CNEL = community noise equivalent level.

¹ Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

² As determined for a typical worst-case hour during periods of use.

³ Where it is not possible to reduce noise in outdoor activity areas to 60 L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: Placer County General Plan 2013

Placer County Noise Ordinance

Article 9.36 Noise of the Placer County Code defines sound level performance standards for sensitive receptors. Relevant standards are listed below.

Article 9.36 Noise

Noise level standards for sensitive receptors from Placer County Code Article 9.36 are shown in Table 3.13-4 below. The ordinance states that it is unlawful for any person at any location to create any sound, or to allow the creation of any sound, on property owned, leased, occupied, or otherwise controlled by such a person that causes the exterior sound level, when measured at the property line of any affected sensitive receptor, to exceed the ambient sound level by 5 dB or exceed the sound level standards (as set forth in Table 3.13-4), whichever is greater.

Table 3.13-4 Placer County Noise Ordinance Noise Level Standards for Sensitive Receptors

Sound Level Descriptor (dB)	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly L _{eq}	55	45
L _{max}	70	65
	— 100 —	

Note: dB = A-Weighted Decibel.

Source: Placer County 2004

Each of the sound level standards specified in Table 3.13-4 shall be reduced by 5 dB for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be lower than the ambient sound level plus 5 dB.

Section 9.36.030 Exemptions

According to Section 9.36.030, "Exemptions," some noise-generating activities are exempt from the above noise ordinance standards. These are listed below.

- ▶ Construction that is performed between 6:00 a.m. and 8:00 p.m., Monday through Friday, and between 8:00 a.m. and 8:00 p.m. Saturday and Sunday, provided that all construction equipment is fitted with factory-installed muffler devices and maintained in good working order.
- ▶ Emergencies involving the execution of the duties of duly authorized governmental personnel and others providing emergency response to the general public, including but not limited to sworn peace officers, emergency personnel, utility personnel, and the operation of emergency response vehicles and equipment.

El Dorado County

El Dorado County General Plan

El Dorado County's Public Health, Safety, and Noise Element identifies public health and safety issues and provides guidance for protecting the health, safety, and welfare of residents in the county. The county's noise standards are provided within the Public Health, Safety, and Noise Element and vary between community regions, rural centers, and rural regions. The county defines community regions as areas that are appropriate for the highest intensity of self-sustaining compact urban development or suburban development (El Dorado County 2018:11). The county defines rural centers as areas of higher intensity development located throughout the rural areas of the county based on the availability of infrastructure, public services, existing uses, parcel size, and impacts on natural resources. The county classifies all lands not contained within the boundaries of a community region or a rural center as rural regions (El Dorado County 2018:13). The portion of the program area in El Dorado County does not include any designated community regions or rural centers and is considered a rural region. The following noise-related goals and policies identified in the El Dorado County General Plan Public Health, Safety, and Noise Element are applicable to the program (El Dorado County 2015:117–124).

- ▶ **Policy 6.5.1.2:** Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of [General Plan] Table 6-2 (presented as Table 3.13-5 in this PTEIR) at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.
- ▶ **Policy 6.5.1.3:** Where noise mitigation measures are required to achieve the standards of [General Plan] Tables 6-1 and 6-2 (presented as Tables 3.13-5 and 3.13-6 in this PTEIR), the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.
- ▶ **Policy 6.5.1.7:** Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of [General Plan] Table 6-2 (presented as Table 3.13-5 in this PTEIR) for noise-sensitive uses.
- ▶ **Policy 6.5.1.9:** Noise created by new transportation noise sources, excluding airport expansion but including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in [General Plan] Table 6-1 (presented as Table 3.13-6 in this PTEIR) at existing noise-sensitive land uses.
- ▶ **Policy 6.5.1.11:** The standards outlined in [General Plan] Tables 6-3, 6-4, and 6-5 shall not apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally recognized holidays. Further, the standards outlined in Tables 6-3, 6-4, and 6-5 shall not apply to public projects to alleviate traffic congestion and safety hazards. (General Plan Tables 6-3 and 6-4 are not presented in this PTEIR because they apply to Community Regions and Rural Centers, none of which exist in the program area. General Plan Table 6-5 is presented as Table 3.13-7 in this PTEIR.)

- ▶ **Policy 6.5.1.12:** When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration:
 - A. Where existing or projected future traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of residential uses, an increase of more than 5 dB L_{dn} caused by a new transportation noise source will be considered significant;
 - B. Where existing or projected future traffic noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of residential uses, an increase of more than 3 dB L_{dn} caused by a new transportation noise source will be considered significant; and
 - C. Where existing or projected future traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of residential uses, an increase of more than 1.5 dB L_{dn} caused by a new transportation noise will be considered significant.

- ▶ **Policy 6.5.1.13:** When determining the significance of impacts and appropriate mitigation to reduce those impacts for new development projects, including ministerial development, the following criteria shall be taken into consideration:
 - A. In areas in which ambient noise levels are in accordance with the standards in Table 6-2 (presented as Table 3.13-6 in this PTEIR), increases in ambient noise levels caused by new non-transportation noise sources that exceed 5 dB shall be considered significant; and
 - B. In areas in which ambient noise levels are not in accordance with the standards in Table 6-2 (presented as Table 3.13-6 in this PTEIR), increases in ambient noise levels caused by new non-transportation noise sources that exceed 3 dB shall be considered significant.

- ▶ **Policy 6.5.1.14:** The county will adopt a noise ordinance to resolve neighborhood conflicts and to control unnecessary noise in the county. Examples of the types of noise sources that can be controlled through the use of a quantitative noise ordinance include noisy mechanical equipment (e.g., swimming pool pumps, HVAC units), and amplified music in commercial establishments.

Table 3.13-5 El Dorado County Noise Level Performance Standards for Noise-Sensitive Land Uses Affected by Non-Transportation Sources in Community Centers

Noise Level Descriptor	Daytime 7 a.m. – 7 p.m.	Evening 7 p.m. – 10 p.m.	Night 10 p.m. – 7 a.m.
Hourly L_{eq} , dB	55	50	45
Maximum level, dB	70	60	55

Notes: L_{eq} = equivalent continuous sound level; dB = decibels.

Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive tones.

Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

The county can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site. In Community areas the exterior noise level standard shall be applied to the property line of the receiving property. The above standards shall be measured only on property containing a noise sensitive land use as defined in Objective 6.5.1. This measurement standard may be amended to provide for measurement at the boundary of a recorded noise easement between all effected property owners and approved by the county.

Source: El Dorado County 2015:121

Table 3.13-6 El Dorado County Noise Level Standards for Noise-Sensitive Land Uses Affected by Transportation Noise Sources

Sensitive Receptor	Outdoor Activity Areas ¹ L _{dn} /CNEL, dB	Interior Spaces L _{dn} /CNEL, dB	Interior Spaces L _{eq} , dB ²
Residential	60	45	—
Transient Lodging	60	45	—
Hospitals, Nursing Homes	60	45	—
Theaters, Auditoriums, Music Halls	—	—	35
Churches, Meeting Halls, Schools	60 ³	—	40
Office Buildings	—	—	45
Libraries, Museums	—	—	45
Playgrounds, Neighborhood Parks	70	—	—

Notes: L_{dn} = day-night level; CNEL = community noise equivalent level; dB = decibels.

¹ In Communities and Rural Centers, where the location of outdoor activity areas is not clearly defined, the exterior noise level standard shall be applied to the property line of the receiving land use. For residential uses with front yards facing the identified noise source, an exterior noise level criterion of 65 dB L_{dn} shall be applied at the building facade, in addition to a 60 dB L_{dn} criterion at the outdoor activity area. In Rural Regions, an exterior noise level criterion of 60 dB L_{dn} shall be applied at a 100-foot radius from the residence unless it is within Platted Lands where the underlying land use designation is consistent with Community Region densities in which case the 65 dB L_{dn} may apply. The 100-foot radius applies to properties which are five acres and larger; the balance will fall under the property line requirement.

² As determined for a typical worst-case hour during periods of use.

³ Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: El Dorado County 2015:120

Table 3.13-7 El Dorado County Maximum Allowable Noise Exposure for Non-transportation Noise Sources in Rural Regions – Construction Noise

Land Use Designation	Time Period	Noise Level (dB) Leq	Noise Level (dB) L _{max}
All Residential (LDR)	7 a.m. – 7 p.m.	50	60
	7 p.m. – 10 p.m.	45	55
	10 p.m. – 7 a.m.	40	50
Commercial, Recreation, and Public Facilities (C, TR, PF)	7 a.m. – 7 p.m.	65	75
	7 p.m. – 7 a.m.	60	70
Rural Land, Natural Resources, Open Space, and Agricultural Lands (RR, NR, OS, AL)	7 a.m. – 7 p.m.	65	75
	7 p.m. – 7 a.m.	60	70

Notes: dB = decibels; L_{eq} = equivalent continuous sound level; L_{max} = maximum sound level; LDR = low-density residential; C = commercial; TR = tourist recreational; PF = public facilities; RR = rural residential; NR = natural resource; OS = open space; AL = agricultural lands.

Source: El Dorado County 2015:122

El Dorado County Code

The most recent noise standards for El Dorado County are stated in Chapter 130.37 of the zoning ordinance, which was adopted by the county on December 15, 2015. The ordinance includes standards concerning acceptable noise levels for both noise-sensitive land uses and for noise-generating land uses.

Section 130.37.020 provides an exemption for noise sources associated with construction during daylight hours provided that all construction equipment shall be fitted with factory installed muffling devices and maintained in good working order. This section also states that the use of any mechanical device, apparatus, or equipment related to or connected with emergency activities or emergency work to protect life or property shall be exempt from county noise standards.

Noise-sensitive land uses affected by non-transportation noise sources shall not exceed standards set forth in Table 130.37.060.1 of the County Code (presented as Table 3.13-5 in this PTEIR). Transportation noise shall not exceed thresholds set forth in Table 130.37.060.2 of the County Code (presented as Table 3.13-6 in this PTEIR).

City of South Lake Tahoe

General Plan

The Health and Safety Element of the City of South Lake Tahoe General Plan contains the following noise-related goals and policies applicable to the proposed program (City of South Lake Tahoe 2011: HS-9 to HS-13):

- ▶ **Policy HS-8.1: Annoying and Excessive Non-Transportation Noise Protection.** The City shall require all new non-transportation noise sources to not exceed the exterior noise level standards shown in Table HS-1 (presented as Table 3.13-8 in this PTEIR). These standards shall be measured from immediately within the property line of parcels designated as noise-sensitive uses.

Table 3.13-8 Exterior Noise Level Performance Standards for New Projects Affected by or Including Non-Transportation Noise Sources

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly L_{eq} , dB	55	45

Note 1: Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises (e.g., humming sounds, outdoor speaker systems). These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

The city can impose noise level standards that are more restrictive than those specified above based on determination of existing low ambient noise levels.

Fixed noise sources which are typically of concern include, but are not limited to, the following:

HVAC Systems	Cooling Towers/Evaporative Condensers
Pump Stations	Lift Stations
Emergency Generators	Boilers
Steam Valves	Steam Turbines
Generators	Fans
Air Compressors	Heavy Equipment
Conveyor Systems	Transformers
Pile Drivers	Grinders
Drill Rigs	Gas or Diesel Motors
Welders	Cutting Equipment
Outdoor Speakers	Blowers

The types of uses which may typically produce the noise sources described above include but are not limited to: industrial facilities including pump stations, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

Note 2: For the purposes of the General Plan, transportation noise sources are defined as traffic on public roadways, railroad line operations, and aircraft in flight. Control of noise from these sources is preempted by federal and state regulations. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, loading docks, etc.

Source: City of South Lake Tahoe 2011: HS-10

- ▶ **Policy HS-8.2: Annoying and Excessive Non-Transportation Noise Mitigation.** In instances where a noise-sensitive use is adversely affected by non-transportation noise levels in excess of standards shown in Table HS-1 (presented as Table 3.13-8 in this PTEIR), the City shall require appropriate mitigation to be incorporated into the project’s design in order to achieve the standards shown in Table HS-1 (presented as Table 3.13-8 in this PTEIR), as measured immediately within the property line or within a designated outdoor activity area of the project (at the discretion of the Community Development Director).
- ▶ **Policy HS-8.3: Overall Background Noise Mitigation.** The City shall not allow any project to increase the overall background noise levels at receiving land uses by 3 dB or more in instances when measured ambient noise levels exceed the standards contained within Table HS-1 (presented as Table 3.13-8 in this PTEIR).

- **Policy HS-8.5: New Transportation Noise Source Mitigation.** The City shall require the mitigation of new transportation noise sources to the levels shown in Table HS-2 (presented as Table 3.13-9 in this PTEIR) at all outdoor activity areas and interior spaces of existing noise-sensitive land uses.

Table 3.13-9 Maximum Allowable Noise Exposure from Transportation Noise Sources in the City of South Lake Tahoe

Land Use	Outdoor Activity Areas ¹ L _{dnr} /CNEL, dB Roadways	Outdoor Activity Areas ¹ L _{dnr} /CNEL, dB Railroads/Aircraft	Interior Spaces L _{dnr} /CNEL, dB	Interior Spaces L _{eq} , dB ²
Residential	60 ³	65 ⁵	45	
Transient Lodging	65 ^{4,5}	65 ^{4,5}	45	
Hospitals, Nursing Homes	60 ³	60 ³	45	
Theaters, Auditoriums, Music Halls				35
Churches, Meeting Halls	60 ³	65 ⁵		40
Office Buildings				45
Schools, Libraries, Museums				45
Playgrounds, Neighborhood Parks	70	75		

¹ Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use. Where it is not practical to mitigate exterior noise levels on patios or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.

² As determined for a typical worst-case hour during periods of use.

³ Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dnr}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dnr}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

⁴ For hotels, motels, and other transient lodging facilities where outdoor activity areas such as pool areas are not included in the project design, only the interior noise level criterion will apply.

⁵ Where it is not possible to reduce noise in outdoor activity areas to 65 dB L_{dnr}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 70 dB L_{dnr}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: City of South Lake Tahoe 2011: HS-11

Note that the noise standards from the General Plan also apply to the portion of the city within the Tourist Core Area Plan, as stated in Policy LU-7.1 and Policy LU-7.2 of the Tourist Core Area Plan (City of South Lake Tahoe and TRPA 2013:5-3 to 5-4). Thus, land in the Tourist Core Area Plan is subject to both the city’s noise standards shown in Table 3.13-8 and the land use based CNEL standards of the Tourist Core Area Plan.

3.13.2 Environmental Setting

ACOUSTIC FUNDAMENTALS

Before discussing the noise setting for the program, background information about sound, noise, vibration, and common noise descriptors is needed to provide context and a better understanding of the technical terms referenced throughout this section.

Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a human ear. Noise is defined as loud, unexpected, annoying, or unwanted sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors

affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz, or thousands of hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.0000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this large range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of hearing for young people is about 0 dB, which corresponds to 20 mPa.

Addition of Decibels

Because decibels are logarithmic units, SPLs cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness at the same time, the resulting sound level at a given distance would be 3 dB higher than if only one of the sound sources was producing sound under the same conditions. For example, if one idling truck generates an SPL of 70 dB, two trucks idling simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level approximately 5 dB louder than one source.

A-Weighted Decibels

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within this range better than sounds of the same amplitude with frequencies outside of this range. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an “A-weighted” sound level (expressed in units of A-weighted decibels) can be computed based on this information.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgment correlates well with the A-scale sound levels of those sounds. Thus, noise levels are typically reported in terms of A-weighted decibels. All sound levels discussed in this section are expressed in A-weighted decibels. Table 3.13-10 describes typical A-weighted noise levels for various noise sources.

Table 3.13-10 Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1,000 feet	— 100 —	
Gas lawn mower at 3 feet	— 90 —	
Diesel truck at 50 feet at 50 miles per hour	— 80 —	Food blender at 3 feet, Garbage disposal at 3 feet

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
Noisy urban area, daytime, Gas lawn mower at 100 feet	— 70 —	Vacuum cleaner at 10 feet, Normal speech at 3 feet
Commercial area, Heavy traffic at 300 feet	— 60 —	
Quiet urban daytime	— 50 —	Large business office, Dishwasher next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime	— 30 —	Library, Bedroom at night
Quiet rural nighttime	— 20 —	
	— 10 —	Broadcast/recording studio
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: California Department of Transportation (Caltrans) 2013a:2-20

Human Response to Changes in Noise Levels

The doubling of sound energy results in a 3-dB increase in the sound level. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different from what is measured.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear can discern 1-dB changes in sound levels when exposed to steady, single-frequency (“pure-tone”) signals in the mid-frequency (1,000–8,000 Hz) range. In general, the healthy human ear is most sensitive to sounds between 1,000 and 5,000 Hz and perceives both higher and lower frequency sounds of the same magnitude with less intensity (Caltrans 2013b:2-18). In typical noisy environments, changes in noise of 1–2 dB are generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness (Caltrans 2013b:2-10). Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dB increase in sound would generally be perceived as barely detectable.

Common Noise Descriptors

Noise in our daily environment fluctuates over time. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors used throughout this section.

Equivalent Continuous Sound Level (L_{eq}): L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound level that occurs during the same period (Caltrans 2013b:2-48). For instance, the 1-hour-equivalent sound level, also referred to as the hourly L_{eq} , is the energy average of sound levels occurring during a 1-hour period.

Maximum Sound Level (L_{max}): L_{max} is the highest instantaneous sound level measured during a specified period (Caltrans 2013b:2-48; FTA 2006:2-16).

Day-Night Level (L_{dn}): L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB “penalty” applied to sound levels occurring during nighttime hours between 10 p.m. and 7 a.m. (Caltrans 2013b:2-48; FTA 2006:2-22).

Community Noise Equivalent Level (CNEL): CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m. and a 5-dB penalty applied to the sound levels occurring during evening hours between 7 p.m. and 10 p.m. (Caltrans 2013b:2-48).

Single Event [Impulsive] Noise Level (SENL): The SENL describes a receiver’s cumulative noise exposure from a single impulsive noise event (e.g., an automobile passing by or an aircraft flying overhead), which is defined as an acoustical event of short duration and involves a change in sound pressure above some reference value. SENLs typically represent the noise events used to calculate the L_{eq} , L_{dn} , and CNEL.

Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which a noise level decreases with distance depends on the following factors:

Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Roads and highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources, thus propagating at a slower rate in comparison to a point source. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

Ground Absorption

The propagation path of noise from a source to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling provides additional attenuation associated with geometric spreading. Traditionally, this additional attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), additional ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the attenuate rate associated with cylindrical spreading, the additional ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance. This would hold true for point sources, resulting in an overall drop-off rate of up to 7.5 dB per doubling of distance.

Atmospheric Effects

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels, as wind can carry sound. Sound levels can be increased over large distances (e.g., more than 500 feet) from the source because of atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also affect sound attenuation.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction (Caltrans 2013b:2-41; FTA 2006:5-6, 6-25). Barriers higher than the line of sight provide increased noise reduction (FTA 2006:2-12). Vegetation between the source and receiver is rarely effective in reducing noise because it does not create a solid barrier unless there are multiple rows of vegetation (FTA 2006:2-11).

EXISTING NOISE ENVIRONMENT

Existing Noise- and Vibration-Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels, and because of the potential for nighttime noise to result in sleep disruption. Additional land uses such as schools, transient lodging, historic sites, cemeteries, and places of worship are also generally considered sensitive to increases in noise levels.

Noise-sensitive receptors near the program area include single family homes, multifamily residential dwellings, and schools.

Existing Noise Sources and Ambient Levels

The predominant noise source in the program area is vehicle traffic traveling on SRs 28, 89, and 267 and U.S. 50. Other noise sources include motorized watercraft activity on Lake Tahoe, landscape maintenance and snow removal activities (e.g., grass cutting, leaf blowing, snow plowing and blowing) at residential and commercial land uses and along local roads, and activities typical of urban and suburban environments, such as people recreating outside. Helicopters and other aircraft also generate noise in the program area.

TRPA conducts a comprehensive evaluation of threshold standard status every 5 years. The most recent evaluation was completed in 2015 (TRPA 2016:10-4 through 10-6). This threshold evaluation determined that:

- ▶ the following areas in the Tahoe region are “somewhat worse than their target” with respect to their CNEL-based TRPA noise thresholds (as shown in Table 3.13-1): high-density residential areas, South Lake Tahoe Airport transportation corridor, and the SR 28, SR 89, SR 207, and SR 267 transportation corridors;
- ▶ there was insufficient data to determine the attainment status of the following areas in the Tahoe region with respect to their CNEL-based TRPA noise thresholds (as shown in Table 3.13-1): low-density residential areas, hotel/motel areas, commercial areas, industrial areas, urban outdoor recreation areas, rural outdoor recreation areas, wilderness and roadless areas, and the SR 431 and U.S. 50 transportation corridors; and
- ▶ some of the critical wildlife habitat areas are “considerably worse than target” with respect to TRPA’s 45 CNEL noise threshold for these areas.

TRPA is currently working on a new threshold evaluation that is expected to be completed in 2020.

3.13.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The analysis of noise impacts focuses on the potential for nearby noise-sensitive receptors to experience a substantial temporary or permanent increase in ambient noise levels as a result of treatment implementation. Significance determinations account for the influence of relevant SPRs, which are incorporated into treatment design and listed below (also see Appendix B).

- ▶ **SPR NOI-1 Limit Heavy Equipment Use, Truck Hauling, and Helicopter to Daytime Hours:** The project proponent will require that operation of heavy equipment associated with treatment activities (heavy off-road equipment, tools, and delivery of equipment and materials) and hauling of equipment, merchantable timber, and biomass will occur during daytime hours if such noise would be audible to noise-sensitive receptors (e.g., residential land uses, schools, hospitals, places of worship). Placer County, El Dorado County, and the City of South Lake Tahoe exempt construction-noise (which would apply to noise generated by treatment activity) from locally established noise standards during particular daytime hours. The project proponent shall comply with the most stringent applicable local limits as listed in greater detail below:
 - In Placer County: 6:00 a.m. to 8:00 p.m., Monday through Friday, and 8:00 a.m. to 8:00 p.m. Saturday and Sunday;
 - In unincorporated areas of El Dorado County: all daylight hours; and
 - In the City of South Lake Tahoe: 8:00 a.m. to 6:30 p.m. on all days of the week.
- ▶ **SPR NOI-2 Equipment Maintenance:** The project implementer will require that all powered treatment equipment and power tools will be used and maintained according to manufacturer specifications. All diesel- and gasoline-powered treatment equipment will be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers’ recommendations.
- ▶ **SPR NOI-3 Engine Shroud Closure:** The project proponent will require that engine shrouds be closed during equipment operation.

- ▶ **SPR NOI-4 Locate Staging Areas and Landings Away from Noise-Sensitive Land Uses:** The project proponent will locate landings, equipment, and equipment staging areas away from nearby noise-sensitive land uses (e.g., residential land uses, schools, hospitals, places of worship), to the extent feasible, to minimize noise exposure. This would apply only to mechanical treatments.
- ▶ **SPR NOI-5 Restrict Equipment Idle Time:** The project proponent will require that all motorized equipment be shut down when not in use. Idling of equipment and haul trucks will be limited to 5 minutes.
- ▶ **SPR NOI-6 Notify Nearby Off-Site Noise-Sensitive Receptors:** For treatment activities utilizing heavy equipment, the project proponent will notify noise-sensitive receptors (e.g., residential land uses, schools, hospitals, places of worship) located within 1,500 feet of the treatment activity. Notification will include anticipated dates and hours during which treatment activities are anticipated to occur and contact information, including a daytime telephone number, of the project representative. Recommendations to assist noise-sensitive land uses in reducing interior noise levels (e.g., closing windows and doors) will also be included in the notification. This SPR applies only to mechanical treatment activities.
- ▶ **SPR NOI-7 Restrict Helicopter Flight Patterns:** Helicopter flight patterns will be designed to avoid and minimize flights over residential areas, the Granite Chief Wilderness, and the Desolation Wilderness. This would apply only to manual and mechanical treatments.

To assess noise generated by treatment activity, sensitive receptors that have the potential to be impacted and their relative exposure were identified in the program area. Treatment-generated noise levels were determined based on methodologies, reference noise levels, and usage factors from FTA's *Guide on Transit Noise and Vibration Impact Assessment* (FTA 2006), and other sources as needed for specialized equipment such as helicopters and wood chippers. See Appendix D for detailed calculations of treatment-generated noise levels. Reference noise levels for specific equipment and treatment activities are well documented and application of reference noise levels is a common practice in the field of acoustics.

As described in Section 3.13.2, "Environmental Setting," the SENL describes a receiver's cumulative noise exposure from a single impulsive noise event (e.g., a passing truck, a truck downshifting to engine brake, or an aircraft flying overhead), which is a rating of a discrete noise event that compresses the total sound energy of the event into a 1-second period, measured in decibels (Caltrans 2011). These noise events can be more startling to receptors if they occur when ambient noise levels are quieter, such as during nighttime hours.

Many studies have been conducted regarding the effects of single-event noise on sleep disturbance, but due to the wide variation in the reactions of test subjects to SENLs of various levels, no definitive consensus has been reached with respect to a universal criterion to apply. Based on its review of studies about sleep disturbance and SENLs, the Federal Interagency Committee on Aviation Noise (FICAN) provided estimates of the percentage of people expected to be awakened when exposed to specific SENLs inside a home (FICAN 1997). According to FICAN's review, 10 percent of the population is estimated to be awakened by an SENL interior noise level of 81 dB. An estimated 5 to 10 percent of the population is affected when the SENL interior noise level is between 65 and 81 dB, and few sleep awakenings (less than 5 percent) are predicted if the interior SENL is less than 65 dB. The SENL analysis is based on reference noise levels published by EPA.

THRESHOLDS OF SIGNIFICANCE

Thresholds of significance are based on Appendix G of the State CEQA Guidelines, relevant TRPA thresholds, and reference SNEL noise levels published by EPA. A treatment implemented under the proposed program would result in a significant noise-related impact if it would:

- ▶ generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- ▶ for project areas located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; or

- ▶ result in the exposure of residential receptors to sleep disturbance, including SENLs generated by trucks or helicopters at night.

IMPACTS AND MITIGATION MEASURES

Impact 3.13-1: Result in a Substantial Short-Term Increase in Exterior Ambient Noise Levels During Treatment Implementation

Treatment activities implemented under the proposed program would adhere local noise policies and ordinances to the extent that treatment activity is subject to them, limit later treatment activities to daytime hours, ensure proper notification of nearby sensitive receptors, locate treatment activities and staging areas away from sensitive receptors to minimize noise exposure, and design helicopter flight patterns to avoid and minimize flights over residential areas and wilderness areas. Additionally, any increase in noise exposure at nearby receptors would be temporary and periodic. Therefore, implementation of the proposed program would not result in the exposure of noise-sensitive receptors to a substantial temporary increase in ambient noise levels. This impact would be **less than significant**.

Treatment activities would typically be applied in combination to treat an area. Treatment methods would vary across the program area based on the fuel conditions, site topography, accessibility, ecological conditions, and other factors. The most noise-intensive treatment activities would be prescribed burns, mechanical treatment, and manual treatment. The typical equipment used for each noise-generating treatment activity, as described in Section 2.4 of Chapter 2, "Program Description," is summarized in Table 3.13-11.

Table 3.13-11 Equipment by Treatment Activity

Treatment Activity	Equipment Types
Manual Treatments	Chainsaws (4 to 8) Masticators Cable Skidder or Grapple Skidder Fire Engine Chippers (only used occasionally) Logging Trucks (only used occasionally) Helicopter (only used occasionally)
Mechanical Treatments	Chain Saws Harvesters Forwarders Skid Steer Excavators Dozers Loaders Chippers Masticators Feller-Buncher Rubber-tired Skidder Fire Engine Chippers (only used occasionally) Logging Trucks (only used occasionally)
Prescribed Burn	Fire Engines (2 to 10 engines) Bulldozers (up to 2) Masticators or Track Chippers Water Truck

Source: Compiled by Ascent Environmental in 2019

Reference noise levels for individual equipment used in treatment activities are summarized in Table 3.13-12.

Table 3.13-12 Noise Levels from Individual Treatment Equipment

Equipment Type	Typical Noise Level (dB) at 50 Feet ¹
Chain Saw	85
Dozer	85
Shears (on Backhoe)	85
Excavator	85
Flat Bed Trucks	84
Wood Chipper	75 ²
Helicopter	83 dBA SENL @ 492 feet ³

Notes: Reference noise levels are for equipment when fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacturer-specified noise levels for each equipment type.

¹ Reference noise levels from FTA 2006 except where indicated otherwise.

² Source: Berger et. al. 2010

³ Source: Acoustical Analysis Associates 1993

Noise Generated by Ground Equipment

As shown in Table 3.13-13, noise levels generated by individual ground equipment range from 75 to 85 dB at 50 feet from the noise source. Though multiple pieces of equipment would be operated simultaneously to implement a treatment they would typically be spread out (i.e., usually more than 100 feet apart) rather than operating next to each other. This is particularly true of larger, heavy-duty off-road equipment such as masticators, chippers, bulldozers, skid steers, and excavators that could be used in mechanical treatments. This helps ensure worker safety and maximizes efficiency.

Although all pieces of heavy equipment could operate simultaneously during some treatments, because of the size of the treatment sites and the spatial operational constraints of heavy equipment—not many could operate in close proximity to one another because of function and size—it is unlikely that all pieces of equipment would operate in close proximity to each other near the boundaries of an individual treatment site. Therefore, it is unlikely that noise from multiple pieces of equipment would combine to affect the same noise-sensitive receptor for an extended period. However, this analysis conservatively assumes that four of the highest noise-generating pieces of equipment could operate simultaneously in close proximity to the same off-site noise-sensitive receptor.

Table 3.13-13 shows the combined noise level at 50 feet from the source for each noise-generating treatment activity, assuming four of the loudest pieces of equipment listed in Table 3.13-12 are operated next to each other. See Appendix D for the specific equipment assumed to be operated under each treatment activity and the associated noise calculations.

Table 3.13-13 Noise Levels from Treatment Activities

Treatment Activity	Noise Level (L _{eq} dB) at 50 feet	Noise Level (L _{max} dB) at 50 feet
Manual Treatment	87	91
Mechanical Treatment	87	91

Notes: dB = decibels; L_{eq} = Equivalent Continuous Sound Level.

Noise levels assume all equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacture-specified noise levels for each piece of heavy construction equipment. Noise levels do not include periodic and occasional helicopter use.

Source: FTA 2006

As shown in Table 3.13-14, the highest noise-generating pieces of equipment used for manual treatment or mechanical treatment produce the same noise levels, 87 dB L_{eq} and 91 dB L_{max} . The same equipment may also be involved in the preparation work conducted before a prescribed understory burn or to gather vegetative material for a pile burn. Manual treatment activity could take place on sites adjacent to residential parcels and mechanical treatments would more often be performed in locations further from residences and other developed lands. Thus, it is assumed that noise-sensitive receptors near treatment activity sites could experience elevated noise levels. However, any increase in ambient noise levels exposure at nearby receptors would be temporary and periodic.

Helicopter Noise

A helicopter may be used to remove merchantable timber from areas that cannot be easily accessed by haul trucks. The noise level generated from operating a Kaman K-Max K-1200 helicopter, which has a maximum takeoff load of 6,000 pounds, is approximately 83 dB SENL below the helicopter and at a hover distance of 492 feet above the ground (Acoustical Analysis Associates 1993:1). The equivalent continuous sound level (i.e., L_{eq}) generated by a helicopter would vary according to multiple factors, including height, speed, the amount of time it spends hovering in one place, the engine load, and relative orientation to the receptor.

Due to the inherently remote nature of the program area where helicopters might be used, it is assumed that noise-sensitive receptors would not be in close proximity to these treatment sites. Noise-sensitive receptors could be exposed to helicopter noise during approach and takeoff procedures or when it travels to and from these remote sites. Thus, a helicopter would not be used near the same noise-sensitive land use for an entire day. Additionally, for safety and visibility reasons, helicopters would be used only during the day. Therefore, overall, any exposure of sensitive receptors to noise generated by helicopter activity would be brief, infrequent, and, pursuant to SPR NOI-1, would not occur during noise-sensitive evening and nighttime hours. Also, pursuant to SPR NOI-7, helicopter flight patterns will be designed to avoid and minimize flights over residential areas, the Granite Chief Wilderness, and the Desolation Wilderness.

Conclusion

Treatment activities under the proposed program would integrate various SPRs into treatment design to reduce exposure to noise generated by treatment activities. SPRs that avoid and minimize noise exposure are SPRs NOI-1, NOI-4, NOI-6, and NOI-7. SPR NOI-1 restricts treatment activities to daytime hours if such noise would be audible to noise-sensitive receptors (e.g., residential land uses, schools, hospitals, places of worship). SPR NOI-4 would require treatment activities and landing areas be located away from sensitive receptors to the extent feasible to minimize noise exposure. SPR NOI-6 requires notification be provided to nearby sensitive receptors when heavy equipment would be used for a treatment. Additionally, SPR NOI-7 required helicopters to avoid and minimize flights over residential areas, the Granite Chief Wilderness, and the Desolation Wilderness.

SPRs to reduce noise levels during treatment would also be integrated into treatment design. SPR NOI-2 requires all equipment to be maintained appropriately and equipped with the proper intake and exhaust shrouds. SPR NOI-3 requires all equipment engine shrouds to be closed during operation. SPR NOI-5 restricts equipment idling time.

Each later treatment activity under the proposed program would be required to adhere to the applicable SPRs identified above that avoid and minimize exposure to noise and reduce noise levels during treatment. Any increase in noise exposure at nearby receptors would only occur during daytime hours; thus, avoiding the potential to cause sleep disturbance to residents during the more noise-sensitive evening and nighttime hours. Although noise-sensitive receptors near treatment sites could experience a temporary increase in ambient noise levels, this increase would not be substantial with implementation of SPRs. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.13-2: Result in a Substantial Short-Term Increase in Truck-Generated SENLs During Treatment Activities

Because treatment activities conducted under the proposed program would be required to adhere to SPR NOI-1, which limits treatment activities to daytime hours, SENLs generated by associated haul truck trips would not have the potential to result in sleep disturbance during noise-sensitive evening and nighttime hours. For this reason, implementation of the program would not result in a substantial temporary increase in SENLs during treatment activities. This impact would be **less than significant**.

Treatment activity would result in worker trips and haul truck trips to and from the treatment sites. There would be up to 10 workers per manual or mechanical treatment crew and 20–25 workers per prescribed burn treatment crew (including fire engines and support crews). Heavy-duty truck trips would be associated with the hauling of equipment, hauling of merchantable timber to mills, and hauling of chipped biomass to biomass power facilities. The number of haul trips and worker trips to and from the treatment sites would vary based on the size of the area being treated, the type of treatment being implemented, and the duration of the treatment activities. The roadway segments affected by treatment activities analyzed under the proposed program would vary by treatment site. Additionally, treatment activities under the proposed program would be temporary in nature; and thus, would not result in long-term operational increases in vehicular traffic along roadways surrounding treatment sites. Therefore, treatment-related vehicle trips would not generate a substantial permanent increase in traffic noise levels along affected roadways.

However, many of these haul truck trips would use roads that would pass by residential receptors and the event of each passing truck by could generate a SENL that could be noticeable to residents. Reference SENLs for heavy truck passbys were measured by Bollard Acoustical Consultants and reported in an EIR for a proposed commercial center (City of Ceres 2010). The outdoor measurements conducted for the study indicate that SENLs generated by heavy truck passbys range from 77 to 85 dB SENL, with a mean of 83 dB SENL at a reference distance of 50 feet. It is assumed that SENLs from engine braking (i.e., Jake braking) are at least as loud.

As described above, the SENL describes a receiver's cumulative noise exposure from a single impulsive noise event, which is a rating of a discrete noise event that compresses the total sound energy of the event into a 1-second period, measured in decibels (Caltrans 2011). These noise events can be more startling to receptors if they occur when ambient noise levels are quieter, such as during nighttime hours. Assuming the average exterior-to-interior noise level reduction of 20 dB provided by wood frame buildings with the windows closed (Caltrans 2011), the highest SENL in the interior of rooms located closer than 50 feet from a passing truck would exceed 65 dB SENL. Because some houses along routes used by haul trucks could have inhabitable rooms located closer than 50 feet to the roadway, these rooms would experience SENLs that exceed the criterion of 65 dB and, therefore, the percentage of people expected to be awakened when inside the affected homes would exceed 5 percent. However, SPR NOI-1 restricts hauling of equipment and materials to daytime hours; and thus, the haul truck passbys associated with treatment activity would not occur during more noise-sensitive evening and nighttime hours. Also, the increase in SENL-generating haul truck passbys associated with treatment activity at any particulate treatment site would be temporary. For these reasons, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

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3.14 RECREATION

This section describes existing recreation resources within the program area. The analysis includes a description of the existing environmental conditions including applicable regulatory requirements, the methods used for assessment, and the potential direct and indirect impacts of program implementation related to recreation.

No comments received on the notice of preparation were related to recreation.

TRPA has a Fair Share of Resource Capacity Threshold that serves as a policy statement to ensure a fair share of the Region's total capacity for outdoor recreation is available to the general public. Based on the most recent Threshold Evaluation Report completed in 2016, this recreation threshold is implemented (TRPA 2016:11-2). The fair share capacity of recreation would not be affected by implementation of the Tahoe PTEIR and is not discussed further.

3.14.1 Regulatory Setting

FEDERAL

U.S. FOREST SERVICE LAKE TAHOE BASIN MANAGEMENT UNIT

National Forest System lands overseen by the U.S. Forest Service (USFS) are managed on a multiple-use, sustained yield basis for production of forage, wildlife, wood, fish, water, and outdoor recreation. The mission statement for the USFS Lake Tahoe Basin Management Unit (LTBMU) states, "The Forest Service mission at Lake Tahoe is to manage, protect, and enhance the environment of this national treasure for the benefit of the people." Wilderness management and protection of forest areas containing historic, scenic, geologic, ecologic, or other special qualities, are inherent in USFS management policies. A revised Land Management Plan (also known as the Forest Plan) for the LTBMU was completed in 2015. This plan replaces the Forest Plan that was adopted in 1988. The Land Management Plan guides decisions on recreational issues. Unique to this plan is the emphasis on watershed, wildlife and fisheries restoration, and outdoor recreation with a de-emphasis on grazing and timber production.

Tahoe Regional Planning Agency

Tahoe Regional Plan

The Lake Tahoe Regional Plan contains specific goals and policies to achieve and maintain thresholds. Policies in the Recreation Element address three broad categories of recreation in the Lake Tahoe Basin: dispersed recreation, developed recreation, and urban recreation. Dispersed recreation includes such activities as hiking, jogging, primitive camping, mountain biking, nature study, fishing, cross country skiing, rafting/kayaking, and swimming. All these activities require a natural environment and some degree of solitude. Developed recreation includes marina and boat launch facilities, ski areas, campgrounds, and beaches. Urban recreation includes facilities located near urban areas, such as sports facilities, day-use areas, and recreation centers. Goals and policies for all types of recreation generally pertain to providing opportunities and sufficient capacity for high-quality recreation opportunities in a manner consistent with resource protection and overall regional capacity. Policies relevant to recreation include (TRPA 2012:5-1 through 5-8):

GOAL R-1: Encourage opportunities for dispersed recreation when consistent with environmental values and protection of the natural resources.

- ▶ **Policy R-1.5:** Off-road vehicle use is prohibited in the Lake Tahoe Region except on specified roads, trails, or designated areas where the impacts can be mitigated.

GOAL R-2: Provide high-quality recreational opportunities.

- ▶ **Policy R-2.1:** Wilderness and other undeveloped and roadless areas shall be managed for low density use.

GOAL R-5: Protect natural resources from overuse and rectify incompatibility among uses.

- ▶ **Policy R-5.1:** Recreation development in the Tahoe Region shall be consistent with the special resources of the area.
- ▶ **Policy R-5.2:** Regulate intensity, timing, type, and location of use to protect resources and separate incompatible uses.

Thresholds

TRPA has established two threshold standards for recreation, which represent minimum standards of environmental quality targets to be achieved in the region. The recreation thresholds are in the form of policy statements rather than numeric standards. As discussed above the "Fair Share of Resource Capacity" threshold is not evaluated in detail in this PTEIR. The recreation threshold standard applicable to the Tahoe PTEIR is as follows:

- ▶ **Quality Experience and Additional Access.** It shall be the policy of the TRPA Governing Body in development of the Regional Plan to preserve and enhance the high-quality recreational experience including preservation of high-quality undeveloped shorezone and other natural areas. In developing the Regional Plan, the staff and Governing Body shall consider provisions for additional access, where lawful and feasible, to the shorezone and high-quality undeveloped areas for low density recreational uses.

The Quality Experience and Additional Access Threshold consists of two parts: (1) preservation and enhancement of a high-quality recreational experience and opportunities and (2) the provision of additional access to high-quality lands for recreation, including lake access. The status of this threshold standard is evaluated by considering the quality of the experience of recreation users and by considering the availability of public access to the lake and other natural features. The quality of recreation experiences was evaluated for the 2015 Threshold Evaluation through recreation user surveys conducted by City of South Lake Tahoe, El Dorado County, Tahoe City Public Utility District, Lake Tahoe Visitors Authority, and North Lake Tahoe Resort Association. Such surveys assessed the overall satisfaction of recreation users and compare the importance of identified recreation attributes, such as condition of recreation facilities, with the experience that the recreationists perceive. The evaluation criteria for the second part of the threshold standard relies on assessing the extent of public land acquired, and the availability of additional amenities that provide public access for low density recreational uses, such as trails and trailheads.

Based on the most recent Threshold Evaluation Report completed in 2016, this recreation threshold is in attainment (TRPA 2016:11-3 and 11-11).

STATE

California Tahoe Conservancy

The California Tahoe Conservancy (Conservancy) was created in 1986 to restore and sustain a balance between the natural and human environments for public and private uses at Lake Tahoe. The Conservancy provides grants to local governments and nonprofit organizations for erosion control, public recreation and access, land acquisition, and other projects, and implements a mandate that, among other things, seeks to increase public access to the region's natural recreational opportunities.

The Conservancy's Public Access and Recreation Program implements projects that are consistent with the Tahoe Region's Environmental Improvement Program (EIP) and has four primary objectives:

- ▶ To increase and enhance significant regional public access and public recreational opportunities consistent with natural resource preservation.
- ▶ To provide a range of public access opportunities to locations with regionally significant lakefront, riverfront, cultural/historical, and natural characteristics.
- ▶ To increase regional waterborne and non-motorized transportation and recreation opportunities.
- ▶ To support environmental education, interpretation, and wayfinding efforts that promote stewardship, provide information, and lessen confusion for recreationists.

Core elements of the Public Access and Recreation Program include aiding the planning and construction or enhancement of the Region's hiking and biking trail networks through the funding of design, right-of-way acquisition, and project development. The Conservancy has contributed to the planning or completion of over 45

miles of Class 1 bike paths, Class II bike lanes, and hiking, equestrian, and cross-country ski trails. These projects connect existing trails to create user-friendly networks. Conservancy-funded projects also have constructed and improved trailheads to the backcountry, including key access points to the Tahoe Rim Trail, a continuous 150-mile hiking and equestrian trail encircling the Tahoe Basin (Conservancy 2019). The Conservancy has also funded many lakefront acquisitions and implemented lakefront recreational facility enhancement projects that improve access to the lake and provide world-class recreational amenities. In addition, the Conservancy owns several developed and undeveloped beaches primarily on the north shore and, in many cases, contracts with private, local, and state partners for ongoing management of those facilities.

LOCAL

El Dorado County General Plan

The Parks and Recreation Element of the El Dorado County General Plan includes a number of policies that address the long range provision and maintenance of parks and recreation facilities for El Dorado County residents (El Dorado County 2018). Policies focus on providing recreational opportunities and facilities on a regional scale, including trails and waterways. The following policy is the most applicable to the Tahoe PTEIR:

- ▶ **Policy 9.1.3.3:** Coordinate with Federal, State, other agencies, and private landholders to provide public access to recreational resources, including rivers, lakes, and public lands.

Placer County General Plan

The Recreation and Cultural Resources Element of the Placer County General Plan includes a number of goals and policies intended to ensure the development and maintenance of parks and recreational facilities to serve present and future residents, employees, and visitors (Placer County 2013). The following policies are most applicable to the Tahoe PTEIR:

- ▶ **Policy 5.A.13:** The County shall ensure that recreational activity is distributed and managed according to an area's carrying capacity, with special emphasis on controlling adverse environmental impacts, conflict between uses, and trespass. At the same time, the regional importance of each area's recreation resources shall be recognized.
- ▶ **Policy 5.A.22:** The County shall encourage compatible recreational use of riparian areas along streams and creeks where public access can be balanced with environmental values and private property rights such as the proposed Dry Creek Greenway.

City of South Lake Tahoe General Plan

The Recreation and Open Space Element of the City of South Lake Tahoe General Plan includes goals and policies that protect open space and enhance recreational opportunities for residents and visitors (City of South Lake Tahoe 2011). The following policies are most applicable to the Tahoe PTEIR:

- ▶ **Policy ROS-2.1: Open Space and Critical Environmental Area Protection.** The City shall use the best "un-biased" science and engineering technologies to protect and preserve open space and critical environmental areas allowing public usage if deemed reasonable.
- ▶ **Policy ROS-2.7: Publicly Owned Open Space Maintenance and Preservation.** The City shall preserve and maintain publicly-owned open spaces that provides a visual break from the urban environment as well as views of surrounding mountains, forests, and stream environment zones.
- ▶ **Policy ROS-2.8: Restoration Effort Protection.** The City shall ensure that public access does not jeopardize restoration activities and water quality treatment projects on publicly-owned open space lands.

Tahoe City Public Utility District

The Tahoe City Public Utility District (TCPUD) provides parks and recreation services to over 1,000,000 visitors and residents in the district (TCPUD 2019). The TCPUD service area extends from Emerald Bay to Dollar Hill and along the Truckee River to the Nevada County line. Recreation facilities in the district include: 64-Acre Tract, Commons Beach

Park, Elizabeth Williams Park, Kilner Park, Lake Forest Park, Marie Sluchak Community Park, Pomin Park, Skylandia Park and Beach, and 19 miles of trail network for bicyclists, joggers, and hikers (including the Truckee River Trail, West Shore Trail, and Lakeside Trail/North Shore Trail). TCPUD parks and recreation services and facilities are supported through property taxes, facility rental fees, user fees, and grants.

North Tahoe Public Utility District

The North Tahoe Public Utility District (NTPUD) was formed in 1948 under the State of California Public Utilities Code to provide sewer services to the residents of the north shore of Lake Tahoe (NTPUD 2019). In November of 1967, water services were added to the District's responsibility with the Recreation and Parks Department being created in 1968. NTPUD's service area includes the communities of Kings Beach, Tahoe Vista, Brockway Vista, Carnelian Bay, Cedar Flat, and Agate Bay. NTPUD manages and maintains the public beaches in its service area that are owned by Placer County as well as the North Tahoe Regional Park in Tahoe Vista. NTPUD parks and recreation services and facilities are supported through property taxes, donations, user fees, and facility rental fees.

3.14.2 Environmental Setting

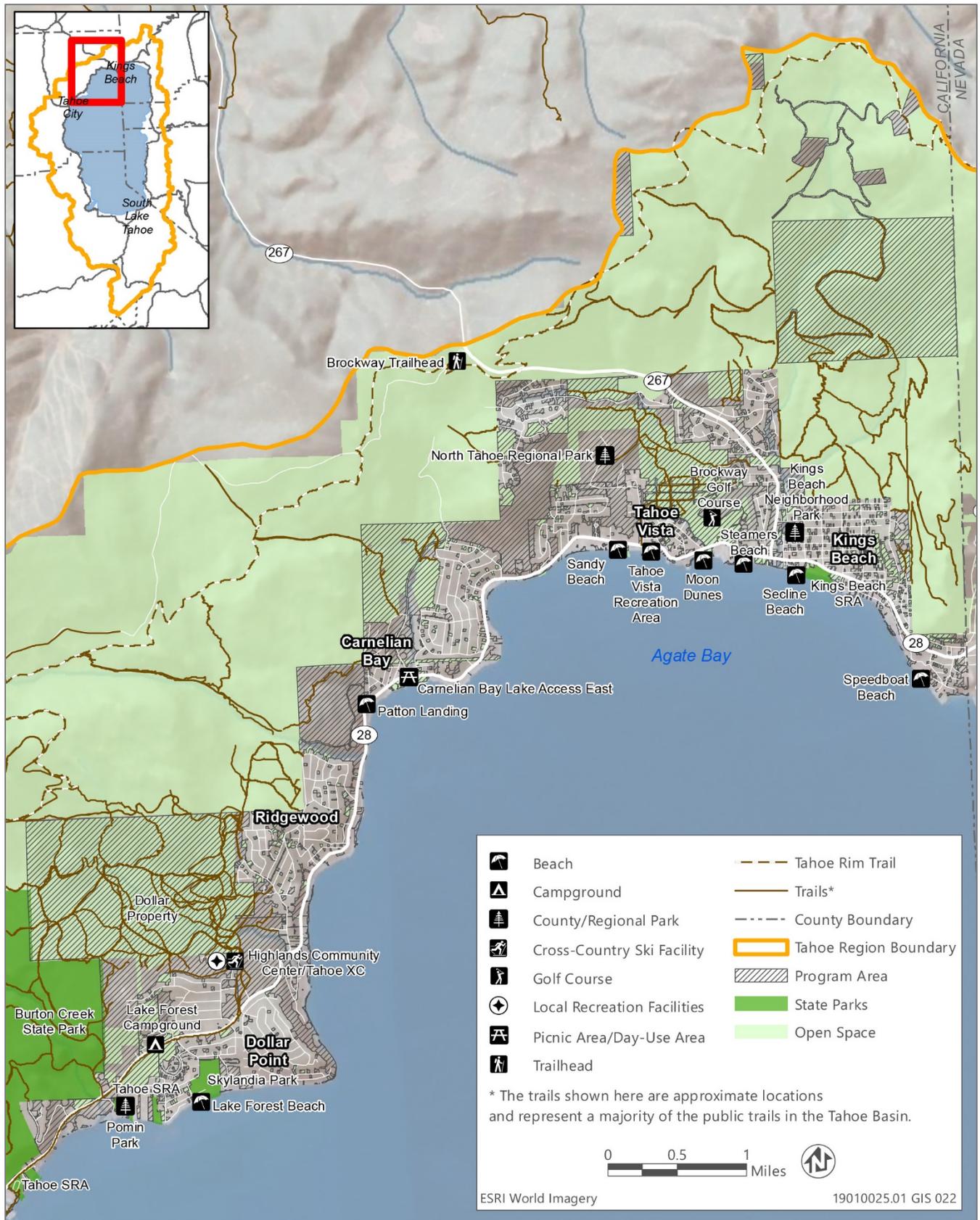
Recreational opportunities throughout the program area are available within lands owned by State agencies, local governments, special districts and non-profit organizations, and privately owned land.

The recreation opportunities in the Lake Tahoe region are abundant due to the diverse terrain and topography. Activities are generally associated with the mountains surrounding the lake (e.g., hiking, mountain biking, backpacking, snowboarding, skiing, snowmobiling, and off-road vehicle use), the lake's open water (e.g., swimming, boating, personal watercraft use, and fishing), and the shoreline (e.g., sunbathing, camping, bicycling, and sightseeing). Recreation activities also involve the use of open space areas that provide opportunities for nature viewing, relaxing, and picnicking. The greater Lake Tahoe region includes the Lake Tahoe Basin (i.e., the watershed boundary for Lake Tahoe) and surrounding areas, including Truckee, Reno, Carson City, Alpine County, eastern El Dorado County, and eastern Placer County. The Lake Tahoe Basin is home to almost 55,000 full-time residents and is a recreational destination with four to six million visitors each year (TRPA 2017), including many who live in nearby metropolitan centers within a few hours travel time.

The recreational activities in the region are a major draw. Tourism is an important part of the local economy and a high-quality recreation experience coupled with outstanding recreation opportunities is important to maintaining tourism. The peak period for recreational use at Lake Tahoe occurs during the summer months (i.e., June through August) and during the winter months (i.e., December through March). Less recreational use occurs in the shoulder seasons (i.e., spring and fall).

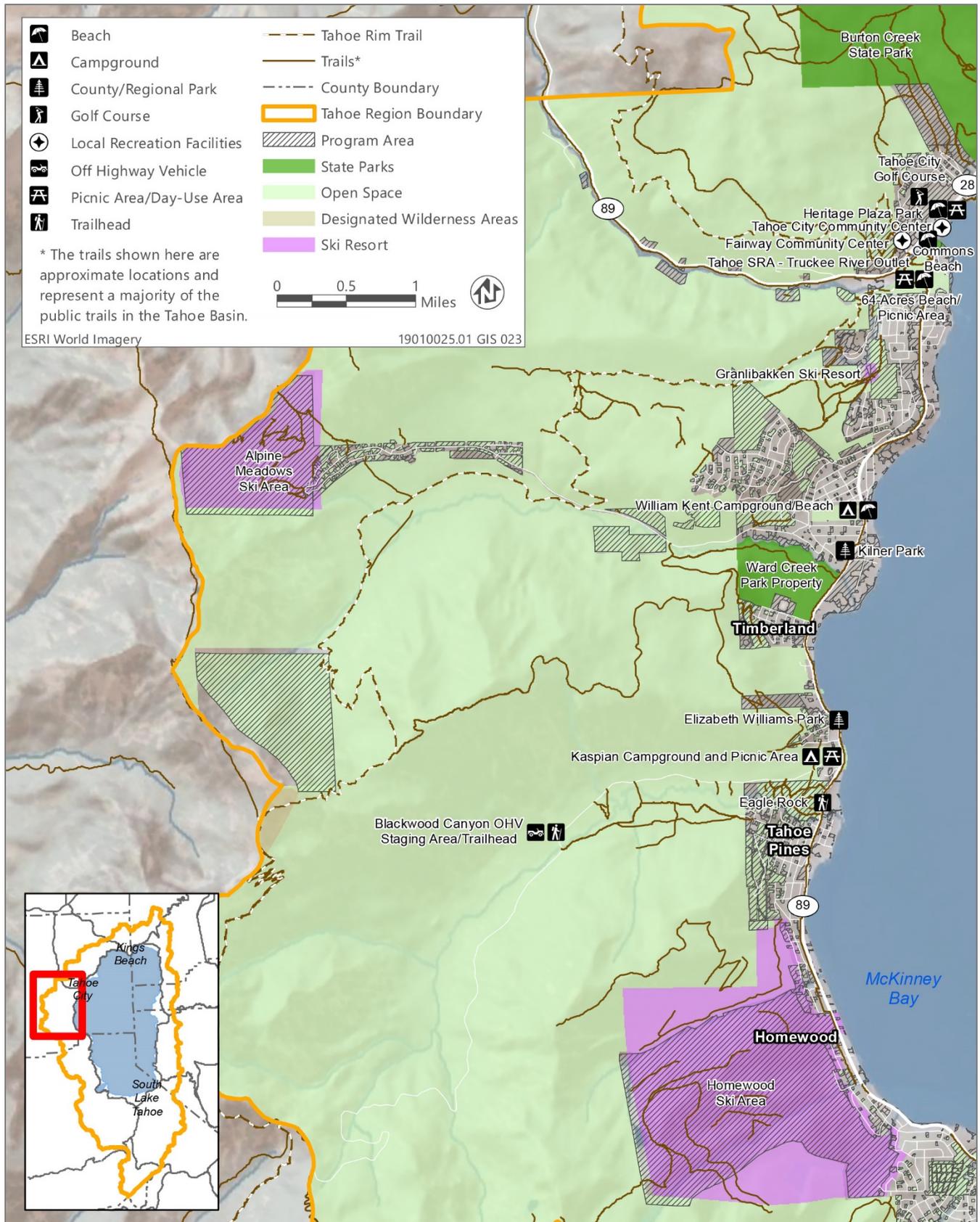
PARKS AND RECREATION FACILITIES

The program area includes park and recreation facilities, such as neighborhood parks, regional parks, golf courses, and a campground that are owned and managed by TCPUD, NTPUD, City of South Lake Tahoe, and Tahoe Paradise Recreation and Park District. These recreation resources include the North Tahoe Regional Park, Lake Forest Campground, Pomin Park, Kings Beach Neighborhood Park, Tahoe City Golf Course, and Brockway Golf Course in the north shore (Figures 3.14-1 and 3.14-2). Near the west shore, Kilner Park, Elizabeth Williams Park, and Marie Sluchak Park are within the program area (Figures 3.14-2 and 3.14-3). In the south shore area, these recreation resources include Campground by the Lake, Bijou Community Park, Bijou Bike Park, Bijou Golf Course, Van Sickle Bi-State Park, Tahoe Paradise Park, and Tahoe Pines Day Use Area (Figures 3.14-4 through 3.14-6). The program area also includes portions of some ski areas, including Tahoe Cross-Country Ski Area, Homewood Ski Area, Alpine Meadows Ski Area, Granlibakken Ski Resort, and Heavenly Valley Ski Resort (Figures 3.14-1, 3.14-2, and 3.14-5). These recreation resources provide opportunities for a wide range of recreation activities that may rely on developed facilities, such as picnic tables, playgrounds, ballfields, golf courses, and groomed ski runs. Some of these resources may also provide access to hiking and mountain biking trails in surrounding areas. Although recreation resources that include landscaped or developed facilities, such as ball fields and golf courses, may be within the program area, these areas would not receive fuels treatments.



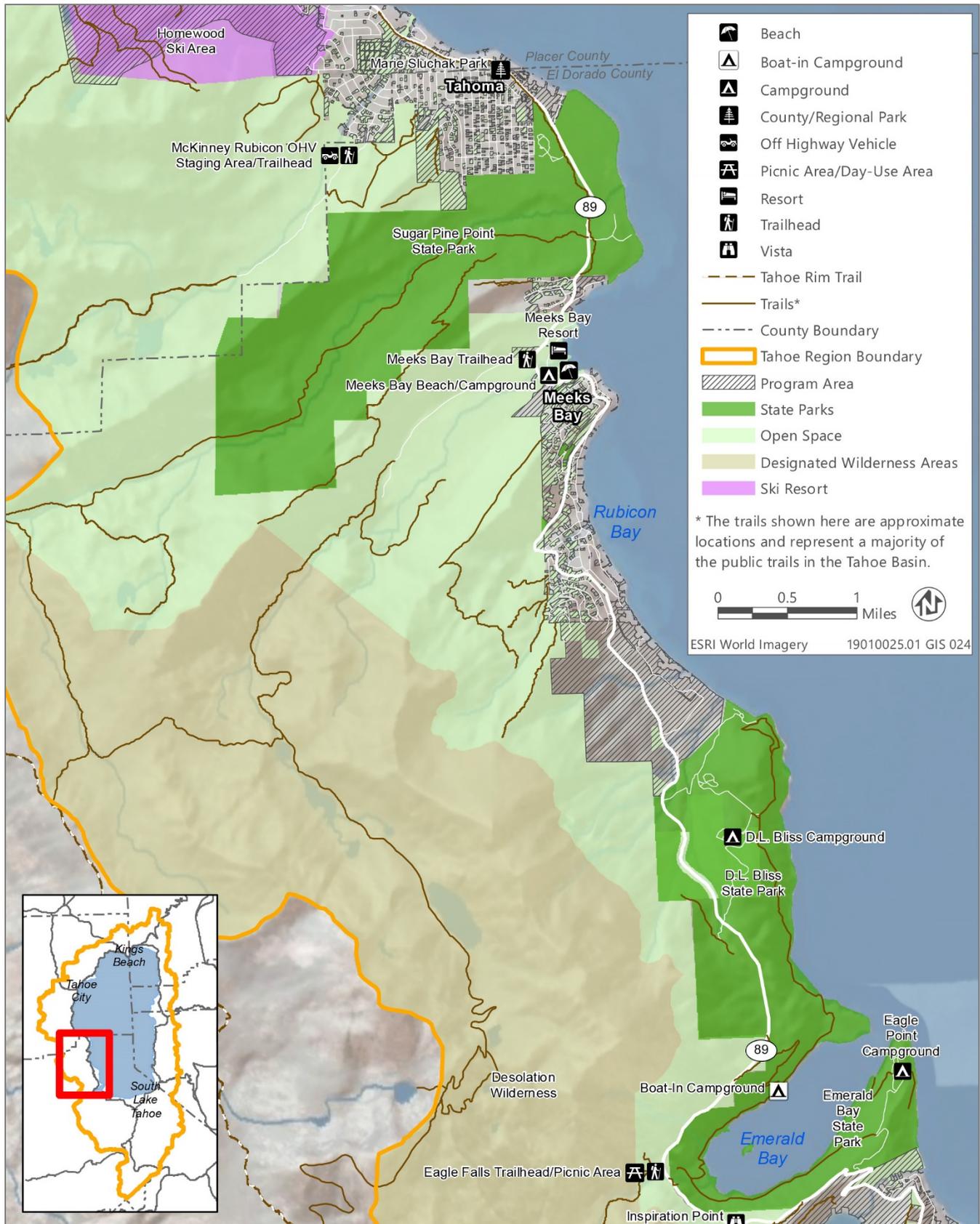
Source: Compiled by Ascent Environmental in 2019 using data provided by TRPA, the Conservancy, and Design Workshop

Figure 3.14-1 Park, Recreation, and Trail Facilities in the Program Area: Kings Beach to Dollar Point



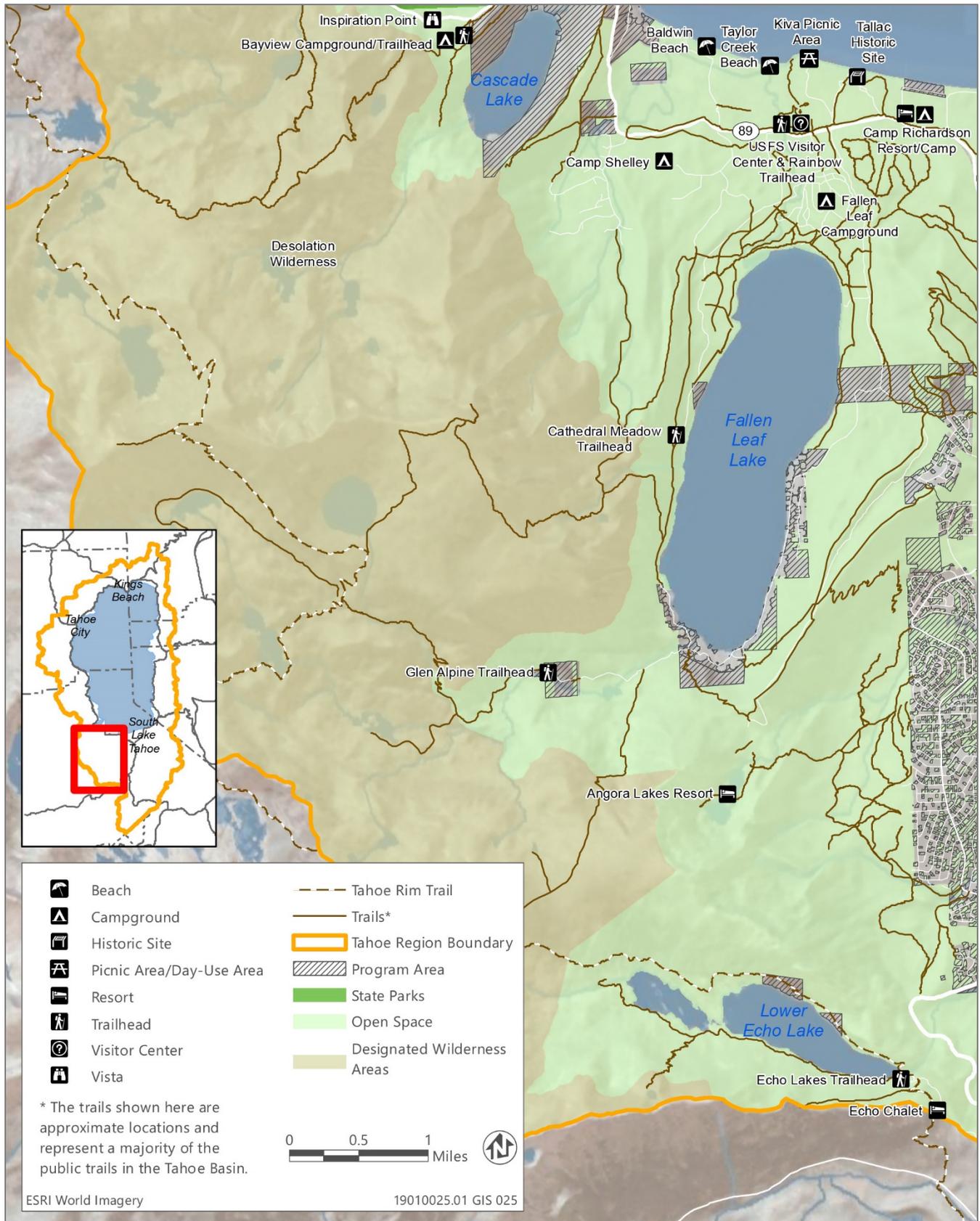
Source: Compiled by Ascent Environmental in 2019 using data provided by TRPA, the Conservancy, and Design Workshop

Figure 3.14-2 Park, Recreation, and Trail Facilities in the Program Area: Tahoe City to Homewood



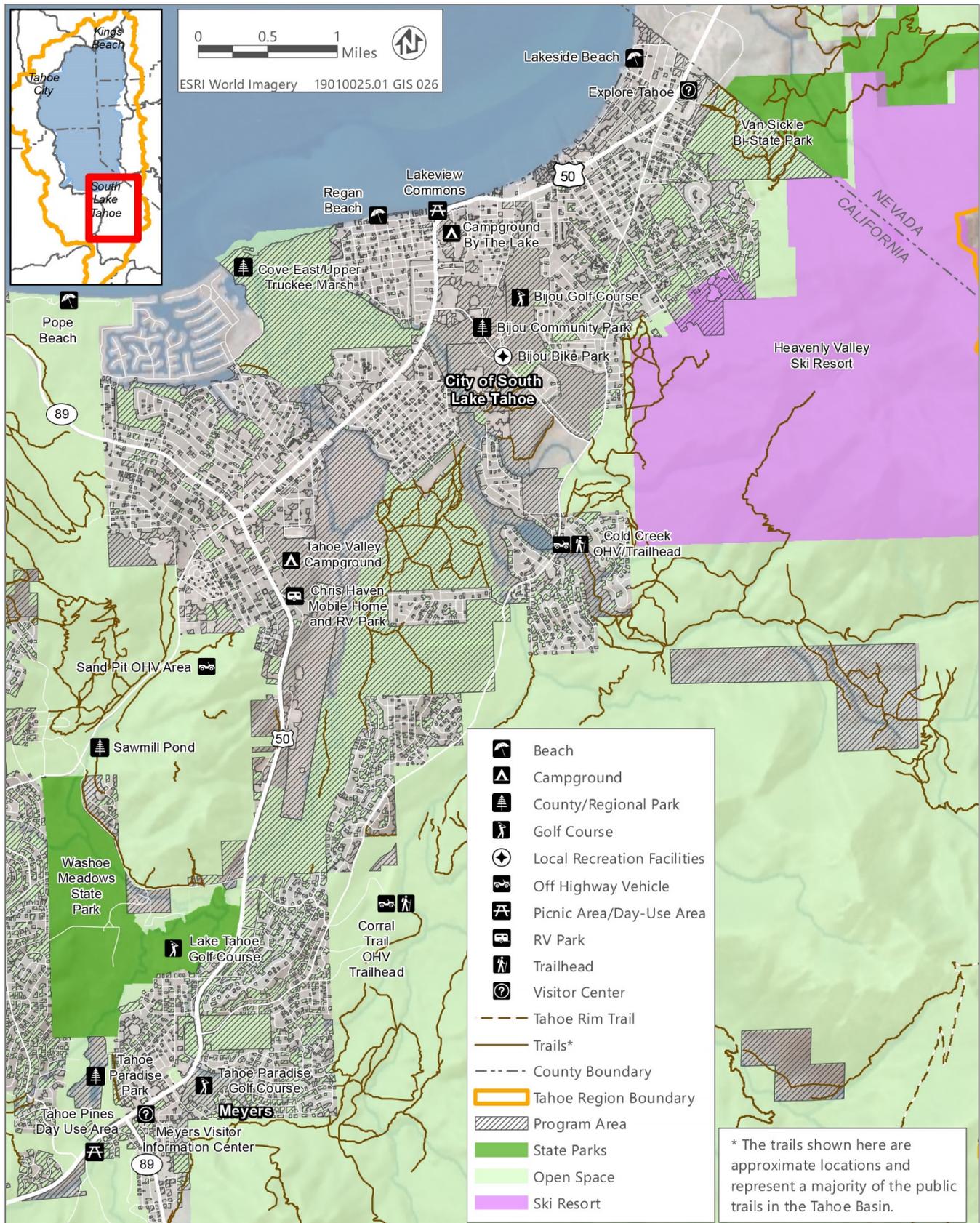
Source: Compiled by Ascent Environmental in 2019 using data provided by TRPA, the Conservancy, and Design Workshop

Figure 3.14-3 Park, Recreation, and Trail Facilities in the Program Area: Tahoma to Emerald Bay



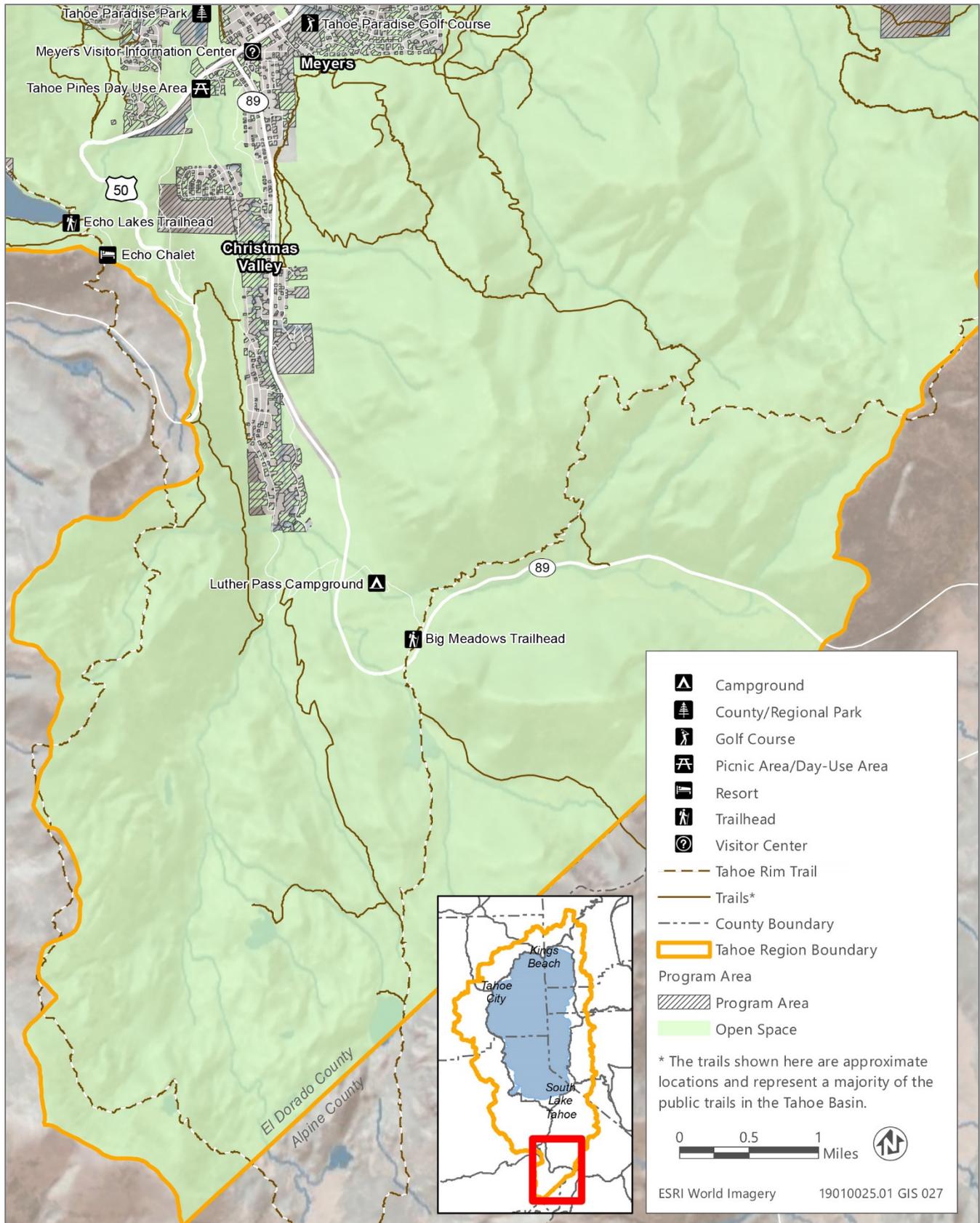
Source: Compiled by Ascent Environmental in 2019 using data provided by TRPA, the Conservancy, and Design Workshop

Figure 3.14-4 Park, Recreation, and Trail Facilities in the Program Area: Cascade Lake to North Upper Truckee



Source: Compiled by Ascent Environmental in 2019 using data provided by TRPA, the Conservancy, and Design Workshop

Figure 3.14-5 Park, Recreation, and Trail Facilities in the Program Area: South Lake Tahoe



Source: Compiled by Ascent Environmental in 2019 using data provided by TRPA, the Conservancy, and Design Workshop

Figure 3.14-6 Park, Recreation, and Trail Facilities in the Program Area: Christmas Valley

BICYCLE AND PEDESTRIAN TRAILS

The program area contains an extensive network of hiking and mountain biking trails (Figures 3.14-1 through 3.14-6). A small portion of the Tahoe Rim Trail is located within the program area near Kings Beach northeast of State Route 267, Conservancy-owned land in upper Ward Creek watershed, and on the north side of Lower Echo Lake (Figures 3.14-1, 3.14-2, and 3.14-4). Other portions of the program area that contain a number of trails include around North Tahoe Regional Park, through the Conservancy's Dollar Property, within Alpine Meadows Ski Area and Homewood Ski Area, near Cascade Lake and Fallen Leaf Lake, northeast of the Lake Tahoe Airport, and in Van Sickle Bi-State Park.

SPECIAL EVENTS

Public lands in the program area are used for a variety of special events in addition to recreation uses. Special events include trail running and mountain bike races and environmental, educational, and volunteer events (see Table 3.14-1). The Conservancy receives a number of requests for other license agreements for temporary activities on their lands within the program area, which are listed in Table 3.14-1, below. Other public events and activities that occur within the program area are also identified. Additional special events could be proposed within the program area in the future.

Table 3.14-1 Typical Special Events and Activities on Public Lands in the Program Area

Special Event and Activities	Location ¹	Timing
Burton Creek Trail Run	Conservancy Dollar Property	June
Lake Tahoe Mountain Bike Race	Conservancy Dollar Property	June
Nav-X Bike Race	Conservancy Dollar Property	June
XTERRA Tahoe City Race	Conservancy Dollar Property	June
Big Chief 50K Trail Run	Conservancy Dollar Property	July
Tahoe Trail 100K Mountain Bike Race	Conservancy Dollar Property	July
NV Interscholastic Cycling Race	Conservancy Dollar Property	August
Tahoe 200 Running Festival	Homewood Mountain Resort, throughout the Tahoe Region	September
Great Trail Run	Dollar Property	October
Great Ski Race	Tahoe Cross-Country Ski Area	March
TRPA noise monitoring	Several locations (typically urban lots)	Summer
Native seed collection	Several riparian areas in the South Shore	Summer
Guided hikes	Tahoe Rim Trail	Summer
Trail workdays	Tahoe Rim Trail	Spring – Fall
Commercial photo shoots	Conservancy Dollar Property	Varies
Non-profit educational events	Eagle Rock	Varies
Volunteer clean-up/restoration events	Upper Truckee Marsh/Cove East	Varies

¹ Some events may extend beyond the location identified here.

Source: Compiled by Ascent Environmental and Conservancy in 2019

RECREATION USER SATISFACTION

TRPA Recreation Surveys

In 2018, TRPA conducted a sustainable recreation user survey to gauge visitor experience. Over 380 individuals participated in the survey (TRPA 2018). Responses were received related to a number of topics, such as which area of Lake Tahoe do recreation users spend the most time, means of transportation to their recreation destination, and factors that influence decisions about what areas to visit or recreation activities to participate. The survey was also

intended to obtain feedback on the quality of recreation users' experience and the perception of negative factors that may have affected the quality of recreation experiences. Most of the responses to the survey stated that their experience in the outdoors at Lake Tahoe was extremely enjoyable to very enjoyable, indicating that recreation users were satisfied with their outdoor experience. The most common factors that affected recreation users' experiences included the amount of traffic on the roads, availability of parking, and visitor crowding (TRPA 2018).

U.S. Forest Service 2015 National Visitor Use Monitoring Report

The USFS develops estimates of the volume of recreation use on national forests through the National Visitor Use Monitoring program. Onsite surveys are conducted and help show the characteristics of recreation-related visits to national forests. The recreation user data collected through the National Visitor Use Monitoring is for use of National Forest System lands within the Tahoe Basin, but because the types of uses and areas in the LTBMU are similar to those that occur within portions of the program area, the survey results are representative of similar types of activities on forested lands.

The surveys found that 84 percent of respondents were very satisfied with their overall recreational experience (USFS 2016). This level of satisfaction is higher than the national average of 81 percent of respondents who were very satisfied with their recreational experience for all National Forest lands between 2005 and 2009 (USFS 2017). The visitor use surveys also reported users' satisfaction with various factors affecting their recreational experience in undeveloped areas. Some factors that were surveyed for user satisfaction that are relevant to the types of recreation experiences within the program area and the percent of visitors that were satisfied or very satisfied with those factors, include: condition of environment (77.1 percent), feeling of safety (85.7 percent), scenery (93.4 percent), and trail condition (72.1 percent; USFS 2016).

3.14.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

The following analysis assesses the environmental effects of the proposed program with respect to the existing recreation uses and facilities in the program area and changes in public access to these recreation resources. This analysis is based on review of existing documents, policies, ordinances, and other regulations pertinent to recreation. Significance determinations account for the influence of relevant SPRs, which are incorporated into treatment design and listed below (also see Appendix B).

- ▶ **SPR REC-1 Notify Recreational Users of Temporary Closures:** If a treatment activity would require temporary closure of a public recreation area or facility, the project proponent will coordinate with the owner/manager of that recreation area or facility (e.g., Tahoe Rim Trail Association, Tahoe Cross-Country Ski Area, Homewood Mountain Resort, Alpine Meadows Ski Resort, TCPUD, NTPUD). If temporary closure of a recreation area or facility is required, the project proponent will work with the owner/manager to post notifications of the closure at least 2 weeks prior to the commencement of the treatment activities. Additionally, prior to implementation of an individual fuel treatment in an area 10 acres or larger or would occur for longer than three days, the project implementer would be required to post a notice in a public location near the treatment area, such as at the nearest trailhead or parking area.
- ▶ **SPR REC-2 Coordination with Special Event Organizers:** The project proponent shall coordinate implementation of treatment activities with special event organizers, such as Big Blue Adventure, North Tahoe High School, Youphoria Productions, Homewood Mountain Resort, and Tahoe Rim Trail Association and any other organizers that seek license agreements or special use permits for the use of public lands in the program area. If a treatment activity could interfere with a special event (e.g., trail or mountain bike race, volunteer event, etc.), the project proponent shall notify special event organizers at the earliest possible date once the treatment implementation date and road and trail closure dates have been identified. The project proponent will coordinate with event organizers to identify the trails and timing associated with planned special events and determine whether events

could proceed on the site (e.g., if they would occur outside periods of operations) or help identify other locations for events on other nearby public land.

- ▶ **SPR REC-3 Post-Treatment Removal of Skid Trails:** Skid trails created as part of treatment activities shall be covered with mulch from mastication operations and, if requested by responsible agency staff, re-contoured to promote natural drainage, de-compacted, and/or reseeded. This SPR applies only to mechanical treatment activities.
- ▶ **SPR REC-4 Post-Treatment Restoration of Existing Trails and Roads Affected by Treatment Activities:** The project implementer shall conduct minor trail rehabilitation activities, as needed, to maintain public use of any existing trails for recreation users such as cross-country skiers, hikers, mountain bicyclists, and runners. Additional trail rehabilitation could include removing slash and re-contouring the trail, if needed, to restore it to pre-treatment conditions. The project implementer shall repair and rehabilitate any incidental damage caused by this project to any existing trails and roads, such as if they are used as a skid trail or are within an active treatment area, to ensure that existing roads and trails are open and free of masticated material or other debris after the treatment area is reopened for public use.
- ▶ **SPR REC-5 Maintain Access to Existing Trailheads:** During non-operational periods, the project implementer shall ensure that trailhead access points shall be open to public use and not blocked with equipment.
- ▶ **SPR AES-1 Vegetation Thinning and Edge Feathering:** The project implementer will thin and feather adjacent vegetation to break up or screen linear edges of the clearing and mimic forms of natural clearings as reasonable or appropriate for vegetation conditions. In general, thinning and feathering in irregular patches of varying densities, as well as a gradation of tall to short vegetation at the clearing edge, will achieve a natural transitional appearance. The contrast of a distinct clearing edge will be faded into this transitional band. This SPR only applies to mechanical and manual treatment activities.
- ▶ **SPR AES-2 Avoid Staging within Viewsheds:** The project implementer will store all treatment-related materials, including vehicles, treatment activity debris, and equipment, outside of the viewshed of public trails, parks, recreation areas, and roadways to the extent feasible. The project implementer will also locate materials staging and storage areas where they will minimize or avoid visual impacts.
- ▶ **SPR AES-3 Maintain Vegetation Screening:** The project implementer will evaluate existing vegetative screening prior to project implementation, consider the potential effects of vegetation removal both positive (e.g., new lake views) and negative (e.g., new views of development). Select vegetation for removal to enhance desirable views of natural features and preserve sufficient strategically located vegetation within, at the edge of, or adjacent to treatment areas to screen undesirable views from public trails, parks, recreation areas, and roadways as reasonable or appropriate for vegetation conditions while still meeting project objectives.
- ▶ **SPR AQ-1 Comply with Air Quality Regulations:** The project implementer will comply with the applicable air quality requirements of air districts within whose jurisdiction the treatment activity is located. Requirements specific to PCAPCD and EDCAQMD are detailed above in Section 3.5.1, "Regulatory Setting."
- ▶ **SPR AQ-2 Submit Smoke Management Plan:** The project proponent or project implementer will submit a smoke management plan for all prescribed burns greater than 10 acres or estimated to produce more than 1 ton of particulate matter, in accordance with 17 CCR Section 80160(b). Burning will only be conducted in compliance with the burn authorization program of the applicable air district(s) having jurisdiction over the treatment area. This SPR applies to pile and understory burning.
- ▶ **SPR AQ-3 Create Burn Plan:** The project proponent or project implementer will create a burn plan using the CAL FIRE burn plan template for all prescribed burns. The burn plan will include a fire behavior model output of First Order Fire Effects Model and BEHAVE or other fire behavior modeling simulation and that is performed by a qualified fire behavior technical specialist that predicts fire behavior, calculates consumption of fuels, tree mortality, predicted emissions, greenhouse gas emissions, and soil heating. The project implementer will minimize soil burn severity from understory burning to reduce the potential for runoff and soil erosion. The burn

plan will be created with input from a qualified technician or certified State burn boss. This SPR applies to pile and understory burning.

- ▶ **SPR AQ-4 Minimize Dust:** To minimize dust that has the potential to transport fine sediment to waterbodies during treatment activities, the project implementer will implement the following measures:
 - Limit the speed of vehicles and equipment traveling on unpaved areas to 15 miles per hour to reduce fugitive dust emissions, in accordance with the California Air Resources Board (CARB) Fugitive Dust protocol.
 - If road use creates excessive dust, the project implementer will wet appurtenant, unpaved, dirt roads using water trucks or treat roads with a non-toxic chemical dust suppressant (e.g., emulsion polymers, organic material) during dry, dusty conditions. Any dust suppressant product used will be environmentally benign (i.e., non-toxic to plants and will not negatively impact water quality) and its use will not be prohibited by CARB, U.S. Environmental Protection Agency (EPA), or the State Water Resources Control Board (SWRCB). The project implementer will not over-water exposed areas such that the water results in runoff. The type of dust suppression method will be selected by the project implementer based on soil, traffic, site-specific conditions, and air quality regulations.
 - Remove visible dust, silt, or mud tracked-out on to public paved roadways where sufficient water supplies and access to water is available. The project implementer will remove dust, silt, and mud from vehicles at the conclusion of each workday, or at a minimum of every 24 hours for continuous treatment activities, in accordance with Vehicle Code Section 23113.
 - Suspend ground-disturbing treatment activities, including land clearing and bulldozer lines, when there is visible dust transport (particulate pollution) outside the treatment boundary, if the particulate emissions may "cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any of those persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property," per Health and Safety Code Section 41700.
- ▶ **SPR AQ-5 Prescribed Burn Safety Procedures:** Prescribed burns planned and managed by non-CAL FIRE crews will follow all safety procedures required of a CAL FIRE crew, including the implementation of an approved Incident Action Plan (IAP). The IAP will include the burn dates; burn hours; weather limitations; the specific burn prescription; a communications plan; a medical plan; a traffic plan; and special instructions such as minimizing smoke impacts to specific local roadways. The IAP will also assign responsibilities for coordination with the appropriate air district, such as conducting onsite briefings, posting notifications, weather monitoring during burning, and other burn related preparations. This SPR applies to pile and understory burning.
- ▶ **SPR NOI-2 Equipment Maintenance:** The project implementer will require that all powered treatment equipment and power tools will be used and maintained according to manufacturer specifications. All diesel- and gasoline-powered treatment equipment will be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations.
- ▶ **SPR NOI-3 Engine Shroud Closure:** The project proponent will require that engine shrouds be closed during equipment operation.
- ▶ **SPR NOI-5 Restrict Equipment Idle Time:** The project proponent will require that all motorized equipment be shut down when not in use. Idling of equipment and haul trucks will be limited to 5 minutes.
- ▶ **SPR NOI-7 Restrict Helicopter Flight Patterns:** Helicopter flight patterns will be designed to avoid and minimize flights over residential areas, the Granite Chief Wilderness, and the Desolation Wilderness. This would apply only to manual and mechanical treatments.
- ▶ **SPR TRAN-1 Implement Traffic Control during Treatments:** Prior to initiating treatment activities, the project proponent will work with the agency(ies) that have jurisdiction over affected roadways to determine if a Traffic Management Plan (TMP) is needed. A TMP will be needed if traffic generated by the treatment activity would result in obstructions, hazards, or delays exceeding applicable jurisdictional standards along access routes for

individual treatment activities. If needed, a TMP will be prepared by either the project proponent or project implementer to provide measures to reduce potential traffic obstructions, hazards, and service level degradation along affected roadway facilities. The project implementer will carry out the measures identified in the TMP. The scope of the TMP will depend on the type, intensity, and duration of the specific treatment activities under the Tahoe PTEIR. Measures included in the TMP could include construction signage to provide motorists with notification and information when approaching or traveling along the affected roadway facilities, flaggers for lane closures to provide temporary traffic control along affected roadway facilities, treatment schedule restrictions to avoid time periods of peak vehicle traffic, haul-trip, delivery, and/or commute time restrictions that would be implemented to avoid peak traffic days and times along affected roadway facilities. If the TMP identifies impacts on transportation facilities outside of the jurisdiction of the project proponent, the TMP will be submitted to the agency with jurisdiction over the affected roadways prior to commencement of treatment activities.

THRESHOLDS OF SIGNIFICANCE

Significance criteria relevant to recreation are summarized below. Appendix G of the State CEQA Guidelines, applicable TRPA threshold standards, the recreation criteria from the TRPA Initial Environmental Checklist, and other relevant information were considered in the development of the significance criteria. An impact would be considered significant if it would:

- ▶ increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;
- ▶ include recreational facilities or require the construction or expansion of recreational facilities that have an adverse physical effect on the environment; or
- ▶ substantially degrade the quality of recreation experience for recreation user groups such as hikers and mountain bicyclists.

IMPACT ANALYSIS

Impact 3.14-1: Increase Demand For and Use of Recreation Facilities That Results In Physical Deterioration of Recreation Facilities

Implementation of the proposed program would result in short-term, temporary closures of trails, which could cause trail users (e.g., hikers and mountain bicyclists) to increase recreation demand on other nearby trails within the program area and surrounding Tahoe region. Because of the amount of recreation resources and trails available in the program area and Tahoe region, a short-term, temporary shift in recreation user demand for hiking and biking trails would not result in the concentration of recreation users on any single recreation facility such that new or expanded facilities would be required. Furthermore, this short-term increase in use of trails in other areas would not result in substantial physical deterioration or acceleration of physical deterioration of those resources. In compliance with SPRs included in the Tahoe PTEIR, project implementers would be required to repair or rehabilitate trails from any damage caused by treatment activities. Thus, implementation of the Tahoe PTEIR would not result in substantial physical deterioration or acceleration of physical deterioration of existing trails or other recreational facilities. This impact would be **less than significant**.

The proposed program would implement a long-term, vegetation management program for forest fuel reduction that includes initial treatments of individual project areas on larger-acreage parcels of public land and publicly or privately owned developed parcels and undeveloped urban lots within and surrounding developed neighborhoods that would be completed over 15 years with ongoing follow-up treatments. The duration of individual fuels treatment activities that could result in temporary trail closures could range from several days to several weeks depending on the size of the project. A maximum of up to 10 active treatments would reasonably be expected to occur at one time during implementation of the proposed program. As described above under Section 3.14.2, "Environmental Setting,"

the program area contains extensive hiking, mountain biking, and cross-country ski trails in addition to other developed recreation resources (see Figures 3.14-1 through 3.14-6). Implementation of the Tahoe PTEIR would temporarily restrict public access within individual treatment areas during active operations for individual fuels treatment activities. Because forested areas would be affected by implementation of the proposed program, trails and open space areas that provides opportunities for nature viewing, relaxing, and picnicking would generally be the only recreation resources that would be directly affected. Fuels treatments could occur in the Lake Forest Campground and Campground by the Lake, resulting in temporary closures of portions or all of the campgrounds if treatments do not occur outside of the operational period for the campgrounds. Thus, there could be short-term, minor increases in recreation demand on nearby trails or open space areas as a result of forest closures resulting from implementation of fuels treatment activities. Fuels treatments would not be anticipated to occur within landscaped and developed recreation or park facilities, such as golf courses, ball fields, North Tahoe Regional Park, Pomin Park, and Bijou Bike Park.

The program area and the surrounding Tahoe region have many miles of trails for hikers and mountain bikers to use (see Figures 3.14-1 and 3.14-2). There is no evidence to suggest a short-term increase in use of trails in other areas within or near the program area would result in substantial physical deterioration or accelerating deterioration of those resources. To help disseminate information about trail or recreation area closures, project implementers or project proponents would implement SPR REC-1 and notify owners or managers of recreation facilities or areas, such as Tahoe Rim Trail Association, TCPUD, NTPUD, Homewood Mountain Resort, and Alpine Meadows Ski Resort, that would be closed during treatment activities. The project implementer would also post notices of upcoming closures in public locations near the treatment area, such as at the nearest trailhead or parking area. Additionally, implementation of SPR REC-5 would require that during non-operational periods, project implementers ensure that trailhead access points be open to public use and not blocked with equipment.

Because of the amount of recreation resources and trails available in the program area and greater Tahoe region, a shift in recreation user demand for hiking and biking trails during individual fuel reduction treatments would not result in the concentration of recreation users on any single recreation facility such that new or expanded facilities would be required. Additionally, the shift in demand would be temporary and project implementers would be required to conduct repair or rehabilitation of any damage caused by treatment activities. Thus, implementation of the Tahoe PTEIR would not result in substantial physical deterioration or acceleration of physical deterioration of existing trails or other recreational facilities. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.14-2: Result In Adverse Physical Effects On the Environment From New or Expanded Recreational Facilities

Implementation of the proposed program would not result in the construction of any new recreational facilities. Treatment activities could remove vegetation that currently serves as a barrier to vehicular access or could include construction of features such as landings, skid trails, or improvements to existing roads that would create new access points for recreational use of motor vehicles and off-highway vehicles (OHVs). These new access points could increase the long-term unmanaged use of motor vehicles and OHVs in the program area. This increase in OHV use and recreation user motor vehicle access could result in adverse physical effects on the environment. This impact would be **potentially significant**.

With implementation of Mitigation Measure 3.14-2, the project implementer would install physical barriers to restrict new access by motor vehicles or OHVs, which would reduce this impact to **less than significant**.

The proposed program would not result in the construction of any new recreational facilities and would not increase demand for other parks and open space facilities, such that new or expanded facilities would be required and there would be no subsequent adverse physical effect on the environment. Operation of treatment equipment, such as a harvester, forwarder, or others (see Figures 2-9 through 2-13), would only use established roads within the program

area. As few skid trails as possible would be used or created to get materials to landings. With implementation of SPR REC-3 and SPR REC-4, included in the proposed program, project implementers would restore any disturbed trails to pre-project conditions, which could include covering skid trails with mulch from mastication operations, removing slash, and re-contouring trails and skid trails, as needed. These measures would help deter motor vehicle and OHV access to treatment areas that did not contain recreation user access before the treatment. Any potential adverse physical effects on the environment that could occur as a result of disturbing and restoring trails, including soil erosion, are addressed as part of the proposed program in the appropriate resource sections of this PTEIR (see Section 3.8, "Geology, Soils, and Land Capability," and Section 3.11, "Hydrology and Water Quality").

Treatment activities could remove vegetation that currently serves as a barrier to vehicular access. Treatment activities could also result in the creation of landings, skid trails, improvements to existing roads, or other features that provide new access points for recreation users of motor vehicles or OHVs. Landings would be used by project vehicles, such as logging trucks, chip vans, and other treatment equipment to access individual treatment areas. Existing landings or existing clearings outside of stream environment zones (SEZs) and waterbody buffer zones (WBBZs) in the program area would be used whenever feasible. New landings could be created or modified to accommodate project vehicles and equipment. New landings, skid trails, or improvements to existing roads established for individual fuels treatments could be used as new access points for recreation use of motor vehicles and OHVs after completion of the treatment project. These new access points could increase the long-term unmanaged use of motor vehicles and OHVs in the program area and/or provide unmanaged access to nearby forest lands. This increase in OHV use and recreation user motor vehicle access could result in adverse physical effects on the environment, such as soil erosion or water quality impacts. Therefore, this impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure 3.14-2: Install Barriers to Prevent New Motor Vehicle Access

To eliminate the potential for new motor vehicle access points into the forest at new landings and skid trails created in the program area, the project implementer (e.g., Licensed Timber Operator, forestry contractor, or public agency field crew, such as the California Conservation Corps, Conservancy Forestry Crews, or Fire District Crews) shall establish physical barriers adjacent to new landings, or skid trails where they access the forest from existing roads or trails to discourage post-treatment motor vehicle access to the project area. The project implementer shall also revegetate and spread mulch and/or slash in the landing area or along skid trails to reduce the visibility of disturbance of the cleared area and expedite restoration. These physical barriers and restoration activities shall be established within 15 days of completion of operations in the treatment unit. The types of physical barriers that could be used include boulders, split rail fencing, or other permanent physical features that are visually compatible with the forest setting.

Significance after Mitigation

Implementation of Mitigation Measure 3.14-2 would reduce the potential for adverse environmental effects resulting from unmanaged motor vehicle use in the program area. Mitigation Measure 3-13-2 would accomplish this by creating permanent, physical barriers that eliminate the potential for motor vehicle entrance into a treatment unit through landing areas or skid trails created by a treatment activity. This impact would be reduced to a **less-than-significant** level.

Impact 3.14-3: Change the Availability of Recreation Opportunities and Quality of Recreation User Experience

Implementation of treatment activities within the program area could result in reducing access to recreation opportunities and the quality of recreation user experience. Factors affecting the availability of recreation opportunities and quality of recreation user experience include short-term, temporary closures of recreation resources; displacement of special events and other temporary uses; degradation of recreation resources; and nuisance impacts related to aesthetics, air quality, noise, and transportation. The number and variety of recreation resources available within and near the program area that may provide recreation opportunities while treatment activities temporarily close some recreation resources would provide ample opportunities for recreation activities while some areas may be closed. Additionally, implementation of SPRs would avoid and minimize disruption to recreation activities. SPRs included in the Tahoe PTEIR, compliance with regulatory requirements, and mitigation measures would minimize nuisance effects associated with aesthetics, air quality, noise, and transportation impacts. For these reasons, implementation of the proposed program would result in a **less-than-significant** impact related to adverse effects on the change in availability of recreation opportunities and quality of recreation user experience.

Implementation of the proposed program could affect the quality of recreation user experience in the program area, which could be influenced by a number of factors, including short-term, temporary closures of recreation resources (and associated degree of crowding and congestion experienced by recreation users); displacement of special events and other temporary uses; and nuisance impacts related to aesthetics, air quality, noise, and transportation.

As described above, the TRPA threshold related to quality experience and additional access for recreation is in attainment. Additionally, TRPA and USFS recreation user survey results indicate that the majority of recreation user experiences are enjoyable and they are satisfied with their overall recreation experience (TRPA 2018, USFS 2016). While the Threshold Evaluation and recreation surveys indicate the quality of recreation user experience for areas beyond the program area within the Tahoe Basin, they are representative of the quality of recreation experiences for the range of recreation opportunities that are available in the program area.

Displacement of Recreation Users

Implementation of the proposed program would result in short-term, temporary closures that would make some recreation resources, such as trails and open space areas, unavailable to local or visiting recreation users. The duration of the closure could be as short as a few days or as long as a few weeks depending on the size of the treatment area. Up to 10 individual treatment projects could occur concurrently within the program area. While treatments could occur year round depending on the type of treatment activity and weather and site conditions, the majority of treatment activities would occur during spring, summer, and fall months when roads and trails are active with hikers, bicyclists, runners, and special events. Short-term, temporary closure of recreation resources could interfere with use of trails or open space areas by these types of recreation users potentially degrading the quality of recreation user experience. However, as shown in Figures 3.14-1 through 3.14-6, the program area and surrounding areas within the Tahoe region contain extensive open space areas, including U.S. Forest Service land, and trails that would be available for recreation activities that might be temporarily displaced for a short period of time during treatment activities. Temporary displacement of recreation users to other trails or recreation resources in the area could result in a greater number of recreation users in those areas. Because of the amount of recreation resources available and the temporary, short-term nature of the closures, crowding in these areas is not anticipated to occur such that the quality of recreation user experiences would be substantially reduced. As described above under Impact 3.14-1, project implementers would comply with notification requirements of SPR REC-1, which includes notifying owners and managers of affected recreation facilities or areas and posting notices of anticipated closures. Because of the substantial quantity and variety of recreation resources in the program area and surrounding Tahoe region, the temporary, short-term nature of the closures, and implementation of notification requirements of SPR REC-1, the effects on quality of recreation user experience from closures of recreation resources would be a less-than-significant impact.

Displacement of Special Events

Implementation of the proposed program could temporarily affect the quality of recreational experiences by temporarily displacing special events and special uses (e.g., educational, volunteer, trail improvement events) that may occur on treatment sites. Annual and other typical special events or uses that use trails within the program area are included in Table 3.14-1. Organizers of these events include Big Blue Adventure, North Tahoe High School, Youphoria Productions, Homewood Mountain Resort, TRPA, and Tahoe Rim Trail Association. Project proponents and implementers would comply with notification requirements of SPR REC-2, which includes notifying event organizers at the earliest possible date to identify treatment dates and roads or trails that would be closed that might conflict with the dates for special events.

Implementation of SPR REC-2 would reduce the potential for adverse environmental effects on special events that could occur within an individual treatment area during active treatments. SPR REC-2 would accomplish this by requiring project proponents (e.g., Conservancy, fire districts, landowners) to coordinate with event organizers to identify treatment dates and roads or trails that would be closed. If there is a potential conflict between a special event and implementation of treatment activities, then the project proponent would assist the event organizers in identifying opportunities for locating the event, or portions of the event, on other nearby public land. Because project proponents would coordinate with special event organizers at the earliest possible date and assist in finding alternate locations for events if they are affected by treatment activities, potential adverse impacts on special events using the treatment area during active treatments would be less than significant.

Degradation of Recreation Resources

Implementation of the treatment activities under the Tahoe PTEIR would occur in locations that contain trails and open space areas that are used for hiking, mountain biking, nature viewing, and picnicking resulting in physical damage to these recreation resources. Mechanical equipment accessing treatment areas or hauling of materials to landings would use existing forest roads or skidder trails, which could result in some damage to existing roads and trails that are used for recreation activities. Mechanical treatments would involve the use of large mechanized equipment that could cause damage to road or trail surfaces. Treatment activities could also result in debris on roads and trails. These effects from treatment activities could adversely affect recreation user experience if trails are impassable or are not visible. Other potential adverse physical effects on roads and trails from implementation of the Tahoe PTEIR are assessed in the applicable resource sections throughout this PTEIR, such as soil erosion impacts in Section 3.8, "Geology, Soils, and Land Capability." Project implementers would implement SPR REC-4 that requires post-treatment restoration of existing trails and roads affected by treatment activities, including minor trail rehabilitation, removal of slash, and repairing any incidental damage to existing trails and roads. Because project implementers would repair roads and trails to pre-treatment conditions such that they are available for recreation users after treatment activities are completed, potential adverse impacts on the quality of recreation users of roads or trails in treatment areas would be less than significant.

Nuisance Impacts from Treatment Activities

Implementation of individual treatment projects under the Tahoe PTEIR could result in nuisance impacts from active treatment operations, which could create conditions that degrade the quality of recreation users near active treatments.

Potential nuisance impacts that could adversely affect the quality of recreation user experiences include degradation of scenic resources through the short-term presence of treatment equipment. The treatment activities would also result in long-term changes to the landscape that previously contained densely forested and vegetated areas are thinned, providing views deeper into the forest. Although the treatment activities remove vegetation and trees, changing the appearance from a dense forest to a less dense forest, the treated areas would remain a forested environment for recreation users to experience. Additionally, over time the forest would fill in with vegetation and evidence that the area received fuels treatments would fade. Project implementers would also carry out SPRs AES-1, AES-2, and AES-3 to minimize aesthetic impacts of treatment activities by using vegetation thinning and edge feathering techniques, avoid staging within viewsheds, and preserving sufficient vegetation in treatment areas to provide screening. For these reasons, the visual effects from treatment activities would not have a substantially adverse effect on recreation user experience. The effects of implementing the Tahoe PTEIR on scenic resources and any associated mitigation measures are further discussed in Section 3.2, "Aesthetics."

Implementation of treatment activities could temporarily decrease air quality due to prescribed burning, pile burning, and the use of motorized equipment along unpaved roadways that may adversely affect the quality of recreation user experiences. During active treatments, potential contributors to decreased air quality include exhaust generated by off-road equipment and machine-powered hand tools, dust emissions generated by ground disturbance activities and vehicle travel on unpaved roads, and smoke generated by the combustion of vegetation during prescribed burns. Treatment activities, and thus the associated air quality effects, would be short-term and temporary in nature. Additionally, project implementers would adhere to SPRs AQ-1 through AQ-5, which would minimize air quality effects through compliance with air quality regulations, preparation and implementation of smoke management and burn plans, and dust minimization efforts. The effects of implementing the Tahoe PTEIR and any associated mitigation measures related to air quality are further discussed in Section 3.4, "Air Quality."

Implementation of treatment activities would involve the use of off-road heavy-duty equipment, such as mechanical harvesters, forwarders, chain saws, loaders, and masticators. Haul trucks would also be used to transport chipped biomass away from the treatment sites. The noise levels generated by these types of equipment would be similar to noise levels generated by standard construction equipment, which could be disruptive and adversely affect the quality of recreation user experiences. Heavy-duty off-road equipment would not be operated in the same location for more than a few days. Thus, any increase in noise exposure for recreation users would be short-term and temporary and would not have a substantially adverse effect on recreation user experience. Additionally, project implementers would carry out SPRs NOI-2, NOI-3, NOI-5, and NOI-7 to minimize noise impacts of treatment activities by properly maintaining equipment, engine shrouds are closed during equipment operation, and restricting equipment idling time. The noise impacts from implementation of the Tahoe PTEIR and any associated mitigation measures are further discussed in Section 3.12, "Noise and Vibration."

Implementation of treatment activities would result in heavy equipment entering and exiting treatment sites. Ingress/egress of these vehicles may temporarily limit, restrict, or delay access to recreation areas. If needed for an individual later treatment activity, SPR TRAN-1 requires the project proponent or project implementer to prepare and implement a Traffic Management Plan that would reduce potential traffic obstructions, hazards, and service level degradation along affected roadway facilities, which would help minimize potential issues related to recreation access. For the reasons described above under Impact 3.14-1 and under "Displacement of Recreation Users" for this impact, there are numerous recreation resources in and near the program area providing many alternative recreation options in the event that treatment activities are limiting access to some recreation resources. Additionally, the potential for heavy equipment to limit, restrict, or delay access to recreation areas would be focused in specific areas, which are relatively small in relation to the size of the program area. Thus, the ingress/egress of treatment vehicles would not be anticipated to substantially affect the quality of recreation user experience. The potential transportation impacts and applicable SPRs are further discussed in Section 3.14, "Transportation."

Conclusion

A number of effects from implementation of the proposed program could affect the quality of recreation user experience in the program area, including short-term, temporary closures of recreation resources; displacement of special events and other temporary uses; degradation of recreation resources; and nuisance impacts related to aesthetics, air quality, noise, and transportation. As described above, a large number and variety of recreation resources are available within and near the program area that may provide recreation opportunities while treatment activities temporarily close some recreation resources. Project proponents and project implementers would implement SPRs related to noticing the public of closures and notifying landowners or managers and special event organizers of closures. Additionally, regulatory compliance and mitigation measures included in Sections 3.2, "Aesthetics," 3.4, "Air Quality," 3.12, "Noise and Vibration," and 3.14, "Transportation," would minimize these impacts and reduce disruption of recreation by requiring workers to store equipment outside of the viewshed, minimize smoke dispersion, suspend ground disturbing treatment activities when there is visible dust, and minimize the ingress/egress of heavy equipment along public roadways. For these reasons, implementation of the proposed program would result in a **less-than-significant** impact related to adverse effects on the change in availability of recreation opportunities and quality of recreation user experience.

Mitigation Measures

No mitigation is required for this impact.

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3.15 TRANSPORTATION

This section describes the existing transportation system in the program area, identifies applicable regulatory requirements, and evaluates impacts to bicycle, pedestrian, and transit facilities, roadway hazards and obstructions, emergency access, and the generation of vehicle miles traveled (VMT) resulting from later treatment activities under the proposed program.

Later treatment activities under the proposed program could require reconstruction or grading of existing forest roads, but no new temporary or permanent road construction would occur. Additionally, later treatment activities would not alter the physical public roadway network surrounding treatment sites. Therefore, implementation of treatment activities would not adversely affect any existing or planned public transit, bicycle, or pedestrian facilities. Additionally, because of the temporary nature of the treatment activities at individual locations, the rural character of much of the transportation network in and around where treatment activities could occur, and the anticipated dispersion of the individual treatment sites within the program area, the later treatment activities under the proposed program would not generate substantial pedestrian, bicycle, or transit demand. Thus, the proposed program would not conflict with a program, plan, ordinance or policy addressing pedestrian, bicycle, and transit facilities.

Later treatment activities under the proposed program would not locate any new development or land uses within the program area that would require installation of emergency access routes, or alter any existing roadways/emergency access routes along the physical transportation network open to the public surrounding treatment sites. As described above, the implementation of treatment activities analyzed under the proposed program could require the improvement of existing forest roads; however, any such activities would serve to improve emergency access to the individual forest management and fuel reduction sites. Additionally, prescribed understory burns would include between two and ten fire engines onsite during treatment activities; thus, emergency fire suppression services to ensure safety during prescribed understory burning would be available onsite during such treatments. Therefore, later treatment activities under the proposed program would not result in a degradation of emergency access and on-site emergency services would be provided during prescribed understory burns to ensure that such activities would not result in inadequate emergency access.

Section 15064.3 was added to the State CEQA Guidelines effective December 28, 2018 as part of a comprehensive guidelines update. The section addresses the determination of significance for transportation impacts, which requires that the analysis be based on VMT instead of a congestion metric. Pursuant to State CEQA Guidelines Section 15064.3(c), and because later treatment activities analyzed under the proposed program would occur after the date on which VMT is required to be considered, VMT is the primary metric used to identify transportation impacts, and level of service (LOS) is not analyzed herein. Therefore, TRPA, state, and local LOS based standards and thresholds are not analyzed or addressed in this PTEIR.

No comments received on the notice of preparation were related to transportation.

3.15.1 Regulatory Setting

FEDERAL

Federal Highway Administration

The Federal Highway Administration (FHWA), an agency of the U.S. Department of Transportation, provides stewardship over the construction and preservation of the nation's highways, bridges, and tunnels. FHWA also conducts research and provides technical assistance to state and local agencies to improve safety, mobility, and livability and to encourage innovation in these areas. FHWA also provides regulation and guidance related to work zone safety, mobility, and temporary traffic control device implementation. FHWA regulation and guidance related to work zone safety, mobility, and temporary traffic control device implementation is relevant because it informs the standard project requirements of later treatment activities addressed within this PTEIR.

Tahoe Regional Planning Agency

Regional Transportation Plan

The Tahoe Metropolitan Planning Organization (TMPO) and TRPA jointly developed the *Lake Tahoe Regional Transportation Plan and Sustainable Communities Strategy: Mobility 2035* (TRPA 2012) (2012 RTP/SCS) as Lake Tahoe's blueprint for a regional transportation system that enhances the quality of life in the Tahoe region, promotes sustainability, and offers improved mobility options for people and goods. Important objectives of the 2012 RTP/SCS are to reduce the overall environmental impact of transportation in the region, create walkable and vibrant communities, and provide real alternatives to driving. The 2012 RTP/SCS included an SCS, in accordance with California Senate Bill 375, statutes of 2008 (Sustainable Communities and Climate Protection Act). The 2012 RTP/SCS presents 14 goals consistent with regional and federal requirements that focus on reducing dependency on the automobile and giving preference to projects that increase the capacity of the region's transportation system through public transportation projects and programs.

The 2012 RTP/SCS was updated in 2017, tiering from the 2012 RTP/SCS EIS through an expanded checklist. The 2017 RTP/SCS, *Linking Tahoe: Regional Transportation Plan and Sustainable Communities Strategy* (TRPA 2017) builds on the 2012 RTP/SCS, focusing on providing frequent and prioritized multi-modal connections between town centers and neighborhoods and easy and convenient access to high demand recreation sites. The 2017 RTP/SCS contains new goals and policies that draw from stakeholder feedback, detailed goals in the 2015 Intelligent Transportation Systems Strategic Plan, and the 2016 Active Transportation Plan. The 2017 RTP/SCS envisions a first-class transportation system that prioritizes bicycling, walking, and transit, and serves residents and visitors while contributing to the environmental and socioeconomic health of the region (TRPA 2017). The plan offers strategies to jump start innovation through electric vehicle infrastructure, address the routine travel demands of residents and commuters, and the recreational travel demands of visitors that during peak periods stress and cause congestion on Lake Tahoe's transportation system (TRPA 2017). Strategies detailed within the 2017 RTP/SCS focus on projects and programs that dynamically meet the needs of all roadway users by:

- ▶ offering better travel mode options;
- ▶ creating incentives that spread out the times, places, and ways people travel to improve traffic flow;
- ▶ providing environmentally innovative infrastructure;
- ▶ improving safe and equitable access to the places people want to go; and
- ▶ prioritizing funding for projects that fulfill TRPA objectives in transit, active transportation, transportation demand management, and other programs and directly support identified TRPA transportation performance outcomes.

Thresholds

TRPA has adopted threshold standards pertaining to air quality that are expressed in terms of regionwide VMT. These thresholds are also applicable to transportation analyses. VMT is a computed value, which correlates to the volume of traffic, the length of vehicle trips, and the extent of an area's reliance on the private automobile for travel. The TRPA TransCAD Travel Demand Model provides a forecast of the number of trips made on the highway network and the distance between trip origins and destinations for each trip purpose. Total VMT is the sum of all these trip lengths.

The adopted air quality management TRPA threshold standard that relates to traffic and transportation facilities in the region calls for reducing VMT in the basin by 10 percent of the 1981 base year values.

The VMT threshold is periodically updated whenever TRPA updates its transportation model. The most recent VMT threshold was calculated at 2,030,938 VMT for a peak summer day. TRPA is working on potential updates to the VMT threshold but nothing formal has been proposed. Additional background on VMT, an overview of TRPA's transportation model and threshold updates, details on the VMT threshold, and a discussion of the use of the VMT threshold as a significance criterion in an EIR is provided on pages 3.1-2 through 3.1-7 of the Placer County Tahoe Basin Area Plan and Tahoe City Lodge Project Final EIR/EIS (California State Clearinghouse #2014072039; Placer County and TRPA 2017) and is incorporated by reference into this PTEIR. The Placer County Tahoe Basin Area Plan and Tahoe City Lodge Project Final EIR/EIS is available online at <https://www.trpa.org/document/projects-plans/>.

Because the plan area for the Placer County Tahoe Basin Area Plan overlaps with all portions of the program area that fall within Placer County and TRPA's regulations related to VMT apply to the Area Plan and the proposed program, the background information included in the Final EIR/EIS is relevant to the proposed program.

Over the last decade, VMT has declined by roughly nine percent within the region, (2017). Based on the most recent modeling completed in support of the Regional Transportation Plan, existing VMT in the Tahoe region over the course of a peak summer weekday is approximately 1,937,070, indicating that the region is currently in attainment (TRPA 2016).

Code of Ordinances

Chapter 4, "Required Findings," of the TRPA Code of Ordinances includes mandatory findings and sets forth procedures describing how TRPA shall make the required findings. Section 4.4, "Threshold-Related Findings," of the Code of Ordinances requires the following findings:

- A. The project is consistent with and will not adversely affect implementation of the Regional Plan, including all applicable Goals and Policies, plan area statements and maps, the Code, and other TRPA plans and programs.
- B. The project will not cause the environmental threshold carrying capacities to be exceeded.

Chapter 50, "Allocation of Development," of the TRPA Code of Ordinances sets forth the requirements for regulating the rate and timing of growth within the region. Section 50.4, "Allocation of Commodities and Development Rights Accounting," of the Code of Ordinances includes LOS and VMT monitoring requirements.

Chapter 65, "Air Quality/Transportation," of the TRPA Code of Ordinances addresses how to protect air quality; and thus, attain and maintain applicable standards and thresholds, including limits on direct sources of air pollution, and new and modified stationary source review; and establishment of programs to maintain and improve air quality, including a traffic and air quality mitigation program, a rental car mitigation program, and an employer-based trip reduction program. Additionally, Section 65.2, "Traffic and Air Quality Mitigation Program," of the Code of Ordinances includes standards for new or transferred development in which requirements related to transportation are detailed.

However, these commodity allocations and air quality/transportation programs are designed to address land use development projects and do not apply to temporary construction projects, which treatment activities are generally consistent with in terms of the temporary nature of activities, trip generation characteristics, and types of vehicles and equipment required.

STATE

California Department of Transportation

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining the state highway system and ramp interchange intersections. Caltrans is also responsible for highway, bridge, and rail transportation planning, construction, and maintenance.

Environmental planning for transportation improvement projects involving California state highways follow the procedures set forth in the agency's Standard Environmental Reference and Section V of Guidance for Compliance Environmental Handbook. This guidance is intended for transportation-specific improvement projects where Caltrans operates as the CEQA lead agency but can also be used by other agencies, including local agencies, for ideas supplemental to their own procedures.

Caltrans provides guidance to local agencies on assessing the performance of rural roadways to enhance safety, mobility, accessibility, and productivity under continued use. Caltrans requires transportation permits for the movement of vehicles or loads exceeding the limitations on the size and weight contained in Division 15, Chapter 5, Article 1, Section 35551, of the California Vehicle Code. Treatment activities would require the short-term use of state and locally managed roadways; and thus, Caltrans guidance and standards specifically related to the performance of rural state roadways and vehicle size and weight limitations would apply to later treatment activities analyzed under the proposed program.

California Manual on Uniform Traffic Control Devices

This *California Manual on Uniform Traffic Control Devices* (California MUTCD) is published by the California Department of Transportation (Caltrans) and provides uniform standards and specifications for all official traffic control devices in California. Temporary traffic control (TTC) applies when the normal function of the roadway, or a private road open to public travel, is suspended and is intended to provide for the reasonably safe and effective movement of road users through or around TTC zones while reasonably protecting road users, workers, responders to traffic incidents, and equipment. TTC planning provides for continuity of the movement of motor vehicle, bicycle, and pedestrian traffic (including accessible passage); transit operations; and access to property and utilities. TTC plans should be prepared by persons knowledgeable about the fundamental principles of TTC and work activities to be performed, and the design, selection, and placement of TTC devices for a TTC plan should be based on engineering judgment (Caltrans 2014). California MUTCD TTC standards and specifications would apply to TTC or other related plans developed as part of, or in response to later treatment activities analyzed under the proposed program.

Transportation Management Plan Guidelines

The Caltrans *Transportation Management Plan Guidelines (2015)* identify the processes, roles, and responsibilities for preparing and implementing Transportation Management Plans (TMPs), as well as useful strategies for reducing congestion and managing work zone traffic impacts. TMP strategies are required for all planned construction, maintenance, and encroachment permit activities within Caltrans right-of-way and requires a Caltrans encroachment permit. A TMP encompasses activities that are implemented to minimize traffic delays that may result from lane restrictions or closures in a work zone. TMP strategies are designed to improve mobility, as well as safety for the traveling public and highway workers. TMP strategies would be required if treatment activities would require a Caltrans encroachment permit. Additionally, TMP guidance informs the standard project requirements of the proposed program addressed within this PTEIR.

Senate Bill 743 (Statutes of 2013)

Senate Bill (SB) 743, passed in 2013, required the Governor's Office of Planning and Research (OPR) to develop new CEQA guidelines that address traffic metrics under CEQA. As stated in the legislation, upon adoption of the new guidelines, "automobile delay, as described solely by LOS or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment pursuant to this division, except in locations specifically identified in the guidelines, if any."

OPR published its proposal for the comprehensive updates to the CEQA Guidelines in November 2017 which included proposed updates related to analyzing transportation impacts pursuant to Senate Bill 743. These updates indicated that vehicle miles traveled (VMT) be the primary metric used to identify transportation impacts. In December of 2018, OPR published the most recent version of the Technical Advisory on Evaluating Transportation Impacts (December 2018) which provides guidance for VMT analysis. The Office of Administrative Law approved the updated CEQA Guidelines and lead agencies have an opt-in period until July 1, 2020 to implement the updated guidelines.

As noted in the updated guidelines, agencies are directed to choose metrics that are appropriate for their jurisdiction to evaluate the potential impacts of a project in terms of VMT. The guidance provided thus far relative to VMT significance criteria is focused on residential, office, and retail uses which would not apply to the rural and temporary transportation uses that would occur with later treatment activities under the proposed program. Additionally, as stated above, lead agencies have until July 1, 2020 to implement the updated guidelines.

3.15.2 Environmental Setting

This section describes the existing environmental setting, which is the baseline scenario upon which project-specific impacts are evaluated. The environmental setting for transportation includes baseline descriptions for roadway, bicycle, pedestrian, and transit facilities.

PROGRAM AREA

The program area covers an estimated 17,490 acres of public and private land throughout the California side of the Tahoe Basin. Fuel reduction activities would occur in the City of South Lake Tahoe and in unincorporated areas of El Dorado and Placer Counties including, but not limited to: Meyers, Cascade properties near Cascade Lake, Tahoma, Homewood, Alpine Peaks, Tahoe City, Dollar Point, Carnelian Bay, Tahoe Vista, and Kings Beach. Planned Lake Tahoe Community Wildfire Protection Plan (CWPP) Projects encompass 11,640 acres of the program area (see Figures 2-1 through 2-7). Community Fuel Reduction Areas primarily made up of smaller-acreage parcels that are publicly- or privately-owned account for 5,850 acres of the program area. Implementation of treatment activities would require the short-term use of state and locally managed roadways.

ROADWAY SYSTEM

The four basic types of roadways in the program area include state routes, arterials, collectors, and local/neighborhood streets.

State Highways

Most vehicular travel in the Tahoe region occurs on state highways including U.S. Route (US) 50, State Route (SR) 28, SR 89, SR 207, SR 267, and SR 431. Most highways are two-lane facilities; however, portions of US 50, SR 28, and SR 89 have wider cross-sections such as four-lane roadways with center two-way left turn lanes.

Arterials

Arterial roadways carry moderate to high traffic volumes to and from local and collector roads to other arterials and highways. Although access to adjacent parcels is more limited from arterials than from collector and local streets, arterial roadways also provide direct access to properties, particularly in commercial areas.

Collectors

Collector roadways serve as transition facilities, distributing traffic from arterials and highways to their ultimate destination, and collecting traffic from local roadways to roads higher in the street classification hierarchy, such as arterials and state highways. Collector roads serve a dual function by providing access to properties on the roadway and moving moderate traffic volumes for medium length trips.

Local/Neighborhood Streets

Local roadways are intended to serve as access roads to adjacent properties only. They provide connections to higher order roadways, carry little if any through traffic, and generally have low traffic volumes.

TRANSIT SYSTEM

Transit service within the program area is provided by a mix of public and private transit services. Tahoe Transportation District (TTD) and Tahoe Truckee Area Regional Transit (TART) are the regional transit providers. These two transit providers operate year-round and seasonal services on the north, east, south and west shores. They also provide commute services to nearby areas such as Truckee to the north, and Carson Valley to the east. Washoe Regional Transportation Commission, the Town of Truckee, State Departments of Transportation, and private entities such as ski resorts also partner with transit providers to offer transit service through cost sharing agreements, formula funding allotments, and private shuttles and taxi services (TRPA 2017).

TART connects the north and west shores of Tahoe to the Town of Truckee year-round and runs a free night shuttle service during summer. TTD provides year-round service throughout the south shore and connects to the neighboring communities of Gardnerville and Minden. The TTD also connects parts of the west and east shores during the summer with the Emerald Bay Trolley and the East Shore Express. Some local buses also provide connections to trailheads, such as at Spooner Summit. Though many parts of the lake are served with transit, year-around connections from north to south do not exist.

TART and TTD supply on-demand services to qualified individuals with special needs who are unable to independently use the fixed-route transit system. Location-specific shuttle service is provided by private companies and public/private partnerships. Many major ski resorts also provide shuttle services. Additionally, some private shuttle companies focus on the needs of the recreational hiker and biker by providing point-to-point pick-up and drop-off. Private providers include Flume Trail Bikes and Over the Edge Tahoe (TRPA 2017).

BICYCLE AND PEDESTRIAN SYSTEM

The current network in the Tahoe Basin includes 58 miles of shared-use path, 45 miles of bicycle lanes, 24 miles of sidewalks, and four enhanced crosswalks that include a pedestrian active beacon or rapid flashing beacon (TRPA 2018). The United States Forest Service also operates and maintains 350 miles of National Forest System Trails and 250 miles of National Forest System Roads (TRPA 2017).

The region has over 80 miles in separated class-I shared-use paths and sidewalks. These routes are well-connected in some areas and have gaps in others. Caltrans and local jurisdictions have constructed sidewalks along the state highway system through town centers and more are planned. Local jurisdictions are connecting Class-I shared-use paths around the lake, providing links across communities and to neighboring areas (TRPA 2017).

PAST AND CURRENT TREATMENT ACTIVITIES AND WILDFIRE

Treatments occur within the program area that result in temporary increases in traffic. There is no detailed data regarding the total trips or VMT for current treatment activities. Treatment crews typically originate from the region of the treatment site. Existing treatment activities typically require a small number of trips per day on an individual basis, considering that treatment activities are generally consistent with construction activities in terms of the temporary nature of activities, trip generation characteristics, and types of vehicles and equipment required.

Wildfire can require emergency response in the form of personnel and equipment. In cases where a wildfire exceeds the capacity of local CAL FIRE and local units, emergency resources may be diverted to a wildfire from elsewhere in the state or some cases, elsewhere in the country or internationally. Additional VMT results from this wildfire response. During wildfire, the main goal is containment and reducing impacts to human life and property; efficient travel and VMT minimization are not prioritized.

3.15.3 Environmental Impacts and Mitigation Measures

This section describes the analysis techniques, assumptions, and results used to identify potential significant impacts of the proposed program on the transportation system. Transportation impacts are described and assessed, and mitigation measures are recommended for impacts identified as significant or potentially significant.

METHODOLOGY

The analysis of transportation impacts related to later treatment activities under the proposed program includes qualitative analysis of bicycle, pedestrian, and transit facilities, hazards, emergency access, and VMT. The analysis is based on details of typical treatment activities, the equipment utilized for treatments, and methods for transporting the equipment, materials, and by-products. Significance determinations account for the influence of relevant SPRs (i.e., TMPs), which are incorporated into treatment prescriptions and project design and listed below.

- ▶ **SPR TRAN-1 Implement Traffic Control during Treatments:** Before initiating treatment activities the project proponent will work with the agency(ies) that have jurisdiction over affected roadways to determine if a Traffic Management Plan (TMP) is needed. A TMP will be needed if traffic generated by the treatment activity would result in obstructions, hazards, or delays exceeding applicable jurisdictional standards along access routes for individual treatment activities. If needed, a TMP will be prepared to provide measures to reduce potential traffic obstructions, hazards, and service level degradation along affected roadway facilities. The scope of the TMP will

depend on the type, intensity, and duration of the specific treatment activities under the Tahoe PTEIR. Measures included in the TMP could include construction signage to provide motorists with notification and information when approaching or traveling along the affected roadway facilities, flaggers for lane closures to provide temporary traffic control along affected roadway facilities, treatment schedule restrictions to avoid time periods of peak vehicle traffic, haul-trip, delivery, and/or commute time restrictions that would be implemented to avoid peak traffic days and times along affected roadway facilities. If the TMP identifies impacts on transportation facilities outside of the jurisdiction of the project proponent, the TMP will be submitted to the agency with jurisdiction over the affected roadways before commencement of treatment activities.

- ▶ **SPR TRAN-2 Smoke Management and Effects on Traffic:** Smoke generated during prescribed burn operations could potentially affect driver visibility and traffic operations along nearby roadways. Direct smoke impacts to roadway visibility and indirect impacts related to driver distraction will be considered during the planning phase of burning operations. Smoke impacts and smoke management practices specific to traffic operations during prescribed fire operations will be identified and addressed within the TMP. The TMP will include measures to monitor smoke dispersion onto public roadways, and traffic control operations will be initiated in the event burning operations could affect traffic safety along any roadways. This SPR applies only to prescribed burn treatment activities and all treatment methods.
- ▶ **SPR TRAN-3 Reconstruction or Grading of Existing Forest Roads:** During the reconstruction or grading of existing forest roads, the project proponent shall strive to maintain the existing roadway alignment. If the existing roadway alignment is diverged from, the new roadway alignment shall be constructed in accordance with all applicable geometric and safety design standards. The project proponent shall work with the agency(ies) with jurisdiction over these affected roadways to determine the standards to which any newly aligned roadway shall be constructed.

Methodology for Determining VMT Threshold of Significance

Section 15064.3 of the State CEQA Guidelines became effective December 28, 2018 as part of a comprehensive guidelines update. The section addresses the determination of significance for transportation impacts, which requires that the analysis be based on VMT instead of a congestion metric (such as LOS). The change in the focus of transportation analysis is the result of legislation (SB 743, Statutes of 2013) and is intended to change the focus from congestion to, among other things, reduction in greenhouse gas emissions, encouraging mixed use development, and other factors. Pursuant to State CEQA Guidelines Section 15064.3(c), this change in analysis may be implemented now and is mandated to be addressed beginning July 1, 2020. Because the later treatment activities analyzed under the proposed program will occur after the date on which VMT is required to be considered, it is included in the analysis in this PTEIR.

SB 743 requirements are most applicable to travel related to urban land uses, such as residential or commercial development projects; however, requirements are not limited to those types of projects. State CEQA Guidelines Section 15064.3(b) identifies criteria for analyzing the transportation impacts of a project, including land use projects (Section 15064.3(b)(1)) and transportation projects (Section 15064.3(b)(2)). Treatment activities analyzed under the proposed program are not land use or transportation projects, so neither of these sections apply. However, State CEQA Guidelines Section 15064.3(b)(1) notes that projects that would decrease VMT from existing conditions should be presumed to have a less-than-significant effect. State CEQA Guidelines Section 15064.3(b)(3) (Qualitative Analysis) explains that there may be conditions under which a qualitative rather than quantitative analysis of VMT is appropriate. This section states that if existing models or methods are not available to estimate the VMT for the particular project being considered, a lead agency may qualitatively analyze VMT generated by a project. Additionally, this section notes that for many projects, a qualitative analysis of construction traffic may be appropriate. Section 15064.3(b)(4), Methodology, explains that the lead agency has discretion to choose the most appropriate methodology to evaluate VMT subject to other applicable standards such as CEQA Guidelines Section 15151 (standards of adequacy for EIR analyses).

Later treatment activities analyzed under the proposed program would occur on developed and undeveloped landscapes. Treatment activities would typically require a small number of trips per day on an individual basis, considering that they are generally consistent with construction activities in terms of the temporary nature of

activities, trip generation characteristics, and types of vehicles and equipment required. The Technical Advisory on Evaluating Transportation Impacts (OPR 2018) notes that projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact, absent substantial evidence indicating otherwise (OPR 2018). Later treatment activities analyzed under the proposed program are likely to generate fewer than 110 trips per day, recognizing that would accommodate up to 50 vehicles bringing crews and equipment to a treatment site in a day (i.e., 100 trips commuting to and from a treatment site each day, plus a few additional incidental trips during the day). Therefore, using OPR guidance, individual treatment activities that would generate fewer than 110 trips per day would result in a less-than-significant VMT impact.

The change in VMT considered in this PTEIR would not only be for individual treatment activities, but also for the combined implementation of the multiple later treatment activities under the proposed program as a whole. Individual treatment activities would contribute to the total annual change in VMT attributable to the program as a whole. The VMT generated by the total annual program would need to be compared to a different threshold than 110 trips per day, because it comprises many individual treatment activities carried out each year with locations throughout the program area. The Technical Advisory describes no scenario analogous to the overall program, i.e., where a natural resources management program is proposed to consist of an array of individual, in-field activities on different sites over a broad geography. Inherently, managing trip length is not feasible for such a natural resources management program scenario, because of the variability in location of individual activities, broad geography of the program, and special skill set of treatment workers. Nor is it feasible to reduce VMT by requiring worker carpooling because workers would often need to drive separate vehicles to transport equipment (e.g., chippers, chainsaws) to treatment sites. For the purposes of this PTEIR, the VMT of later treatment activities are estimated based on project-specific data and assumptions on the number and length of worker trips and haul trips under discrete treatment project types (i.e., manual treatments, mechanical treatments, prescribed burning), the frequency of treatments, and the number of new treatment activities that could occur concurrently under the proposed program. Therefore, a quantitative analysis using project-specific data and assumptions provides the most applicable approach for analyzing the change in VMT resulting from later treatment activities under the proposed program.

This PTEIR does not rely on the TRPA peak day VMT Threshold value of 2,030,938 VMT, as this threshold is intended as a threshold for air quality and nitrogen deposition into Lake Tahoe. It was not formulated with the same intent as SB 743 and is not directly tied the state's long-term greenhouse gas emissions reduction target; and therefore, does not address Section 15064.3 of the State CEQA Guidelines. Thus, this PTEIR relies on fundamental CEQA principles for defining the threshold of significance for VMT. The statutory and regulatory definition of "significant effect on the environment" provides the fundamental principle applicable to thresholds of significance. A significant effect on the environment is defined in CEQA as a "substantial or potentially substantial adverse change in the environment." (PRC Section 21068). For purposes of PRC Section 21100, governing actions for proposed state projects, subpart (a) limits significant effects on the environment to "substantial or potentially substantial adverse changes in physical conditions..." This definition of significant effect on the environment is repeated in Sections 15002(g) in Article 1, General, under Section 15002, General Concepts, and 15382 in Article 20, Definitions. Based on these provisions, this PTEIR considers whether an adverse change in physical conditions would occur. In the case of VMT, an adverse change would be an increase in VMT, because statutory environmental policy seeks to decrease VMT. Thus, taking into consideration the fundamental CEQA principals for defining thresholds of significance, the four criteria detailed in Section 15064.3(b) of the State CEQA Guidelines for analyzing the transportation impacts and their applicability to the proposed program, state policy, and the recommendations of the Technical Advisory, a threshold of no net increase in VMT is used in this PTEIR to determine significance of the implementation of the proposed program. A relative increase in VMT under the proposed program within the program area, as compared to existing conditions, is determined to result in a significant effect on the environment (see listing under "Thresholds of Significance," below). It should be noted that this threshold is more conservative than the existing TRPA Air Quality Threshold, which requires that VMT for the Tahoe region does not exceed the value of 2,030,938 VMT; and thus, allows for projects to increase VMT up to that static threshold. This threshold is also consistent with recent TRPA guidance for the assessment of VMT impacts of projects in the Tahoe Basin (TRPA 2019).

THRESHOLDS OF SIGNIFICANCE

Based on Appendix G of the State CEQA Guidelines, an impact on transportation and traffic would be significant if implementation of later treatment activities under the Tahoe PTEIR would:

- ▶ substantially increase hazards due to a geometric design features or incompatible uses;
- ▶ result in inadequate emergency access; or
- ▶ conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision(b).

IMPACTS AND MITIGATION MEASURES

Impact 3.15-1: Substantially Increase Hazards due to a Design Feature or Incompatible Uses

Implementation of the proposed program would not require the construction or alteration of any public roadways, and qualifying treatment activities under the proposed program would adhere to SPRs that manage and minimize potential hazards due to smoke generated during prescribe burns. The project proponent would prepare and implement a TMP to avoid and minimize temporary transportation hazards due to incompatible uses operating along program area roadways. Therefore, later treatment activities would not substantially increase hazards because of a design feature or incompatible uses. This impact would be **less than significant**.

Agencies with the responsibility for roadway design and operation within the program area (i.e., Caltrans, El Dorado County, Placer County, and the City of South Lake Tahoe) all have adopted and enforce roadway design standards. These standards address a variety of roadway elements, including safety and hazards. The use and enforcement of these design standards prevents the development of transportation infrastructure that would substantially increase hazards because of a design feature. The later treatment activities analyzed under the proposed program would not require the construction, re-design, or alteration of any public roadways, and treatments activities would not occur within any public roadway right-of-way. However, later treatment activities analyzed under the proposed program could require reconstruction or grading of existing forest roads, but no new temporary or permanent road construction would occur. As detailed in SPR TRANS-3, any forest road reconstruction necessitating a divergence from the existing roadway alignment shall be constructed in accordance with all applicable geometric and safety design standards. Thus, the later treatment activities under the proposed program would not substantially increase hazards because of a design feature.

The later treatment activities under the proposed program would be temporary in nature; and thus, would not result in long-term operational increases in vehicular traffic along roadways surrounding treatment sites. However, later treatment activities would temporarily increase vehicular traffic along roadways used to access treatment areas. Treatment-related traffic would include heavy-duty vehicle trips to haul equipment, materials, and trips associated with the workers commuting to and from the treatment areas. The number of haul trips and worker trips to and from the treatment sites would vary based on the size of the area being treated, the type of treatment being implemented, and the duration of the treatment activities. Additionally, the forest biomass produced and removed during treatments would be disposed of through processing of sawlogs into lumber, burning, biomass energy generation, firewood, on-site decomposition, and other purposes. This would result in additional haul truck trips to biomass, biomass energy, and sawmill as far away as 155 miles from where later treatment activities could occur. Due to the variability of the scale, location, and duration of treatment activities that could be implemented under the proposed program, the number of trucks, truck routing, number of employees, employee parking, truck idling, lane closures, and a variety of other treatment-related activities are unknown at this time.

However, it is known that the hauling of heavy-duty equipment to and from the individual treatment sites would be necessary for some of the treatment activities. In some of the more remote areas of the program area, the circulation network includes heavily trafficked roadways, roadway facilities with limited lane and shoulder widths, curvilinear alignment, low design speeds, and roadways that pass through mountainous terrain. In these areas, the hauling of heavy machinery (e.g., bulldozers, excavators) and operation of large trucks occurring along heavily trafficked

roadways with limited lane width, little or no roadway shoulders, and curvilinear alignment, could potentially result in transportation hazards along the roadway network because of incompatible uses. Additionally, pile burning and prescribed understory burn operations would produce smoke and could potentially affect visibility along nearby roadways such that a transportation hazard could occur.

Due to the nature of the program area roadway network, the vehicle trip types generated by later treatment activities, and the potential for roadway visibility to be affected by pile burning and prescribed understory burns, temporary roadway obstructions and hazards could occur if project-generated traffic is not appropriately planned and managed.

SPR TRAN-2 requires the project proponent to monitor prescribed burn operations and the associated smoke dispersion. Traffic control operations would be initiated if burning operations begin to affect traffic safety along any roadways. SPR TRAN-1 also requires that if deemed necessary by the project proponent, a TMP will be prepared before initiating later treatment activities if traffic generated by the treatment activity would result in obstructions or hazards exceeding applicable jurisdictional standards along access routes for individual treatments. The TMP will include measures to avoid and minimize traffic obstructions and hazards along affected roadway facilities, as needed. The scope of the TMP will depend on the type, intensity, and duration of the specific treatment activities under the proposed program.

Measures included in the TMP could include notification of treatments; temporary traffic control signage; flaggers for lane closures; and delivery, hauling, and worker commute schedule restrictions. These measures would promote safe and efficient transportation circulation during implementation of later treatment activities under the proposed program and would address and plan for any potential transportation hazards resulting from the operation of incompatible vehicles on roadways not designed to accommodate these vehicle classes.

Implementation of later treatment activities under the proposed program would not require the construction, re-design, or alteration of any public roadways. Additionally, each later treatment activity under the proposed program would be required to comply with and implement the SPRs identified above that manage and minimize potential hazards because of smoke associated with prescribe burns, and the operation of incompatible uses along the roadway network during later treatment activities. Additionally, project-generated effects related to transportation hazards would be localized and temporary, and the project proponent would prepare and implement a TMP to reduce any temporary transportation effects to the degree feasible. Therefore, later treatment activities would not substantially increase hazards due to a design feature or incompatible use. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required for this impact.

Impact 3.15-2: Conflict or be Inconsistent with CEQA Guidelines Section 15064.3, Subdivision (b) Regarding Vehicle Miles Traveled

Under the proposed program, the scale of treatment activities would increase to treat approximately 850 acres per year within Planned CWPP Projects plus an estimated average of 400 acres per year within the Community Fuel Reduction Area. With the increase in treatment acreage, the daily VMT generated by treatment activities in comparison to existing conditions is anticipated to increase by approximately 8,061 VMT because more individual treatment projects would be implemented. A key goal of the proposed program is to reduce the risk of catastrophic wildfires. Reducing the risk of catastrophic wildfires would result in a reduction in fire suppression activity and trips, which would be reasonably expected to decrease VMT over the long term, compared to conditions without the proposed program. However, it is not feasible to predict changes in wildfire occurrence sufficiently to quantify potential changes in fire response VMT. Thus, to meet CEQA's mandate of good faith disclosure and to not risk understating potential future impacts in light of the uncertainties, this impact would be **potentially significant**, because VMT generated by later treatment activities under the proposed program would increase in comparison to existing conditions, notwithstanding the potential VMT-reducing effects of reduced wildfire response.

Under existing conditions, treatment activities are implemented within the program area by fire agencies and agencies with land management responsibilities. These treatment activities generate a baseline amount of VMT from heavy-duty vehicle trips to haul equipment and materials, and trips associated with the workers commuting to and from the treatment areas. Additionally, some of the forest biomass produced by mechanical and manual treatments is currently hauled by truck to processing facilities.

Under the proposed program, the scale of the later treatment activities would increase by approximately 747 acres per year to treat a total of approximately 1,250 acres per year, including 850 acres within Planned CWPP Projects and 400 acres within Community Fuel Reduction Area. With the increase in treatment acreage, the VMT generated would increase in comparison to existing conditions. The VMT would vary based on the location, size of the area being treated, the type of treatment being implemented, and the duration of the treatment activities. However, based on project-specific data and assumptions, an estimate of the daily VMT associated with the increase in treatment activities under the proposed program was calculated and is shown in Table 3.15-1, below. As detailed in Section 2.4.7, "Access and Hauling," the hauling of forest products to biomass facilities and sawmills could occur concurrently with mechanical treatment activities. The locations of the potential biomass facilities and sawmills to which forest products could be hauled, and their approximate distance from the center of the program area were identified and disclosed in Section 2.4.7, "Access and Hauling," and are listed below.

- ▶ Cabin Creek biomass energy facility in Truckee, California (27 miles), if it is opened;
- ▶ American Renewable Power biomass facility in Loyalton, California (62 miles);
- ▶ Sierra Pacific Industries biomass and sawmill facility in Quincy, California (100 miles);
- ▶ Sierra Pacific Industries biomass and sawmill facility in Lincoln, California (110 miles); or
- ▶ Greenleaf Honey Lake biomass energy facility in Wendel, CA (155 miles).

For the purposes this analysis, the conservative approach of assuming the identified biomass and sawmill facility and biomass energy facility furthest from the program area (i.e., 110 miles and 155 miles, respectively) would be where the forest products would be hauled to. For detailed calculations and assumptions see Appendix D.

Table 3.15-1 Daily VMT of New Treatment Activities under the Proposed Program

Treatment Type	Workers Number of Workers	Workers Vehicle Trips ²	Workers Average Trip Length ³	Workers VMT	Hauling Trips ⁴	Hauling Average Trip Length ⁵	Hauling VMT	Maximum Concurrent Treatments	Total VMT
Manual Treatment	10	20	17.24	345	0	0	0	3	1,034
Mechanical Treatment	10	20	17.24	345	20	Varies	2,740	2	6,170
Pile Burning ¹	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Prescribed Understory Burning	25	50	17.15	858	0	0	0	1	858
Total Daily VMT of Maximum Concurrent Treatments									8,061

Note: N/A = not applicable.

¹ Pile burning typically occurs in the late fall, winter or early spring; thus, would not occur concurrently with other treatment activities, which are generally conducted from late spring through early fall.

² Assumed that individual workers will generate two trips per day; one trip to the treatment site and one trip from the treatment site.

³ Based on CalEEMod default trip length and an additional 5 miles of travel on unpaved roads for 29 percent of treatment sites.

⁴ Maximum of 8 daily trips to a sawmill and 12 trips to a biofuel energy facility.

⁵ Approximately 110 miles to a sawmill and 155 miles to a biomass energy facility.

Source: Compiled by Ascent Environmental in 2019, see Appendix G for detailed calculations

As shown in Table 3.15-1, because the greater proposed scale of treatment activities and associated trips implementation of the proposed program would increase VMT above current conditions by approximately 8,061. However, it should be noted that individual treatment activities under the proposed program are likely to generate fewer than 110 trips per day, which is generally assumed to cause a less-than-significant transportation impact for specific later activities, as described in the Technical Advisory on Evaluating Transportation Impacts (OPR 2018).

A primary objective of the program is to reduce the risk of catastrophic wildfires. Wildfires require an immediate response from emergency personnel and mobilization of equipment. During wildfires that exceed the containment capacity of local resources, personnel from throughout the state (and occasionally nationally and internationally) are dispatched to assist in firefighting. The reduction of VMT is not a primary consideration during wildfires. Rather, protecting human life and property is prioritized. The movement of personnel associated with containment of wildfires results in a surge of VMT associated with vehicle travel. While implementation of treatment activities under the program cannot ensure that wildfires would not occur, implementation of the proposed program is designed to reduce wildfire occurrence and severity, which would reduce the surge in VMT resulting from increased trip generation and trip lengths associated with response to such events.

When VMT attributable to wildfire response is considered with the VMT from later treatment activities, it is conceivable that implementation of the proposed program could result in a net decrease in total VMT. This could compensate for the comparatively smaller increase in VMT attributable to increased scale of treatments activities, but predicting this outcome with certainty is not feasible.

In summary, because of an intended decrease in the occurrence and severity of wildfires following achievement of the proposed treatment acreage targets under the proposed program, implementation of the proposed program could result in a net reduction in VMT in the long term because wildfire response travel could be reduced, resulting in a less-than-significant impact. However, because of the increase in treatment acreage under the proposed program, VMT associated with treatment activities would increase in comparison to the existing condition. Additionally, there is uncertainty in predicting future wildfire occurrence and intensity; thus, recognizing uncertainty in future predictions, to meet CEQA's mandate of good faith disclosure (*California Native Plant Society v. City of Santa Cruz, supra*, 177 Cal.App.4th at p. 979) and to not risk understating potential future impacts in light of the uncertainties, this impact related to VMT would be **potentially significant**.

Mitigation Measures

Vehicular travel associated with implementation of later treatment activities under the proposed program would primarily originate from near where individual treatment activities would occur. Due to the rural nature of the majority of the program area and the required equipment and number of employees (i.e., the primary trip generators associated with treatment activities) associated with each later treatment activity, it would not be feasible to reduce VMT generated under the proposed program beyond current practices of encouraging workers to carpool and/or use public transportation and the current practice of employing local crews and equipment as available and feasible. Additionally, there are a limited number of facilities where forest biomass produced by mechanical and manual treatments could be hauled to, operational constraints (capacity, hours of operation, processing services offered) exist at some facilities, and the cost of hauling would reasonably result in sawlogs and biomass taken to the closest available facility. Therefore, there is no feasible mitigation available.

Significance after Mitigation

As stated above under the pre-mitigation significance determination, to meet CEQA's mandate of good faith disclosure and to not risk understating potential future impacts in light of uncertainties related to wildfire, this PTEIR classifies this VMT impact as **potentially significant and unavoidable**, even though the probability of a net VMT reduction could be reasonably expected to occur in the long term with the intended reduction in wildfire occurrence and severity, and individual later treatment activities under the proposed program would likely be less than significant pursuant to the thresholds identified in OPR's Technical Advisory on Evaluating Transportation Impacts. Even though the intended outcome would be less than significant, the "potentially significant and unavoidable" determination is necessary under CEQA to disclose in good faith the potential effects related to VMT generated by the proposed program as a whole.

4 SOCIAL AND ECONOMIC EFFECTS

4.1 INTRODUCTION

This chapter presents a high-level assessment of the potential social and economic effects of the proposed program. While the social and economic effects are not *required* to be included in an environmental impact report (per State CEQA Guidelines Section 15131(a)), these effects may be studied for informational purposes to gauge the value of implementing the proposed program or alternatives and used as part of the decision making process for adopting the Tahoe PTEIR and approving the proposed program. Furthermore, *Guidance in the Preparation and Review of Program Timberland Environmental Impact Reports* (Board of Forestry and Fire Protection and CAL FIRE 2014) states, “a PTEIR may consider the social or economic changes of the project where it is related to a physical change and used in determining whether the physical change is significant.” The economic and social effects of the proposed program and alternative described herein would not result in any new or more severe environmental effects beyond those assessed in this PTEIR.

The information presented in this chapter has been generated using the best information that is readily available, but some details (such as treatment costs, changing dynamics in the market for timber, inflationary forces, labor market fluctuations, etc.) are not known with a high degree of certainty at this time, and could change in the future. As such, the results presented herein should be considered conceptual planning-level estimates.

4.2 GENERAL APPROACH AND METHODOLOGY

The social and economic analysis of the PTEIR and alternatives, including the cost to implement treatment activities, the cost to suppress wildfires, and related impacts to public health, recreation, tourism, property values, and municipal revenues is based on a number of resources. Much of the economic research presented in this chapter is informed by the Lake Tahoe West Economics Team: Key Findings and Methodology Documentation (Lake Tahoe West in prep.). In addition, data on forest fuel treatment implementation costs, wildfire suppression costs, property impacts, tourism impacts, municipal revenue impacts, and other relevant data were obtained from a variety of sources, including:

- ▶ U.S. Department of Agriculture Forest Service Lake Tahoe Basin Management Unit (USFS),
- ▶ Newspaper and magazine articles, and
- ▶ Tahoe Prosperity Center.

The social and economic information presented herein is focused on the proposed program and later treatment activities, which are compared to existing conditions (Alternative A described in Chapter 6, “Alternatives”). Each of the program alternatives included in Chapter 6 are also discussed.

4.3 COSTS TO IMPLEMENT TREATMENT ACTIVITIES

There will be a substantial cost to the project proponents to implement the later treatment activities analyzed in the PTEIR over the next several years. There will also be costs associated with wildfire suppression, which could differ between existing conditions and the conditions contemplated in the PTEIR and selected alternatives. All of these costs will have a nominal effect on the local economy through the hiring of labor, and the purchase and rental of equipment, supplies, and other necessary inputs. The spending from PTEIR activities will support jobs, payroll, and additional indirect spending throughout the local and regional economies.

4.3.1 Treatment Costs

As described in Chapter 2, "Program Description," the PTEIR would authorize a variety of forest management treatments designed to reduce wildfire risk to communities and improve forest health within the program area. These activities include manual thinning, mechanical thinning, pile burning, and prescribed understory burning. The proposed program would treat an estimated 1,250 acres per year, broken down among the various treatment types as shown in Table 4-1. Approximately 500 acres would be treated using manual methods, 300 acres would be treated using mechanical treatments, 250 acres would utilize pile burning, and 200 acres would be treated through prescribed understory burning. Compared to existing conditions, the activities in the PTEIR represent an increase in treatment of approximately 747 acres per year.

Table 4-1 Estimated Acres Treated by Treatment Type

	Manual Treatments	Mechanical Treatments	Pile Burning	Prescribed Broadcast Burning	Total
Total Acres Treated - Existing Conditions	199.0	200.0	104.0	0.0	503.0
<i>% of Total</i>	39.6%	39.8%	20.7%	0.0%	100.0%
Total Acres Treated - Proposed Program	500.0	300.0	250.0	200.0	1,250.0
<i>% of Total</i>	40.0%	24.0%	20.0%	16.0%	100.0%
Potential Net Increase (Acres)	301.0	100.0	146.0	200.0	747.0

Source: Compiled by Ascent Environmental in 2019

The cost factors for treatment activities included in the proposed program are based on information from the Lake Tahoe West Economics Team (LTW Economics Team) and USFS. First, cost estimates that were prepared by the LTW Economics Team for the Lake Tahoe West Restoration Partnership were reviewed. The LTW Economics Team used the USFS BioSum OpCost model and adjusted the cost factors using actual thinning contracts from the USFS to reflect the higher costs of activities in the Tahoe region. The treatment costs from the LTW Economics were then inflated to 2020 dollars using the Bureau of Labor Statistics' Consumer Price Index (CPI).

It is reasonable to assume that the costs presented in the LTW Team's analysis would be similar to those that would be incurred as part of the later treatment activities under the Tahoe PTEIR. However, differences between the program area and Lake Tahoe West planning area (e.g., slope, distance to nearby roadways, forest density, and other variables) would influence the actual costs incurred. It's anticipated that of the mechanical treatments undertaken in the program area, approximately 70 percent would likely be cut-to-length and an estimated 30 percent would be whole tree treatments. The LTW Economic Team's cost estimates for mechanical treatments were adjusted accordingly. In addition, treatment activities within the program area are expected to be smaller and cover multiple land ownerships intermixed with developed communities. These projects would not achieve as the same economies of scale as the larger projects in general forest that were included in the Lake Tahoe West cost estimates. To account for this discrepancy, the cost estimates provided by the LTW Economics Team were inflated to 2020 dollars using CPI and adjusted upward by a factor of 20 percent to account for the anticipated higher costs of the smaller projects within and adjacent to the WUI.

For pile burning and understory burning activities, cost estimates from the USFS 2014 *Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy* (TFFT 2014) were used and adjusted to 2020 dollars.

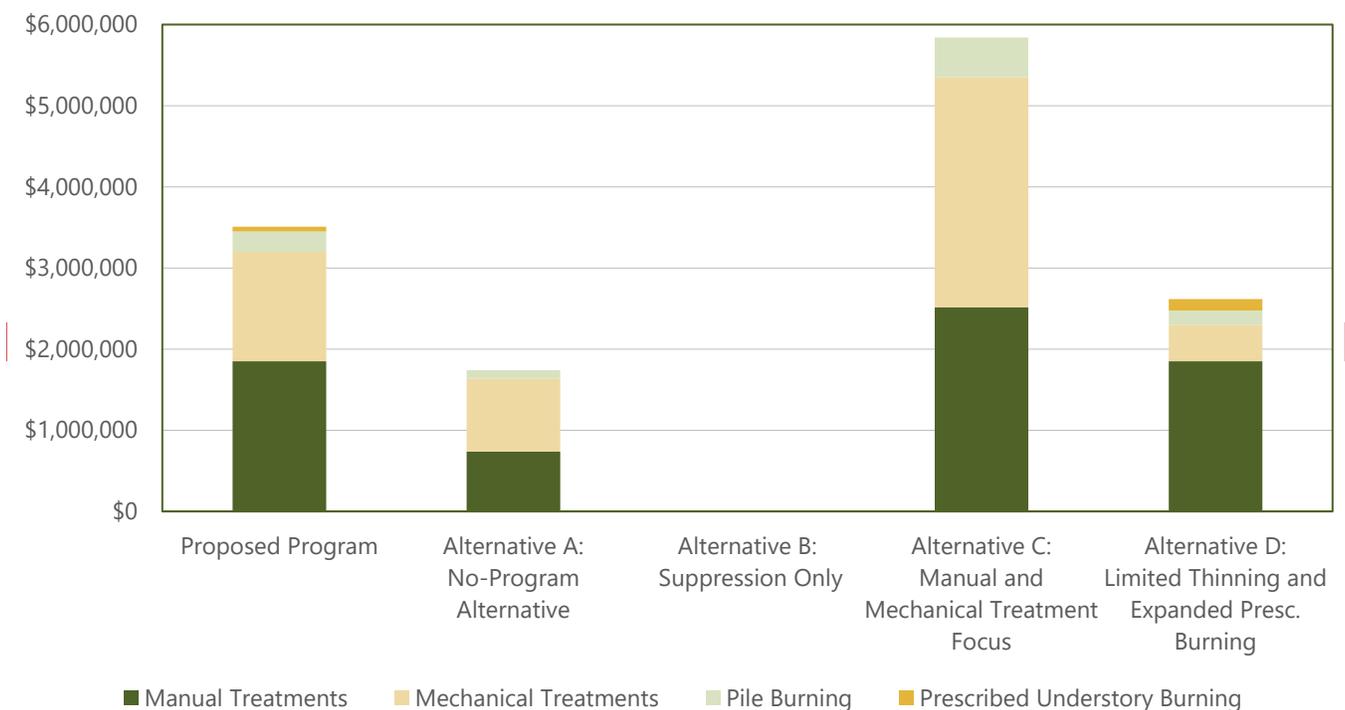
Table 4-2 summarizes the cost factors used to estimate annual treatment costs of later treatment activities.

Table 4-2 Summary of Treatment Cost Factors

Treatment Method	Adjusted Cost per Acre 2020 \$	Source/ Notes
Manual Treatment		
Hand-Thinning	\$3,700	LTW costs escalated by 20% to account for likely higher values in the Program Area
Mechanical Treatment		
Ground-Based CTL	\$3,200	LTW costs escalated by 20% to account for likely higher values in the Program Area
Ground-Based WT	\$7,500	LTW costs escalated by 20% to account for likely higher values in the Program Area
Mechanical Treatment Wtd. Avg.	\$4,500	Utilizes adjusted LTW factors; assumes 70% CTL and 30% WT
Pile Burning	\$1,000	From USFS Multi-Jurisdictional Fuel Reduction and Wildfire Prevent Strategy (2014). Costs scalated from 2014 dollars to 2020 dollars using CPI.
Understory Burning	\$300	From USFS Multi-Jurisdictional Fuel Reduction and Wildfire Prevent Strategy (2014). Costs scalated from 2014 dollars to 2020 dollars using CPI.

Sources: TFFT 2014, Lake Tahoe West Economics Team: Key Findings and Methodology Documentation; draft provided in December, 2019

Figure 4-1 shows the estimated annual treatment cost of the proposed program and each alternative. As shown, the proposed program is estimated to cost an average of approximately \$3.5 million per year. This cost is approximately \$1.7 million higher than existing conditions (i.e., Alternative A), which is estimated to cost approximately \$1.8 million per year. Alternative B would have zero treatment costs, since this alternative proposes to cease all forest treatment operations and instead would only suppress wildfires when they occur. The proposed program is estimated to cost considerably less than Alternative C (\$5.8 million per year) and slightly more than Alternative D (\$2.6 million per year).



Source: Prepared by Wells Barnett Associates in 2020

Figure 4-1 Estimated Annual Treatment Costs (2020 \$)

4.3.2 Wildfire Suppression Costs

In addition to the costs incurred to implement treatment activities, as described above, costs would be incurred by CAL FIRE, local fire protection agencies, and other fire suppression agencies to carry out needed suppression activities when wildfires do occur. Section 3.2, "Wildfire," of this PTEIR discusses the impact of wildfire in detail and includes an estimated quantity of total acres burned each year in the WUI on the California side of the Tahoe Basin under each of the alternatives.

The LTW Economics Team utilized the LANDIS-II model to estimate the likely number, size, and location of wildfires in the WUI on the California side of the Lake Tahoe Basin within each decade over the next 100 years. Table 4-3 summarizes data presented in Section 3.2, "Wildfire," focusing on the projected acreage of wildfires by year for each scenario considered in the Lake Tahoe West Restoration Partnership over the next 30 years. As shown, it is expected that wildfires will burn approximately 41 to 45 acres per year (on average) in the WUI on the California side of the Tahoe Basin during this time period.

Table 4-3 Estimated Acreage of Wildfire in the WUI on the California Side of the Lake Tahoe Basin By Decade

Timeframe	Scenario 1 No Treatment Total Acres	Scenario 1 No Treatment Average Acres Per Year	Scenario 2 Business as Usual Total Acres	Scenario 2 Business as Usual Average Acres Per Year	Scenario 3 Increased Treatment Total Acres	Scenario 3 Increased Treatment Average Acres Per Year	Scenario 4 Increased Prescribed Burning Total Acres	Scenario 4 Increased Prescribed Burning Average Acres Per Year
Decade 1 (Years 1 - 10)	323.9	32.4	316.4	31.6	336.8	33.7	309.7	31.0
Decade 2 (Years 11 - 20)	477.0	47.7	485.2	48.5	429.3	42.9	512.8	51.3
Decade 3 (Years 21 - 30)	519.9	52.0	543.2	54.3	480.2	48.0	531.2	53.1
Average Overall - Years 1 Thru 30		44.0		44.8		41.5		45.1

Source: Compiled by Wells Barnett Associates in 2020

Next, the LTW Economics Team derived estimates of the cost to suppress wildfires, based on actual cost data from wildfire events in the Lake Tahoe region from 1987 to 2018 (Table 4-4). The cost of fire suppression generally varies by the size of the fire, with larger wildfires generally sustaining a lower cost-per-acre because of economies of scale. Adjusted to 2020 dollars, costs have ranged from approximately \$8,000 per acre for fires between 1 and 10 acres in size to approximately \$2,800 per acre for fires larger than 1,000 acres in size.

Table 4-4 Summary of Suppression Costs Used in LTW Economic Study

	Fire Size	Cost per Acre (2018 \$)	Cost per Acre (2020 \$)
Suppression Costs	1 - 10 Acres	\$7,898	\$8,114
	10 - 100 Acres	\$6,109	\$6,276
	100 - 300 Acres	\$3,017	\$3,099
	300 - 1,000 Acres	\$3,053	\$3,136
	1,000 - 5,000 Acres	\$2,732	\$2,807
Gross Average Suppression Costs			\$4,600
Gross Average of 1-10 Acre Fires and 10 - 100 acre fires			\$7,200

Source: Lake Tahoe West in prep.

High-level estimates of the cost to suppress wildfires in the WUI on the California side of the Tahoe Basin over the long-term were developed based on the wildfire cost estimates presented in Table 4-4, and the estimated acreage of wildfire projected over the next 30 years. This analysis is based on an average suppression cost of \$7,200 per acre, which is the approximate average cost for suppression of fires between 1 and 100 acres in size, because it is assumed that most wildfires in the WUI would be relatively small in scale. It should be noted that this analysis assumes that the average cost of wildfire suppression remains constant over time; whereas, in reality, staffing costs, equipment costs, and other expenses may differ.

The analysis is focused on presenting costs for both the Lake Tahoe West Scenario 2 (i.e., "business as usual" scenario) and Scenario 3, which would involve increased treatment including a mixture of hand-thinning and mechanical treatments, with biomass being removed after treatment and no prescribed burning. While these scenarios do not align perfectly with the proposed program, they are relatively similar and provide a range in the amount of treatment activities that would be less than or more than would occur under the proposed program.

The estimated cost to suppress wildfires in the WUI under these two scenarios is shown in Table 4-5. Under Scenario 2, the annual cost to suppress wildfires in the WUI is \$2.3 million over the first 10 years and a total of \$9.7 million over 30 years. Under an increased treatment scenario (Scenario 3), costs are estimated at \$2.4 million over the first 10 years and \$9.0 million over 30 years. Overall, Scenario 3 shows an estimated savings of approximately \$709,000 in suppression costs over a 30-year period. It should be noted that these cost estimates assume that suppression costs are the same regardless of the severity of the wildfire. As shown in Section 3.2, "Wildfire," Scenario 3 is expected to result in an approximately 14 percent decrease in the proportion of wildfire's that burn at high-severity. To the extent that high-severity wildfires are more costly to suppress, scenario 3 would result in greater cost savings than presented in Table 4-5.

Table 4-5 Total Acres of Wildfire (Projected) in the WUI on the California Side of the Lake Tahoe Basin

Item	Scenario 2 Business as Usual Total Acres	Scenario 2 Business as Usual Average Acres Per Year	Scenario 2 Business as Usual Average Cost per Year ¹	Scenario 2 Business as Usual Cumulative Cost (End of Decade)	Scenario 3 Increased Treatment Total Acres	Scenario 3 Increased Treatment Average Acres Per Year	Scenario 3 Increased Treatment Average Cost per Year ¹	Scenario 3 Increased Treatment Cumulative Cost (End of Decade)	Cost Difference (Cumulative)
Decade 1 (Years 1 - 10)	316.4	31.6	\$227,808	\$2,278,080	336.8	33.7	\$242,496	\$2,424,960	-\$146,880
Decade 2 (Years 11 - 20)	485.2	48.5	\$349,200	\$3,493,440	429.3	42.9	\$309,096	\$3,090,960	\$402,480
Decade 3 (Years 21 - 30)	543.2	54.3	\$391,104	\$3,911,040	480.2	48.0	\$345,744	\$3,457,440	\$453,600
Average Overall - Years 1 Thru 30	48.3	44.8			913.6	91.4			

¹ Assumes average suppression costs of \$7,200 per acre. See Table 4-4.

Source: Compiled by Wells Barnett Associates in 2020

4.4 ECONOMIC BENEFITS OF THE PROPOSED PROGRAM

4.4.1 Value of Merchantable Timber

During the course of implementing the proposed program, biomass would be removed from the program area, some of which would subsequently be transported and sold to recoup a portion of the costs of implementing the later treatment activities. As described in Section 2.4.6, "Biomass Disposal," an estimated average of 10,000 to 15,000 tons of biomass would be removed during implementation of the proposed program each year, which is broken down by the type of biomass in Table 4-6.

Table 4-6 Breakdown of Biomass Removal

	%	Quantity (Tons) Low Estimate		Quantity (Tons) High Estimate	Quantity (Tons) Mid-Point Estimate
Estimated Average Quantity of Biomass Removed Each Year:		10,000	to	15,000	12,500
Sawlogs	60	6,000		9,000	7,500
Burning	20	2,000		3,000	2,500
Biomass Energy Generation	5	500		750	625
Firewood	5	500		750	625
Onsite Decomposition	5	500		750	625
Other Forest Products	5	500		750	625
Total PTEIR Acres	100	10,000		15,000	12,500

Source: Compiled by Ascent Environmental in 2019

The overall average of net revenues generated per acre of treatment for the proposed program is based on the LTW Economic Team's assessment of Scenario 2. Under this scenario, the LTW Economic Team found that approximately \$511,000 could be generated from timber sales annually from approximately 1,000 acres treated per year. On a per-acre basis, this equates to net revenues of approximately \$511 per acre treated.

Using a rounded approximate value of \$500 per acre, the proposed PTEIR program is estimated to produce an average of \$400,000 per year in net biomass sale revenues on the 800 acres per year that would be treated by manual and mechanical treatments, according to the assumptions described above. Compared to the No-Program Alternative (Alternative A), implementation of the proposed program would result in an increase in net timber sales of \$200,000 per year. The calculations and assumptions used to derive these results are shown in Table 4-7.

Table 4-7 Estimated Value of Biomass Removal

	Manual Treatments	Mechanical Treatments	Pile Burning	Prescribed Broadcast Burning	Total
No Program Alternative					
Acres Treated/ Year	199	200	104	0	503
Assumed Net Revenue/ Acre ¹	\$500	\$500	\$0	\$0	
Net Annual (Annual)	\$99,500	\$100,000	\$0	\$0	\$199,500
Proposed PTEIR					
Acres Treated/ Year	500	300	250	200	1,250
Assumed Net Revenue/ Acre ¹	\$500	\$500	\$0	\$0	
Net Annual (Annual)	\$250,000	\$150,000	\$0	\$0	\$400,000
Additional Revenue PTEIR	\$150,500	\$50,000	\$0	\$0	\$200,500

¹ Net revenue per year of \$500 per acre is based on the values reported by the Lake Tahoe West Economics Team, for Scenario 2 (Business As Usual, WUI-Focused).

Source: Prepared by Wells Barnett Associates in 2020

4.5 OTHER EFFECTS

4.5.1 Risk to Property

The risk of wildfire presents a threat to properties within the program area associated with the risk of a catastrophic wildfire destroying existing structures and causing dramatic declines in surrounding property values. There are several recent examples of such disasters, most notably the Camp Fire in Paradise, California that caused an estimated \$16.5 billion in damages in 2018 (Los Angeles Times 2019), and the Angora Fire in the Tahoe Basin that destroyed 254 homes and caused an estimated \$140 million in property damage in 2007 (Reno Gazette Journal 2017).

The proposed program's potential impacts on property is evaluated based on results from the LTW Economic Team's economic analysis. This includes an estimate of the value of properties that are at risk of being burned by a wildfire. At risk properties were identified by assigning a probability of a fire occurrence on each parcel in the LTW Study Area over a 30-year time horizon (Lake Tahoe West in prep.).

The two scenarios from the LTW analysis that are most similar to the scenarios studied in this PTEIR are Scenario 2 (Business as Usual) and Scenario 3 (Increased Thinning). Scenario 2 is closest to Alternative A - No Program as described in Chapter 6, Alternatives, of this PTEIR, and Scenario 3 is closest to the proposed program.

Table 4-8 shows the comparison of properties at risk of a medium- or high-intensity wildfire. As shown, approximately 1,731 properties are at risk in the LTW Study Area, under Scenario 2 (Business as Usual), while only 681 properties were at risk under Scenario 3 (Increased Thinning), as increased treatments decrease the probability of wildfire.

Assuming the average residential property values of \$500,000 (Lake Tahoe West in prep), this represents a total property value of \$865 million in Scenario 2 versus \$340 million in Scenario 3. In other words, implementing Scenario 3 in the Lake Tahoe West planning area, which is similar to the proposed program, would reduce the amount of property value at risk by approximately \$525 million, as compared to Scenario 2.

Table 4-8 Estimated Value of Residential Properties at Risk in LTW Scenarios

Item	Scenario 2 (Business As Usual)	Scenario 3 (Increased Thinning)	Difference (Scen. 2 minus Scen. 3)
Properties at Risk of Medium/High-Intensity Fire	1,731	681	1,050
Value of Properties at Risk ¹	\$500,000	\$500,000	
Total	\$865,500,000	\$340,500,000	\$525,000,000

¹ From the LTW Team's Economic Analysis. Subject to refinement.

Source: Compiled by Wells Barnett Associates in 2020

4.5.2 Health Impacts

The LTW Economics Team evaluated health impacts of wildfire by quantifying the economic value of illnesses associated with smoke exposure (from both wildfire and treatments), using BenMAP, which is an economic benefit transfer tool that estimates the health impacts of airborne pollution exposure. This analysis is highly complex and measures the size and characteristics of populations exposed to smoke under various wildfire and forest treatment (i.e., prescribed burning) scenarios, and quantifies the economic value of potential illnesses caused by this exposure. Given the high number of variables inherent to this analysis, the estimated results vary widely based on differing conditions; however, the LTW Economic Team's analysis found that the costs of health impacts of a single wildfire in the Tahoe Basin could be in the range of \$5 million to \$70 million.

4.5.3 Recreation/Tourism

It is very difficult to quantify the magnitude of the impact of wildfire on tourism and recreation, since the impacts depend on many variables, including the specific timing, location, and severity of the fire and consequent smoke, and effects on transportation routes. However, it is clear that when wildfires occur near tourism areas, the impact felt by the tourism industry can be substantial.

There is very little empirical research connecting tourism losses to the effects of wildfire, but some anecdotal evidence exists. For instance, the Angora Fire of 2007 has been said to cause a total loss of \$1 billion in tourism spending in the Lake Tahoe Basin (USFS no date). More recently, the Yosemite Valley area experienced significant tourism impacts related to the Ferguson Fire in 2018, which cost the park a loss of approximately \$1.7 million in entry fees and cost local business upwards of \$50 million in tourism spending (Outside Magazine 2018).

An estimated 15 million people visit the Lake Tahoe Basin each year. Tourism is the predominant industry in the Basin, accounting for approximately \$3.3 billion dollars in total spending per year and representing approximately 63 percent of the region's total economic activity (Applied Development Economics 2018).

Outdoor recreation, specifically, is a large portion of Lake Tahoe's tourism economy and is especially vulnerable to impacts from major wildfires. The USFS LTBMU estimates that over 7.7 million people visit the LTBMU each year, who spend approximately \$1 billion per year during their visits (USFS 2019). If LTBMU facilities are damaged, destroyed, made difficult or impossible to travel to, or are unusable because of smoke conditions, the impact to visitor spending could be substantial.

4.5.4 Municipal Revenues

To the extent tourism is impacted by a fire-related emergency, smoky conditions, or other related factors, municipal revenues to local jurisdictions would also be affected. The Lake Tahoe regional economy is dominated by the tourism industry; in fact, over 60 percent of the Lake Tahoe regional economy is related to tourism (as noted above). Local and regional government agencies depend upon the revenue generated from tourism, primarily in the form of retail sales taxes and transient occupancy taxes (TOT). Should wildfire cause tourism in Lake Tahoe to suffer a perceptible decline, municipal revenues generated would also be impacted accordingly.

As a point of reference, the City of South Lake Tahoe's annual operating budget for 2019/2020 shows that Transient Occupancy Tax (TOT) represents nearly 40 percent of total general fund revenues, and sales tax revenues (which are largely driven by visitor spending) represents approximately 12 percent (City of South Lake Tahoe 2019). Clearly, any major impact to either or both of these sources from a catastrophic wildfire would have serious consequences on the city's budget, and its ability to provide municipal services, including police protection, fire protection, parks and recreation.

4.6 CONCLUSION

To summarize, an assessment of the social and economic implications of the proposed program produces a range of results. In regard to implementation costs, it is estimated that the proposed treatment activities will cost approximately \$3.5 million per year to implement. As the treatment activities are carried out, large quantities of biomass will be removed from the program area, which is estimated to be in the range of 10,000 to 15,000 tons of material per year. This biomass can then be sold to nearby processing facilities, which would generate approximately \$400,000 in timber sale revenues per year. This would result in a net program implementation cost of approximately \$3.1 million per year.

Wildfire suppression costs represent another major economic factor that could be affected by the proposed program. To provide some high-level measurement of this dynamic, wildfire suppression costs and projected the quantity (in acres) of wildfire that is likely to occur in the future under various forest management scenarios were examined. Based on data available from the LTW Economics Team, it is estimated that the cost to suppress wildfires of 100 acres

of less in the Tahoe Basin is approximately \$7,200 per acre. Based on the predicted extent of wildfire, an estimated \$9.7 million in suppression costs could be incurred over the next thirty years under "business as usual" conditions (i.e., no enhanced treatment activities). However, when increased treatment activities occur (as modeled by the Lake Tahoe West Scenario 3), this cost is reduced to \$9.0 million over thirty years, a cost-savings of over \$700,000. The actual cost savings associated with suppression may be greater because the treatment activities would also result in a lower proportion of high-severity fires, which could further reduce suppression costs.

The proposed program may also affect public health, property values, tourism activity, and municipal revenues. Public health impacts are particularly difficult to measure accurately; however, the LTW Economics Team found that the costs of health impacts of a single wildfire in the Tahoe Basin could be in the range of \$5 million to \$70 million. The effect of the proposed program on property values is also difficult to quantify, but there is approximately \$865 million in property value that is at risk of being damaged or destroyed by a medium to high-intensity wildfire under current conditions. Under an increased treatment program (represented by Lake Tahoe West Scenario 3), the value at risk would be reduced to \$340 million, a difference of over \$500 million.

While it is very difficult to measure the precise value of the potential loss in tourism spending and municipal tax revenues, the potential losses from a catastrophic wildfire are substantial, and that any activities meant to reduce wildfire risk has considerable economic value.

5 CUMULATIVE IMPACTS

5.1 INTRODUCTION TO THE CUMULATIVE ANALYSIS

This section presents an analysis of the cumulative impacts of the proposed program considered together with other past, present, and probable future projects producing related impacts, as required by Section 15130 of the California Environmental Quality Act Guidelines (State CEQA Guidelines). The goal of such an exercise is twofold: first, to determine whether the overall long-term impacts of all such past, present, and probable future projects are cumulatively significant; and second, to determine whether the proposed program’s incremental contribution to any such cumulatively significant impacts would be “cumulatively considerable” (and therefore significant). (See State CEQA Guidelines Sections 15130[a]–[b], Section 15355[b], and Section 15064[h]; and *Communities for a Better Environment v. California Resources Agency* [2002] 103 Cal. App. 4th 98, 120.)

Cumulative impacts are defined in State CEQA Guidelines Section 15355 as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” A cumulative impact occurs from “the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time” (State CEQA Guidelines Section 15355[b]).

The State CEQA Guidelines identify two basic methods for establishing the cumulative environment in which the project is to be considered: the use of a list of past, present, and probable future projects (the “list approach”) or the use of adopted projections from a general plan, other regional planning document, or certified EIR for such a planning document (the “plan approach”). Because of the similar types of activities that would result in vegetation that could combine with the proposed program to potentially result in cumulative impacts, this analysis uses the project approach.

5.2 CUMULATIVE SETTING

5.2.1 Geographic Scope

The geographic area that could be affected by the program and is appropriate for a cumulative impact analysis varies depending on the environmental resource topic, as presented in Table 5-1.

Table 5-1 Geographic Scope of Cumulative Impacts

Resource Topic	Geographic Area
Aesthetics	Localized (based on view shed and visibility) but may aggregate throughout the program area
Agriculture and Forestry Resources	Lake Tahoe Basin
Air Quality	Lake Tahoe Air Basin
Biological Resources	Sierra Nevada region
Archaeological, Historical, and Tribal Cultural Resources	Program area and adjacent areas
Energy	Statewide
Geology, Soils, and Land Capability	Program area
Greenhouse Gas Emissions and Climate Change	Global
Hazards and Hazardous Materials	Program area

Resource Topic	Geographic Area
Hydrology and Water Quality	Lake Tahoe Basin
Noise and Vibration	Localized (based on audibility and sensitive receptors)
Recreation	Lake Tahoe region
Transportation	Lake Tahoe region
Wildfire	Lake Tahoe region

Source: Compiled by Ascent Environmental in 2019

5.2.2 Regional Planning Environment

In the Lake Tahoe Basin, the TRPA Regional Plan is a long-range plan that serves as the regulatory framework and blueprint for redevelopment and limited growth within the Tahoe region (TRPA 2012). The Regional Plan consists of goals, policies, ordinances, and implementation measures to support achievement and maintenance of specific environmental standards – threshold standards (thresholds). The Regional Plan limits the total amount of growth that can occur within the Tahoe region, and establishes regulatory provisions, incentives, and project-review requirements necessary to attain and maintain the thresholds. Goals are also included in the Regional Plan that address land use, transportation, conservation, recreation, and public services and facilities. Additionally, the Meyers Area Plan, Placer County Tahoe Basin Area Plan, Tahoe Valley Area Plan, and Tourist Core Area Plan were developed subsequent to the Regional Plan and contain policies tailored to specific geographic areas within the Tahoe PTEIR program area.

The Lake Tahoe Environmental Improvement Program (EIP) is a program in the Tahoe region that is a partnership of federal, state, and local agencies, private interests, and the Washoe Tribe, created to protect and improve the extraordinary natural and recreational resources of the Lake Tahoe Basin (TRPA 2019). EIP partners implement projects that include everything from new bike trails to creek restorations to programs that protect the lake from aquatic invasive species.

The 2017 Linking Tahoe: Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) outlines the overall vision for developing, operating, and maintaining the Lake Tahoe region's transportation system (TRPA 2017). The RTP offers strategies to address the travel demands of residents, commuters, and the millions of people who visit Lake Tahoe each year. The SCS is a combined land use and transportation plan to meet adopted goals for the reduction in greenhouse gas (GHG) emissions, in compliance with California's Senate Bill (SB) 375, Statutes of 2008.

The regional context for wildfire prevention in the Tahoe Basin includes collaboration between multiple agencies to develop the Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy (Tahoe Fire and Fuels Team 2017) to make strategic decisions related to land management, fire, and the regulatory agencies to reduce the probability of a catastrophic wildfire. Fifteen Lake Tahoe Basin agencies, including the U.S. Forest Service, TRPA, land managers, and fire services of California, Nevada, and local jurisdictions have committed to support and implement the Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy to increase community protection from wildfire, identify and prioritize fuel reduction treatments, and facilitate communication and cooperation among those responsible for project implementation. The Lake Tahoe Basin Community Wildfire Protection Plan was developed by the Tahoe Fire and Fuels Team that implements the Lake Tahoe Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy and identifies and prioritizes areas for hazardous fuel reduction treatments.

5.2.3 Related Projects and Plans

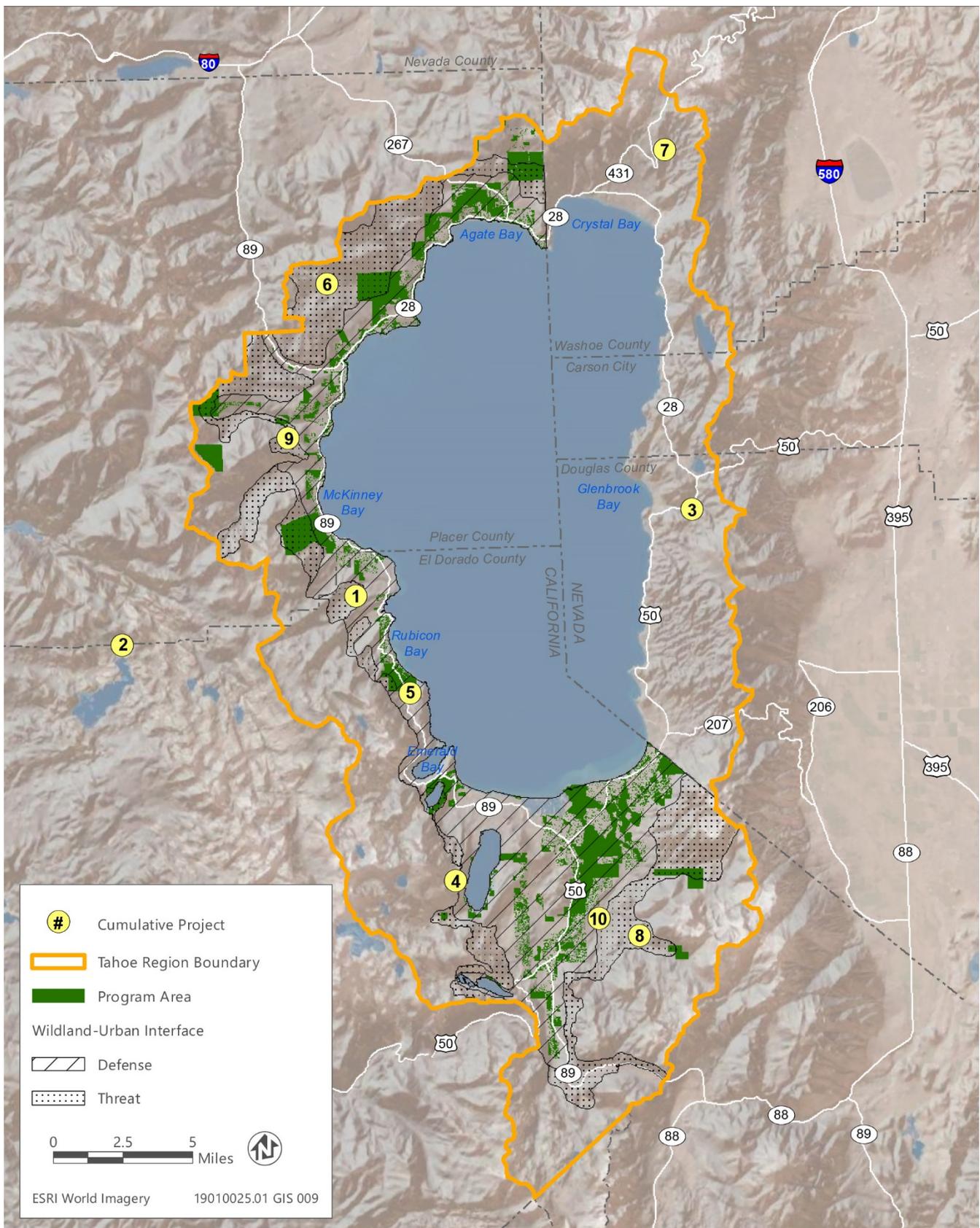
Because the Tahoe PTEIR is a regional program, various plans, projects, and activities that occur throughout the Tahoe region are considered in the cumulative analysis because they affect environmental conditions on a regional basis. This cumulative effects analysis focuses on those past, present, and probable future activities that have effects similar to those of the proposed program, including those within and outside the program area that affect the same resources as the Tahoe PTEIR. Related past, present, and reasonably foreseeable probable future activities, projects, and plans considered for the Tahoe PTEIR cumulative effects analysis are described in Table 5-2 and shown in Figure 5-1.

Table 5-2 Cumulative Projects List

Map ID #	Project Name	Location	Description	Project Status
1	Lake Tahoe West Restoration Project	Federal, state, local, and private lands on the California side of the Tahoe Basin, from Emerald Bay to Squaw Valley	A landscape restoration strategy to guide restoration activities on 59,000 acres. The goal of this project is to increase the resilience of this landscape and to protect against prolonged drought, climate change, and extreme fire. The proposed action would include forest thinning, TRPA Basin-wide Code amendment, biomass utilization and removal, prescribed burning, forest habitat restoration, project-specific Forest Plan Amendment (Protected Activity Centers, Roads in Backcountry), reforestation, meadow and aspen restoration, aquatic habitat restoration, stream restoration, road and stream crossing actions, and temporary forest closures and access considerations.	Planning and environmental review stages
2	Tahoe-Central Sierra Initiative	Lake Tahoe Basin and the American River, Bear River, Truckee River, and Yuba River watersheds	A group of state, federal, environmental, industry, and research representatives have partnered to accelerate regional scale forest and watershed restoration through ecologically based management actions while creating the opportunities to support a forest restoration economy and explore innovative process, investment, and governance tools. Projects include Lake Tahoe West, Upper Truckee Partnership, Caples Ecological Restoration Project, South Fork American River Cohesive Strategy, French Meadows Project, Western Nevada County Defensible Space Project, Sagehen Experimental Forest Project, and North Yuba Forest Resilience Project.	Various stages from planning to implementation and ongoing
3	Lake Tahoe Basin Community Wildfire Protection Plan	Lake Tahoe Basin	Wildfire fuels treatment projects on state and private lands within the Lake Tahoe Basin.	Various stages from planning to implementation to completed
4	Liberty Utilities Resilience Corridors	Multiple areas in El Dorado, Placer, and Washoe Counties on approximately 6,300 acres of National Forest System (NFS) lands managed by the Lake Tahoe Basin Management Unit (LTBMU) and the Tahoe National Forest (Tahoe NF)	Vegetation treatments in 55 miles of forest corridors adjacent to Liberty Utility power lines, with about 54 miles on the LTBMU and one mile on the Tahoe NF. These treatments would occur in untreated areas and would also connect previously treated areas.	LTBMU issued a Decision Memo in October 2019. A majority of project implementation is anticipated to begin in 2020 and would be completed within the next 10 years.

Map ID #	Project Name	Location	Description	Project Status
5	Fuels Reduction and Understory Burning, Burton Creek State Park, D.L. Bliss State Park, Ed Z'berg-Sugar Pine Point State Park, Emerald Bay State Park, Tahoe State Recreation Area, and Ward Creek Unit	Multiple areas on California State Park lands near the communities on the west shore and north shore of Lake Tahoe	California Department of Parks and Recreation to conduct fuels reduction activities on up to 2,012 acres in Burton Creek State Park, D.L. Bliss State Park, Ed Z'berg-Sugar Pine Point State Park, Emerald Bay State Park, Tahoe State Recreation Area, and Ward Creek Unit.	Project implementation has begun and is anticipated to be completed within the next few years.
6	Carnelian Fuels Reduction and Healthy Forest Restoration Project	Multiple areas on LTBMU lands near the communities of Kings Beach, Tahoe Vista, Carnelian Bay, Cedar Flat, Lake Forest, and Tahoe City	Forest management treatments to reduce the risk of severe wildfire, improve forest health, and provide defensible space to neighboring communities. Includes forest thinning using mechanical, hand, and prescribed burning treatments on 3,232 acres.	Project implementation has begun and treatments are planned to occur through 2020
7	Incline Fuels Reduction and Healthy Forest Restoration	Multiple areas on LTBMU lands on the northeast side of the Lake Tahoe Basin, between the Nevada-California state line and the Lake Tahoe Nevada State Park	Fuels reduction activities on 3,917 acres consisting of vegetation and fuels treatments to reduce stand densities that improve forest health, reduce hazardous fuels, that modifies fire behavior, and provides defensible space for adjoining developed private lands.	Project implementation has begun and treatments are planned to occur through 2024
8	South Shore Fuel Reduction and Healthy Forest Restoration Project	Multiple areas on LTBMU lands in the Lake Tahoe south shore area between Cascade Lake, the Nevada state line, Echo Summit, and along SR 89 to Luther Pass	Fuels reduction activities on 10,175 acres to include mechanical treatments, hand treatments, wildlife areas, follow-up treatments, and improvements to or reconstruction of portions of Forest Service roads.	Project implementation has begun, and treatments are planned to occur through 2020
9	West Shore Wildland Urban Interface (WUI) Hazardous Fuel Reduction	Multiple areas on LTBMU lands in the west shore area of Lake Tahoe, within the WUI between Emerald Bay and Burton Creek State Park	Proposes vegetation and fuels treatments to reduce stand densities and reduce fuel loading and continuity.	Project implementation has begun, and treatments are planned to occur through 2024
10	South Tahoe Fuels Treatment Project	Multiple areas on LTBMU lands in the Lake Tahoe south shore area roughly near Fallen Leaf Lake, Meyers, and areas near Pioneer Trail and the state line	Forest thinning and vegetation treatments in areas that have been previously treated to reduce fuels for forest fires and promote healthy and resilient forest stands. Some areas of the project would be treated for the first time. The project area is approximately 3,737 acres located in the Wildland-Urban Interface (WUI) and general forest.	Project planning has been completed and treatments are planned to occur through 2025
Not mapped	Vegetation management practices consistent with Public Resources Code (PRC) 4291 – Defensible Space	Private developed lands within and surrounding the program area	This state regulation requires owners (i.e., private individual, organization, partnership, limited liability company, or corporation) of properties in or adjacent to a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material to maintain defensible space of 100 feet from each side and from the front and rear of any structures on the property.	Ongoing

Source: Compiled by Ascent Environmental 2019



Source: Compiled by Ascent Environmental in 2019

Figure 5-1 Cumulative Projects

5.3 ANALYSIS OF CUMULATIVE IMPACTS

The following sections contain a discussion of the cumulative effects anticipated from implementation of the Tahoe PTEIR, together with related past, present, and reasonably foreseeable probable future activities, projects, and plans within the state, for each of the environmental issue areas evaluated in Chapter 3 of this PTEIR. The analysis conforms with Section 15130(b) of the State CEQA Guidelines, which specifies that the “discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.”

When considered in relation to other reasonably foreseeable projects, cumulative impacts to some resources would be significant and more severe than those caused by the proposed program alone.

For purposes of this PTEIR, the incremental effect of the proposed program would be cumulatively considerable, and thus significant in and of itself, if the cumulative effect of related activities (past, current, and probable future activities), together with the effect of the proposed project, are significant, and the incremental contribution of the project to these effects is substantial enough to be considered cumulatively considerable.

Such an outcome can occur in one of two ways. First, the cumulative effect of related activities (past, current, and probable future activities) without the project is not significant, but the incremental effect of the project, when added to the cumulative effect of the related projects, is substantial enough to result in a new cumulatively significant impact. Or second, the cumulative effect of related activities (past, current, and probable future activities) is already significant and the addition of the effect of the project is substantial enough to make the project’s contribution cumulatively considerable and thus significant in and of itself.

This cumulative analysis employs a multi-step approach: (i) assesses whether the program, together with past, present, and probable future projects, will cause significant cumulative impacts, (ii) identify the program’s contribution, without mitigation, to existing/anticipated (without the program) cumulative effects, (iii) determine whether, even with mitigation, the program’s incremental contribution would be cumulatively considerable, (iv) if the answer is yes, identify any additional potentially feasible mitigation that may be available, and (v) identify the impact significance conclusion after implementation of all (program-specific and any additional) potentially feasible mitigation.

5.3.1 Wildfire

The geographic scope for the wildfire cumulative impact analysis is the Tahoe Basin because impacts related to wildfire are location specific and projects within or immediately adjacent to the program area could combine to result in cumulative wildfire impacts. As discussed in Section 5.2.3, “Related Project and Plans,” above, there are several similar past, present, and reasonably foreseeable projects that have and likely will use internal combustion engines within wildlands, which have the potential to create sparks and subsequent fire, and employ prescribed burning within and surrounding the Tahoe Basin. Examples of related projects and plans that could combine to result in significant cumulative impacts are implementation of the Lake Tahoe Basin Community Wildfire Protection Plan, defensible space per PRC 4291, Fuels Reduction and Understory Burning on State Parks land, and the Carnelian, Incline, South Shore, West Shore, and South Tahoe fuels reduction projects.

The other past, present, and reasonably foreseeable projects identified in Section 5.2.3, “Related Projects and Plans,” combined with the proposed program could result in a significant cumulative impact related to the uncontrolled spread of fire as both the frequency and severity of wildfires in the Tahoe Basin are increasing (refer Section 3.2, “Wildfire,” for a description of current wildfire trends). As described in Impact 3.2-1, treatment activities under the program could result in temporary risks associated with fire from prescribed burning, as well as from the use of vehicles and heavy machinery in the program area as each can increase the risk of an accidental wildfire ignition. Several SPRs would be implemented to reduce the risk of fire from treatment activities including requiring that mechanized hand tools have federal- or state-approved spark arresters (SPR HAZ-2), which prevent the emissions of flammable debris. Implementing crews would carry one fire extinguisher per chainsaw and one long-handle shovel and one axe or Pulaski consistent with PRC Section

4428 (SPR HAZ-3), to quickly respond to an ignition should one occur. Additionally, smoking would only be permitted in designated smoking areas with barren or cleared mineral soil to at least 3 feet in diameter (SPR HAZ-4), which would help to minimize the risk of accidental wildfire ignition. Therefore, it is unlikely that the presence and use of vehicles and equipment needed to implement the treatment activities would substantially exacerbate fire risk resulting in the uncontrolled spread of wildfire. In addition, given all of the planning requirements (e.g., Smoke Management Plan and Burn Plan), ongoing monitoring and maintenance, and safety protocols, prescribed burning would not substantially exacerbate fire risk or result in the uncontrolled spread of wildfire.

As described under Impact 3.2-2, long-term wildfire risks were modeled using the LANDIS II model. Total acres affected by wildfire projected over a 100-year period within the Tahoe Basin was modeled by the LANDIS II model for each of the treatment scenarios and is representative of the cumulative condition for wildfire. Total acres of wildfire and wildfire severity were modeled for four vegetation management scenarios ranging from no vegetation treatments to intensive vegetation treatments.

Projected outcomes from the proposed program in combination with other past, present, and reasonably foreseeable projects in the Tahoe Basin would fall between the modeling results under Scenario 2 (Business as Usual) and Scenario 3 (Increased Treatment). Therefore, projected annual average wildfire acreages in the Tahoe Basin with implementation of the proposed program under cumulative conditions are expected to range from 490 and 500 acres of wildfire in Years 1-10, and between 1,180 and 1,195 acres of wildfire by Years 91-100 (Table 5-3 and Figure 5-2). While both scenarios show variability in projected wildfire acres from decade to decade, there is a general increase in total acres of wildfire over the 100-year span under both scenarios. Modeling outputs indicate that the total acres of wildfire under Scenario 3 would be approximately 12 percent higher compared to Scenario 2 in Years 1-10 but would be approximately 1.4 percent lower in the long term. While the modeling outputs show an increase in total acres of wildfire in the Tahoe Basin under Scenario 3 over the 100-year span, the percent increase in total acres under Scenario 3 decreases over time compared to Scenario 2. This indicates that the total acreage of wildfire is expected to continue to be variable but increasing vegetation treatments under the proposed program and other cumulative projects is projected to decrease the rate at which the total cumulative area burned by wildfires increases.

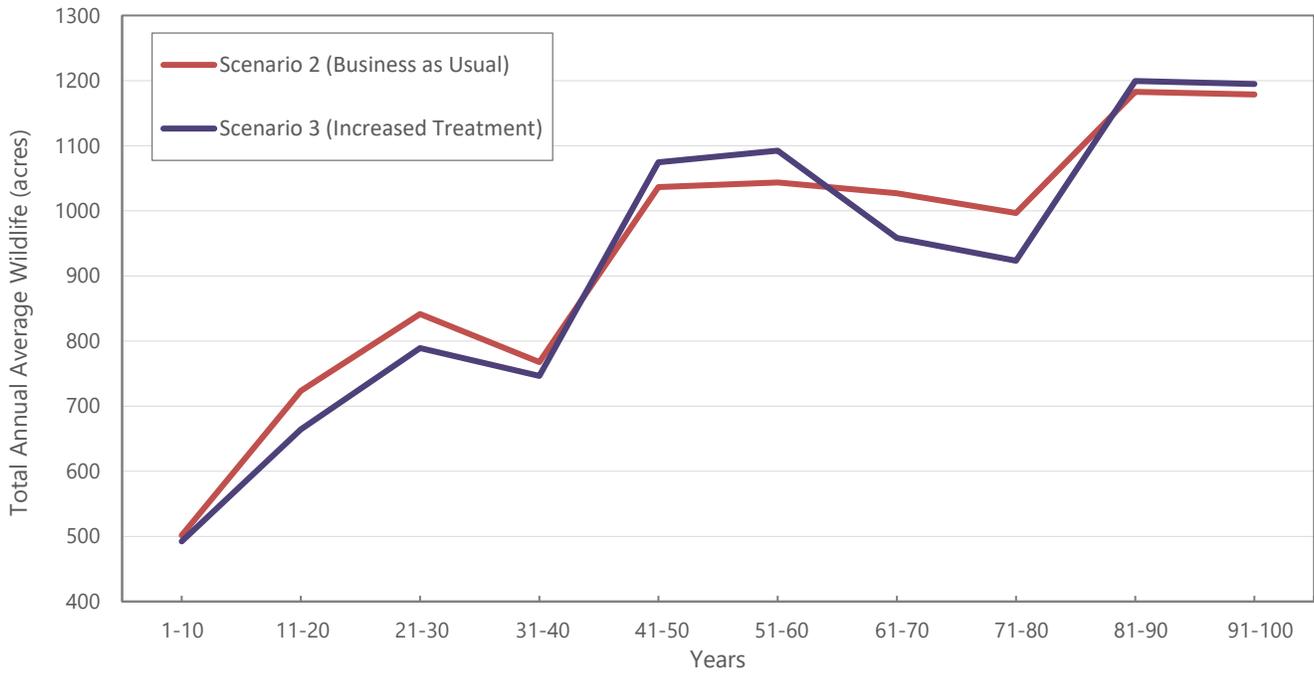
Table 5-3 Future Estimated Annual Average Wildfire Acres and Severity per Decade in the Tahoe Basin for LANDIS II Modeling Scenarios

Years	Scenario 2 – Business as Usual (Baseline) Total Acres	Scenario 2 – Business as Usual (Baseline) % Low ¹	Scenario 2 – Business as Usual (Baseline) % Medium ¹	Scenario 2 – Business as Usual (Baseline) % High ¹	Scenario 3 - Increased Treatment (change in severity compared to baseline) ² Total Acres	Scenario 3 - Increased Treatment (change in severity compared to baseline) ² % Low ¹	Scenario 3 - Increased Treatment (change in severity compared to baseline) ² % Medium ¹	Scenario 3 - Increased Treatment (change in severity compared to baseline) ² % High ¹
1-10	501.6	76.2	18.8	5.0	492.3	88.1 (11.9)	11.4 (-7.4)	0.5 (-4.5)
11-20	723.5	44.7	40.2	15.2	664.5	56.5 (11.8)	42.0 (1.8)	1.5 (-13.7)
21-30	841.6	24.2	58.1	17.7	789.1	27.1 (2.9)	69.4 (11.3)	3.5 (-14.2)
31-40	767.7	18.4	68.5	13.1	746.4	18.6 (0.2)	77.1 (8.6)	4.4 (-8.7)
41-50	1,036.4	13.6	62.8	23.6	1,074.7	12.9 (-0.7)	79.3 (16.5)	7.8 (-15.8)
51-60	1,043.7	11.6	58.2	30.2	1,092.4	10.0 (-1.6)	78.0 (19.8)	12.0 (-18.2)
61-70	1,027.0	9.4	52.9	37.8	958.3	8.4 (-1)	75.6 (22.7)	16.0 (-21.8)
71-80	996.7	7.9	53.7	38.3	923.5	6.8 (-1.1)	75.0 (21.3)	18.1 (-20.2)
81-90	1,182.8	6.2	51.9	41.9	1,199.4	5.8 (-0.4)	72.1 (20.2)	22.2 (-19.7)
91-100	1,178.6	6.6	58.5	34.9	1,194.9	5.2 (-1.4)	76.0 (17.5)	18.8 (-16.1)

¹ Low, medium, and high wildfire severity are percentages of the total wildfire acres by decade for that scenario.

² Numbers provided in parentheses represent the change in percentage of that wildfire severity compared to Scenario 2 – Business as Usual, which reflects baseline conditions.

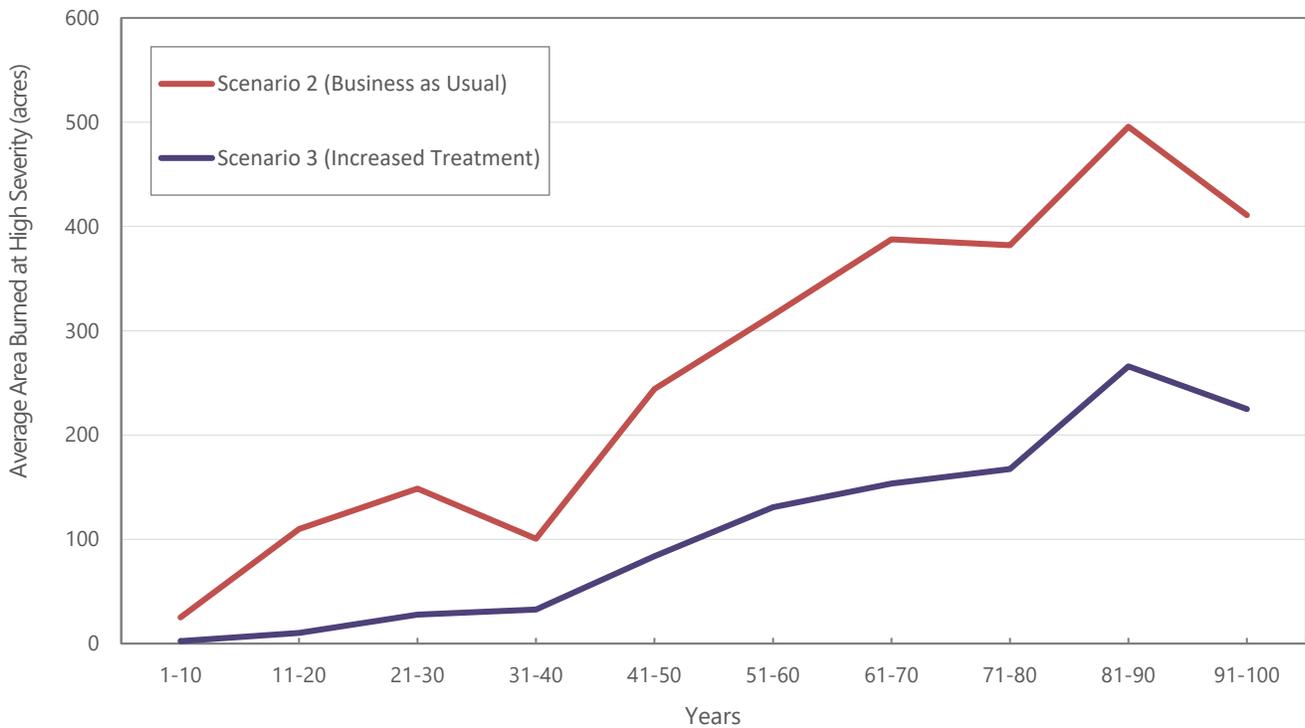
Source: Lake Tahoe West Science Team 2019



Source: Lake Tahoe West Science Team 2019

Figure 5-2 Average Total Annual Average Acres of Wildfire in the Tahoe Basin Projected by the LANDIS II Model (Cumulative Conditions)

In addition to total acres of wildfire projected to occur, modeling results include the percentages of low-, medium-, and high-severity wildfire that are projected to occur over the 100-year period. A comparison of annual average acres projected to burn at high severity within the Tahoe Basin for Scenarios 2 and 3 are shown in Figure 5-3. The model outputs indicate a decrease in the total acres projected to be burned at high severity under Scenario 3 compared to Scenario 2. With continuation of existing treatment activities (Scenario 2), the percentage of high-severity wildfire throughout the Tahoe Basin is expected to increase from 5 percent to almost 42 percent during the 100-year period, while increasing treatments under Scenario 3 indicates the percentage of high-severity wildfire would range from 0.5 percent to 22 percent of the total acres affected by wildfire during the 100-year period. As with total wildfire acres, the percentage of high-severity wildfire varies by decade; however, increasing vegetation treatments under the proposed program, as well as other cumulative projects, is projected to decrease in the percentage of high-severity wildfires occurring during all decades compared to Scenario 2.



Source: Lake Tahoe West Science Team 2019

Figure 5-3 Average Annual Acres of High-Severity Wildfire in the Tahoe Basin Projected by the LANDIS II Model (Cumulative Conditions)

Therefore, implementation of the proposed program in combination with other cumulative projects would not result in a long-term increase in total cumulative wildfire acres compared to existing conditions and would result in beneficial effects related to reducing wildfire severity in the long term. Overall, the proposed program, in combination with other vegetation treatment plans and projects identified in Section 5.2.3, “Related Projects and Plans,” would combine to reduce the risk of high severity wildfire within the Tahoe Basin. Therefore, the program’s contribution to exacerbating fire risk from implementation of treatment activities **would not be cumulatively considerable**.

5.3.2 Aesthetics

The geographic scope of the cumulative effects analysis for scenic resources includes the viewshed of each later treatment activity but may aggregate to include the program area and the associated viewshed within the Lake Tahoe Basin (Basin). The visual landscape of the Basin possesses a striking combination of rugged mountain peaks, a vast lake surface, and densely forested slopes. These landscape elements work in concert to produce the high-quality scenic environment of the Lake Tahoe region. Despite development and alteration of the landscape for over a century, the Basin continues to attract visitors because of its powerful and stunning inherent landscape character.

Scenic values in the Basin have been maintained through TRPA-mandated environmental thresholds including targets for roadways, the shoreline, and public recreation areas and bike trails. As described in Section 3.3, “Aesthetics,” scenic thresholds have improved since 2001, indicating improvement in the cumulative scenic environment. The threshold standard for Scenic Quality is a non-degradation standard, meaning that a scenic resource is considered in attainment of the threshold standard so long as its scenic quality rating remains equal to or higher than the rating it was originally assigned. Thus, there is not an existing adverse cumulative effect associated with scenic quality in the Tahoe region.

As discussed in Section 5.2.3, "Related Project and Plans," above, there are several similar past, present, and reasonably foreseeable projects that have affected and likely will affect vegetation, and thus aesthetics and visual resources, within and surrounding the program area. Examples of related projects and plans that could combine to result in significant cumulative impacts are past land management practices that emphasize fire suppression and vegetation and fuels treatment programs implemented throughout the Basin.

Past fire suppression practices have created overly-dense forests and increased the risk of catastrophic fire within the Basin. Without intervention, the consequences of past forest management decisions could result in the proliferation of large, destructive fires which would have cumulatively detrimental effects to scenic quality. Conversely, the vegetation management projects listed in Table 5-2 would create temporary visual impacts during implementation but would have less-than-considerable contributions to cumulative impact conditions. This is due both to the temporary and intermittent nature of the treatment activities as well as the fact that the projects listed would reduce fuel loads while maintaining the character of and improving the health and resilience of forest ecosystems. Additionally, none of the cumulative projects include forest practices such as clear-cutting or unshaded fuel breaks, which would drastically alter the appearance of the forest.

After implementation of required mitigation measures, the proposed program would not result in significant impacts related to scenic quality. In addition, reasonably foreseeable projects, would be evaluated when those projects are proposed. Project-level review would include a scenic assessment consistent with CEQA and/or TRPA requirements. Therefore, the proposed program's contribution to cumulative impacts on scenic resources **would not be cumulatively considerable**.

5.3.3 Agriculture and Forestry Resources

The proposed program would result in no impact on agricultural resources; thus, there would be no cumulative impact related to agricultural resources.

The geographic scope for forestry resources is the Tahoe Basin. The majority of the land in the Tahoe Basin is forested and in public ownership. Additionally, development in the Basin is guided by the Regional Plan, which only allows new development and redevelopment through authorization of residential allocations, commercial floor area, tourist accommodation units, and residential bonus units. As a result, development is capped in the Region and new development would not substantially convert forest areas to non-forest uses. In addition, as described in Section 3.4.1, "Regulatory Setting," in Section 3.4, "Agriculture and Forestry," there are a number of regulations that protect forest resources. For these reasons, there is not a cumulative condition in the Tahoe Basin related to the loss of forest land.

The cumulative projects identified in Table 5-2 would include similar activities as the proposed program involving forest management and fuel reduction activities. The basic objective for these cumulative projects is similar to that of the proposed program, to implement fuels treatments that would reduce the risk of catastrophic wildfires that could damage Lake Tahoe Basin forests, watersheds, habitats, and communities. These cumulative projects would be subject to many of the same requirements for tree removal as the proposed program and would not result in substantial loss of forest land or conversion of forest land to a non-forest use. Thus, these cumulative projects would not contribute to a cumulatively considerable impact on loss of forest land or conversion of forest land to a non-forest use.

Implementation of the proposed program would consist of vegetation treatment activities that would modify portions of the program area. As discussed in Impact 3.4-1, the proposed program would not result in the loss of forest land or conversion of forest land to a non-forest use. Although, later treatment activities would alter forest land through vegetation removal, the activities would be temporary and once complete the area would remain undeveloped. Additionally, the proposed program would not combine with the cumulative projects in Table 5-2 to cause a significant cumulative impact on loss of forest land or conversion of forest land to a non-forest use. Therefore, the proposed program's contribution to the loss of forest land or conversion of forest land to a non-forest use, **would not be cumulatively considerable**.

5.3.4 Air Quality

As discussed in Section 5.2.3, "Related Projects and Plans," above, there are several similar projects, past, present, and in the reasonably foreseeable future, that have affected or likely will affect vegetation and air quality, within and surrounding the program area (Table 5-2). For a cumulative effect to occur, treatment activities under the proposed program would have to occur simultaneously with and near other projects affecting air quality, such as other vegetation treatment and management activities, timber harvesting, implementation of plans and policies related to forest health, regional habitat conservation, land management practices, and construction projects. It is not anticipated that the temporary airborne emissions generated by treatment activities under the proposed program and emissions from projects unrelated to the program would simultaneously impact the same nearby receptors because the size of the program area and short duration of treatment activities would make it highly unlikely that two such projects would occur concurrently, in close vicinity to one another.

Criteria Air Pollutants

Implementation of the proposed program would result in an increase in emissions of criteria air pollutants and precursors generated by treatment activities, including mechanical and manual treatments, and prescribed burning. Emissions associated with these treatments would include: exhaust generated by off-road equipment, machine-powered hand tools, and potentially helicopters; exhaust from on-road vehicle trips associated with worker commutes and transport of equipment, as well as the hauling of biomass and merchantable timber; stationary-source emissions produced during the combustion or gasification of biomass at an energy generation facility; fugitive dust emissions generated by ground disturbance activities and vehicle travel on unpaved roads, including respirable particulate matter with aerodynamic diameter of 10 micrometers or less (PM₁₀) and fine particulate matter with aerodynamic diameter of 2.5 micrometers or less (PM_{2.5}); and smoke generated by the combustion of vegetation during prescribed burning.

The program area is in the Lake Tahoe Air Basin (LTAB), which is designated as nonattainment with respect to the California ambient air quality standards (CAAQS) for PM₁₀. This nonattainment condition is an existing significant adverse cumulative impact that results from previous development and projects in the region, including those listed in Section 5.2.3, "Related Projects and Plans." Treatment activities conducted under the proposed program would contribute added particulate matter to the LTAB that may conflict with attainment efforts by the El Dorado County Air Quality Management District (EDCAQMD) and the Placer County Air Pollution Control District (PCAPCD). As shown in Table 3.5-7 in Section 3.5, "Air Quality," it is estimated that maximum daily treatment activity would generate 35,568 pounds per day (lb/day) of PM₁₀, most of which would be generated by prescribed burning. Because this level would exceed the criterion of 82 lb/day recommended by EDCAQMD and PCAPCD, the contribution of PM₁₀ by treatment activity under the program would be **significant and cumulatively considerable**.

Though the LTAB is designated as attainment with respect to the CAAQS and national ambient air quality standards (NAAQS) for ozone, EDCAQMD and PCAPCD are responsible for maintaining this attainment status. As part of their plans to maintain the CAAQS and NAAQS for ozone in the LTAB both air districts have established a threshold of 82 lb/day for reactive organic gases (ROG) and oxides of nitrogen (NO_x), which are precursors to ozone. Cumulative development in the LTAB, including those projects and plans described in Section 5.2.3, "Related Projects and Plans," while required to mitigate for adverse air quality impacts, will contribute ozone precursors to the LTAB could contribute to future exceedances of the CAAQS and NAAQS for ozone in the LTAB, which would be a significant adverse cumulative impact. As shown in Table 3.5-7, it is estimated that maximum daily treatment activity would generate 54,844 lb/day of ROG and 4,296 lb/day of NO_x, most all of which would be generated by prescribed burning. Because these levels would exceed the 82-lb/day criteria recommended by EDCAQMD and PCAPCD, the contribution of ozone precursors to the LTAB by treatment activity under the program would be **significant and cumulatively considerable**.

Implementation of Mitigation Measure 3.5-1a and Mitigation Measure 3.5-1b would require project proponents to implement emission reduction techniques where feasible. However, these measures would not reduce mass emissions of criteria air pollutants and precursors to less than the mass emission significance thresholds established

by EDCAQMD and PCAPCD. Therefore, the proposed program's contribution of PM₁₀ to the nonattainment status of PM₁₀ in the LTAB, as well as the proposed programs contribution of ozone precursors to the LTAB, **would remain cumulatively considerable**.

Toxic Air Contaminants

Implementation of treatments under the proposed program would also result in an increase in emissions of toxic air contaminants (TACs), which are pollutants of localized concern. The emissions of multiple TACs by sources, including diesel particulate matter exhaust (diesel PM), is considered to be a cumulative impact to air quality in locations where receptors are exposed to high concentrations of TACs over the long term. As discussed under Impact 3.5-3, treatment activities implemented under the proposed program would result in diesel PM emitted by diesel-powered on-road vehicles and off-road equipment, including vehicles used for transport of biomass, but the resulting levels of health risk exposure would not result in an incremental increase in cancer risk greater than 10 in 1 million or a Hazard Index greater than 1.0 at any receptors. These incremental increase criteria are inherently the criteria for determining whether a project's emissions would be cumulatively considerable. The same is also true regarding the potential for exposure to smoke generated by prescribed burns, as discussed under Impact 3.5-5, because adherence to air district regulations, SPRs, including an approved Smoke Management Plan (SMP), would ensure the exposure would be minimized. Therefore, the proposed program's contribution to TAC health risks **would not be cumulatively considerable**.

Odors

Impacts associated with odor exposure are not inherently cumulative. It is unlikely that odors generated by treatment activities would combine with odors generated by other odor-emitting sources or with odors emitted by projects on the cumulative projects list. As discussed under Impact 3.5-5, diesel PM generated by equipment used for treatment activities would not expose a substantial number of people to objectionable odors, or for a sustained period of time. Similarly, as discussed under Impact 3.5-6, prescribed burns conducted under the program would not expose receptors to odorous smoke emissions because adherence to air district regulations, SPRs, including an approved SMP, would ensure the exposure would be minimized. Therefore, the proposed program's contribution to odor exposure **would not be cumulatively considerable**.

5.3.5 Biological Resources

Terrestrial Biological Resources

The geographic scope of cumulative impacts for terrestrial biological resources is the Lake Tahoe Basin. Biological resources in the Tahoe Basin have been subjected to multiple historic impacts that date back to the extensive logging during the Comstock era. Following that major disturbance, decades of fire suppression and development in the region have reduced the quality and quantity of habitats from pre-Comstock conditions. Past, present, and foreseeable future activities that have affected or may affect biological resources in the Tahoe region generally include logging, grazing, fuels and vegetation management, recreational development and activities, urban and commercial development, transportation and other capital improvement projects, and right-of-way maintenance and operation activities. While many past projects were discretionary and subject to environmental review under CEQA and implemented mitigation measures to reduce or compensate for adverse effects on sensitive natural resources, some activities and projects have not been subject to CEQA review and have potentially resulted in adverse effects on these resources without compensation. Related past, present, and reasonably foreseeable probable future activities, projects, and plans specifically considered for this cumulative effects analysis are listed in Table 5-2 and include South Tahoe Fuels Treatment Project, Incline Fuels Reduction and Healthy Forest Restoration, Carnelian Fuels Reduction and Healthy Forest Restoration Project, and Lake Tahoe West.

The primary terrestrial biological resource issues relevant to cumulative impacts, where the proposed program has the potential to contribute to impacts generated by other projects, are effects related to special-status plants (Impact 3.6-1), special-status wildlife (Impact 3.6-2), and wildlife nursery sites (Impact 3.6-6). Past projects and activities have resulted in the decline of some native plant and animal populations and rarity of some species, degradation of riparian/wetland habitats, and the introduction and spread of various noxious weeds and invasive species in the

program region, resulting in habitat degradation and other adverse effects on native biological resources. Existing and foreseeable future projects have the potential to continue this trend, although current policies, regulations, programs, and environmental review requirements currently minimize the potential for the further loss or degradation of native biological resources, including special-status species and sensitive habitats. The current presence and spread of noxious weeds and invasive species in the program region, the decline of some special-status plant and animal populations, and degradation of sensitive habitats are considered significant cumulative impacts. The significance level of existing cumulative effects related to wildlife nursery sites generally in the Tahoe region is less clear.

Special-Status Plants

Treatment activities under the proposed program would result in ground disturbance, vegetation removal, and modification of habitat, which could result in direct and indirect loss of special-status plants and/or modification of their habitat. Even with implementation of the applicable SPRs and CFPRs (as discussed in Impact 3.6-1), this would contribute to significant cumulative impacts. However, implementation of Mitigation Measures 3.6-1a and 3.6-1b would reduce the proposed program's contribution to this impact, because they would require project proponents to identify and avoid special-status plant occurrences to the extent feasible and provide compensation if avoidance is not feasible. Thus, with implementation of these SPRs, CFPRs, and mitigation measures, implementation of the Tahoe PTEIR is not expected to substantially reduce the abundance or viability of special-status plant populations. The proposed program's contribution to significant cumulative impacts to special-status plants **would not be cumulatively considerable**.

Special-Status Wildlife

Treatment activities under the Tahoe PTEIR would result in ground disturbance; vegetation removal; modification of habitat; use of hazardous materials and prescribed burn accelerants; and the use of heavy machinery, vehicles, and large crews, which could result in the disturbance or direct loss of special-status wildlife. Loss of wildlife habitat function could also occur as a result of treatment activities, especially prescribed burning and mechanical treatment activities. Several special-status wildlife species have been adversely affected as a result of historic and ongoing habitat loss across their range, which in some cases has been a contributing factor in their listing under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA) or designation as another special-status category (e.g., California Department of Fish and Wildlife [CDFW] species of special concern). Other special-status wildlife species have extremely limited ranges or narrow habitat requirements; thus, loss of habitat function within the range of these species could result in the narrowing or exclusion of the species from its range. This would contribute to significant cumulative impacts. Applicable SPRs and CFPRs discussed in Impact 3.6-2 and Mitigation Measures 3.6-2a, 3.6-2b, and 3.6-2c would reduce these direct and indirect impacts to less-than-significant levels for all special-status wildlife because protective actions including implementation of no-disturbance buffers, avoidance during sensitive periods of the species' life history, requirements for retention of important wildlife habitat features, and compensation for unavoidable loss of special-status wildlife species or habitat function would reduce the potential impacts of injury, mortality, or other disturbance on individual animals and habitat. Accordingly, these SPRs, CFPRs, and mitigation measures would substantially reduce the proposed program's contribution to cumulative impacts to special-status wildlife and wildlife habitat. With implementation of the measures, the proposed program would not substantially affect the distribution, breeding productivity, population viability, or the regional population of any special-status or common wildlife species; or cause a change in species diversity locally or regionally. Additionally, program implementation would not threaten, regionally eliminate, or contribute to a substantial reduction in the distribution or abundance of any native habitat type in the Tahoe region.

In the Tahoe Basin and elsewhere in the Sierra Nevada, late seral or mature forest provides high-quality breeding and foraging habitat for many special-status species, including several species evaluated in Impact 3.6-2 of the PTEIR such as northern goshawk, spotted owl, olive-sided flycatcher, western red bat, and pallid bat. In particular, northern goshawk and California spotted owl generally require mature or late seral conifer forests with large trees, snags, and downed logs; dense overstory canopy cover and relatively open understories; and other elements of forest structural complexity. While other special-status species such as olive-sided flycatcher, western red bat, and pallid bat are not restricted to or narrowly associated with late seral forest habitat, specific habitat elements characteristic of late seral

conditions such as large trees and snags, structural complexity, and relatively open understories provide high-quality habitat. Therefore, the cumulative condition of late seral forest habitat is a useful indicator of habitat quality for several sensitive and common forest species in the Tahoe Basin.

As discussed previously, the Lake Tahoe West Restoration Partnership has modeled several forest management scenarios in the PTEIR program area with the LANDIS II model. While the modeling results are not limited to the program area for the Tahoe PTEIR, the modeling area encompasses the majority of the program area, reflects conditions within the program area, and serves as a useful proxy for the relative trends in wildlife habitat that could be expected in the program area. Projected outcomes from the proposed program in combination with other past, present, and reasonably foreseeable projects in the Tahoe Basin would fall between the modeling results under Scenario 2 (Business as Usual) and Scenario 3 (Increased Treatment). In addition to other biological metrics, Landis modeling was conducted specifically for high-quality reproductive habitat of three wildlife predator species strongly associated with late seral forests: spotted owl, northern goshawk, and Pacific marten. For the Lake Tahoe West planning area, the modeling projected substantial increases in high-quality habitat for each late seral species under Scenario 2 and Scenario 3 over the full 100-year modeling period and between each decadal (10-year) time step. Under Scenario 2, for northern goshawk the total acreage of high-suitability reproductive habitat was projected to increase by 39 percent and 46 percent for the 50-year and 100-year projections, respectively; for California spotted owl, projected increases over the same periods were approximately 230 percent and 360 percent, respectively. For other habitat quality metrics for these species such as mean patch size and proportion of total landscape, the Landis modeling projected considerable increases over the full 100-year modeling horizon, with variability in short-term trends between some decadal time steps. These specific results applied to the California portion of the Tahoe Basin but the general trends are expected to apply Basin-wide, resulting in long-term cumulative benefits to late-seral-dependent special status species.

For the reasons described above, the proposed program's contribution to significant impacts to special-status wildlife **would not be cumulatively considerable.**

Wildlife Nursery Sites

As discussed in Impact 3.6-6, vegetation treatment activities implemented under the proposed program could be located in or adjacent to areas used as wildlife nursery sites. Wildlife nursery sites could be disturbed or essential nursery habitat components could be degraded by vegetation treatment activities. This would contribute to potentially significant cumulative impacts. SPRs BIO-1, BIO-3, BIO-4, BIO-8, HYD-1, HYD-3, and HYD-4 and applicable CFPRs discussed in Impact 3.6-6 require identification of nursery sites prior to treatment activities and actions to prevent degradation of aquatic and riparian corridors (see Appendix B). While implementation of SPRs would minimize impacts, nursery sites could still be removed, degraded, or disturbed during treatment activities. However, in addition to implementation of applicable SPRs and CFPRs, implementation of Mitigation Measure 3.6-6 would reduce the proposed program's contribution to the potentially significant cumulative impact to wildlife nursery sites because it would require retention of nursery sites identified by implementation of SPR BIO-8 and establishment of no-disturbance buffers around these sites. Implementation of Mitigation Measure 3.6-6 would reduce potentially significant impacts to wildlife nursery sites because it would avoid removal of important habitat features and avoid or minimize disturbance from noise and human presence. This would retain the value and function of the nursery site such that its use by native wildlife would not be substantially impeded. Thus, after implementation of relevant SPRs and Mitigation Measure 3.6-6, the Tahoe PTEIR's contribution to potentially significant cumulative impacts to nursery sites **would not be cumulatively considerable.**

Fisheries and Aquatic Resources

The geographic scope for the analysis of cumulative impacts to fisheries and aquatic biological resources is the Tahoe Basin. Potentially significant impacts to fisheries would result from activities that substantially reduce the abundance, distribution, or viability of native, special-status, or important non-native game fishes; substantially interfere with movement or habitat use by sensitive life stages of these species; or cause the introduction or spread of AIS.

Native fish populations and stream and nearshore lake habitat in the Tahoe Basin have been depleted and degraded by over 150 years of land and water uses including logging, grazing, and mining. Intentional and unintentional

introductions of AIS in the Basin have altered the ecology of aquatic habitats, altered predator/prey dynamics, and adversely affected the distribution and abundance of native fishes. Historical logging and grazing damaged stream banks and altered stream habitat structure through sedimentation and degradation of riparian habitats. Nearshore lake habitat has also been degraded or lost through similar alterations or by development. Together, these cumulative adverse impacts can be considered significant. Environmental regulation, stewardship, and restoration have largely curtailed further impacts and begun to remediate legacy impacts in riparian and aquatic habitats throughout the Tahoe Basin, but many native fish populations remain depleted and at risk of continued impacts from habitat degradation, habitat loss, and AIS.

Other current and probable future actions in the Tahoe Basin that would affect populations or stream habitat used by native, special-status, and recreationally important non-native game fishes include forest management, vegetation treatment, and ecosystem enhancement activities implemented under the Lake Tahoe West program, the Tahoe-Central Sierra Initiative, and numerous vegetation treatment projects designed to reduce forest fuels and improve forest health throughout the Basin (see Section 5.2.3, "Related Projects and Plans"). While these actions would likely have some level of adverse effects on riparian and aquatic habitat that could affect sensitive fishes, projects would comply with regulations and protections required by CAL FIRE, CDFW, Placer and El Dorado counties, Lahontan Regional Water Quality Control Board (Lahontan RWQCB), TRPA, U.S. Army Corps of Engineers, and LTBMU that require impacts to be avoided, minimized or mitigated to the maximum extent practicable. As a result, adverse effects of other current and probable future projects would likely be relatively minor and are not expected to make a considerable contribution to existing cumulative impacts on special-status and other native fishes, or to contribute considerably to impacts related to the introduction or spread of AIS.

Later treatment activities implemented under the Tahoe PTEIR would result in minor, short-term reductions in aquatic and riparian habitat quality and function, but with incorporation of SPRs and adherence to applicable CFPRs discussed in Impacts 3.5-3 and 3.5-4 these effects would not substantially reduce the distribution, abundance, or viability of native and special-status fish populations or populations of non-native game fishes and impacts would be less than significant. Additionally, later treatment activities would incorporate SPRs to avoid or minimize the risk of introduction or spread of AIS, rendering any impacts less than significant. As a result, the contribution of later treatment activities implemented under the PTEIR to existing cumulative impacts on special-status and other native fishes would not be cumulatively considerable. Similarly, later treatment activities under the PTEIR would not make a cumulatively considerable contribution to the risk of AIS introduction or spread. Therefore, the effects on fisheries and aquatic biological resources from later treatment activities implemented under the proposed program **would not be cumulatively considerable**.

5.3.6 Archaeological, Historical, and Tribal Cultural Resources

The cumulative context for the cultural resources analysis considers a broad regional system of which the resources are a part. The cumulative context for historical resources includes the program area and the greater Lake Tahoe Basin where common patterns of historic-era settlement have occurred over roughly the past two centuries. The cumulative context for archaeological resources, human remains, and tribal cultural resources is the Washoe territory.

Because all significant cultural resources are unique and nonrenewable members of finite classes, meaning there are a limited number of significant cultural resources, all adverse effects erode a dwindling resource base. The loss of any one archaeological site could affect the scientific value of others in a region because these resources are best understood in the context of the entirety of the cultural system of which they are a part. The cultural system is represented archaeologically by the total inventory of all sites and other cultural remains in the region. As a result, a meaningful approach to preserving and managing cultural resources must focus on the likely distribution of cultural resources, rather than on a single project or parcel boundary.

The potential to disturb historical resources would be greater for treatment activities that occur near or at the site of a known or previously unevaluated historic resource. As described in Section 3.7, "Archaeological, Historical, and Tribal Cultural Resources," standard protection measures (SPRs) would be incorporated into all proposed treatment activities under the proposed program. SPRs CUL-1, CUL-6, and CUL-7 and applicable CFPRs (14 CCR Sections 969.1

through 969.7), would avoid any substantial adverse change to built historical resources through requiring records searches, avoidance of known resources, and requiring worker awareness training.

As further described in Section 3.7, "Archaeological, Historical, and Tribal Cultural Resources," impacts to archaeological and tribal cultural resources, as well as human remains, would be avoided and minimized through SPRs CUL-1, CUL-2, CUL-3, CUL-4, CUL-5 and CUL-7, applicable CFPRs (14 CCR Sections 969.1 through 969.7), and implementation of Mitigation Measures 3.6-2 and 3.6-3. These SPRs would ensure the protection of archaeological and tribal cultural resources as well as human remains by requiring appropriate records searches, tribal coordination, pre-field research, surveys, avoidance and protection of identified resources, and worker awareness training. Further, identified mitigation measures would ensure avoidance, recordation, and (if applicable) treatment of archaeological resources, as well as completion of tribal consultation.

Through requirements identified in the SPRs in addition to identified mitigation measures, the proposed program's contribution to archaeological, historical, and tribal cultural resource impacts **would not be cumulatively considerable**.

5.3.7 Energy

Treatment activities under the proposed program would be implemented across up to 1,250 acres annually within the program area; this is the geographic scope for cumulative impact analysis of energy resources. Many other past, present, and reasonably foreseeable future activities in the Tahoe region may interact to result in cumulative impacts. Energy consumption under the proposed program would occur in the form of petroleum fuel combustion. Under existing conditions, projects of similar nature to the proposed program include land management programs and projects, which would consume energy to implement these projects and plans during operation of on- and off-road vehicles, equipment, and machinery as well as from electricity and natural gas combustion for projects with such demand. Energy consumption from these activities could cause environmental impacts from wasteful, inefficient, or unnecessary use of energy.

For reasons similar to those discussed in Section 3.8, "Energy Resources," cumulative energy impacts would be less than significant. As discussed in Section 3.8, the proposed program would not produce additional electricity or natural gas demand that would trigger additional infrastructure. The language of this criterion is derived from language in the Warren Alquist-Priolo Act and pertains to the environmental impacts from projects that produce substantial additional energy demand to warrant the construction of additional energy infrastructure or power plants.

Implementation of the proposed program would increase fuel consumption in line with an increase in the pace and scale of vegetation treatment within the program area. As shown in Table 3.8-1, treatment activity performed under the proposed program is estimated to result in the consumption of 108,507 gallons of diesel fuel and 7,776 gallons of diesel fuel per year. Though treatment activities conducted under the program would be energy intensive, a primary objective of the proposed program is to reduce wildfire risk, which requires substantial and inefficient energy consumption during response (e.g., operation of fire engines, automobile and aerial travel throughout the state). Implementation of treatment activities under the proposed program combined with other similar programs and plans would improve the efficiency of energy consumption during of such events through improved planning. Also, as previously mentioned, the "wasteful, inefficient, and unnecessary use of energy" is interpreted to pertain specifically to grid-sourced energy demand, to which the project would not contribute. Therefore, the proposed program's contribution to energy impacts from the wasteful, inefficient, and unnecessary use of energy **would not be cumulatively considerable**.

5.3.8 Geology, Soils, and Land Capability

The geographic scope where the cumulative impacts related to geology and soils is the program area. Other past, current, or future impacts that overlap with the program area could have cumulative impacts on both soil erosion and landslides. Impacts from other projects upslope or upstream of the program area have the potential to change the degree of overland flow entering the program area or alter the flow that could contribute to channel incision and widening. Historical changes to geology and soils throughout the program area including road construction, legacy

logging projects, urbanization, and grazing have caused soil erosion, soil compaction, and landslides. With incorporation of SPR GEO-7 (unstable soils and active and dormant landslide exclusion), later treatment activities under the proposed program would not result in significant geology and soils impacts and would not contribute considerably to historical impacts on geology and soils.

Later vegetation treatments under the proposed program have the potential to result in soil erosion and slope instability. Other vegetation management programs and projects listed in Section 5.2.3 also have the potential to result in erosion and slope stability. Seven of the 10 other cumulative projects have the potential to overlap with the program area or influence soil erosion through upstream changes to hydrology or erosion. However, under the proposed program, potentially significant geology and soils effects would be avoided and minimized through the implementation of the aforementioned SPRs and applicable CFPRs. Other vegetation management programs within the program area would also be required to implement similar measures. Additionally, cumulative impacts associated with erosion and landslide related to uncontrolled wildfire are more significant in areas not managed with vegetation treatment programs.

As described in Section 3.9, later treatment activities under the proposed program would avoid significant adverse impacts to soil compaction, erosion, and deposition through the incorporation of SPRs that minimize erosion of road surfaces and skid trails by incorporating SPR GEO-1 (suspend disturbance during heavy precipitation), SPR GEO-2 (limit high ground pressure vehicles), SPR GEO-3 (stabilize disturbed soil areas), SPR GEO-5 (drain stormwater via water breaks), and SPR GEO-8 (skidding practices to limit erosion. In addition, SPR GEO-4 (erosion monitoring) would identify areas where SPRs are not effective and implement remediation to limit erosion. Other SPRs would help to limit erosion and associated risks related to landslides, including SPR GEO-6 (minimize erosion) and SPR HYD-3 (protecting fragile stream environment zones). With implementation of relevant SPRs, the contribution of later treatment activities under the proposed program to existing cumulative impacts on soil erosion, compaction, or deposition **would not be cumulatively considerable**.

Later treatment activities under the proposed program would focus on thinning trees, rather than cutting large patches of forest, reducing the potential for shallow landslides. Because no new roads would be constructed, later treatment activities would not destabilize the toes of hillslopes and should not affect deep-seated slides. By ensuring that prescribed burns will be relatively low intensity (SPR GEO-9), fire driven landslides are very unlikely. With implementation of relevant SPRs, the contribution of later treatment activities under the proposed program to existing cumulative impacts related to landslide-related hazards to people or property **would not be cumulatively considerable**.

5.3.9 Greenhouse Gas Emissions and Climate Change

The quantity of GHGs in the atmosphere that ultimately result in climate change is enormous and, as described in Section 3.10.2, "Physical Scientific Basis of Greenhouse Gas and Climate Change," has resulted in climate change, which is a cumulatively significant impact. Because climate change is a global phenomenon, the cumulative context of this impact is all past, present, and reasonably foreseeable projects in the world, including GHG emission sources and carbon sinks. No single project alone would measurably contribute to an incremental change in the global average temperature, or to global, local, or microclimates and, from the standpoint of CEQA, GHG impacts relative to global climate change are inherently cumulative.

As discussed in Section 5.2.3, "Related Projects and Plans," above, there are several similar projects, past, present, and in the reasonably foreseeable future, that have produced or likely will produce GHG emissions, within and surrounding the program area (Table 5-2). As GHG emissions and their effect on climate change are inherently cumulative, the sum total of all GHG emissions in and near the program area, both related and unrelated to the proposed program, must be collectively considered.

Treatment activities that are part of the proposed program, include mechanical and manual treatments, and prescribed burning, would generate GHG emissions and contribute to the regional and global GHG stocks. Emissions associated with these treatments would include: exhaust generated by off-road equipment, machine-powered hand tools, and potentially helicopters; exhaust from on-road vehicle trips associated with worker commutes and transport

of equipment, as well as the hauling of biomass and merchantable timber; stationary-source emissions produced during the combustion or gasification of biomass at an energy generation facility; and smoke generated by the combustion of vegetation during prescribed burning.

As explained under Impact 3.10-1, the proposed program would be consistent with applicable plans, policies, and regulations aimed at reducing GHG emissions, including California's *2017 Climate Change Scoping Plan*, the *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan*, and the *California Forest Carbon Plan*. The purpose of the proposed program is to reduce wildfire risk, which could reduce GHG emissions and increase carbon sequestration over the long term. Therefore, the potential of the program to conflict with existing plans, policies, or regulations adopted to reduce GHG emissions would be **less than significant and not cumulatively considerable**.

As explained under Impact 3.10-2, direct GHG emissions from the increase in treatment activities conducted under the proposed program would be substantial, recognizing planned levels of treatment would increase to 1,250 acres per year. At the full target rate of 1,250 acres per year, GHG emissions from treatments would be an estimated 23,298 MTCO_{2e} annually. Consistent with the goals of the proposed fuel treatments to decrease the occurrence of high-severity wildfires and increase the potential rates of carbon sequestration, implementation of the proposed program could result in a cumulative net carbon benefit over the long term, which is the most relevant timeframe and global context of GHG-caused, climate change-related environmental effects. However, there is uncertainty in predicting future wildfire occurrence, related emissions, and carbon sequestration rates, which are highly variable and depend on many factors. Future wildfire intensities and carbon sequestration in treated areas are the subjects of continued scientific research and debate. To meet CEQA's mandate of good faith disclosure and acknowledge potential future impacts in light of uncertainties, this impact may be considered **potentially significant and cumulatively considerable**, recognizing the reliability of estimates for direct GHG emissions and the uncertainty of the intended net carbon benefits of reduced wildfire intensity and increased carbon sequestration in treated areas. As described under Impact 3.10-2, implementation of Mitigation Measure 3.10-2 would require project proponents conducting prescribed burns to implement GHG emission reduction techniques, as feasible. Given the potential infeasibility of implementing specific emission reduction techniques and the uncertainties associated with all the parameters and objectives of prescribed burning, it is not feasible to precisely quantify the GHG reductions that would be achieved by implementation of Mitigation Measure 3.10-2. The analysis of these impacts is conservative because it does not speculate on the reduced emissions that would result from fewer, smaller, and less severe wildfires. To the extent that the program successfully reduces the extent and severity of wildfires, it could result in less total emissions than disclosed in this PTEIR. Because there is no other feasible mitigation, and to meet CEQA's mandate of good faith disclosure and acknowledge potential future impacts in light of uncertainties, the Tahoe PTEIR classifies this GHG impact as **potentially significant and unavoidable**. Even though the long-term outcome may yet become beneficial, the "potentially significant and unavoidable" determination alerts the public to the potential that net positive emissions of GHGs may persist over time

5.3.10 Hazards and Hazardous Materials

The geographic scope for the hazardous materials cumulative impact analysis is the program area within the California side of the Tahoe Basin. For the purposes of this analysis, that would be generally areas within 0.5 mile of the program area because that is a reasonable maximum distance from which hazardous materials overlap could occur and combine to create a cumulatively significant impact. As discussed in Section 5.2.3, "Related Projects and Plans," there are several similar past, present, and reasonably foreseeable projects that have and could result in similar impacts related to hazardous materials and public health and safety within and surrounding the program area. Examples of related projects and plans that could combine to result in significant cumulative impacts are implementation of Lake Tahoe West, Tahoe-Central Sierra Initiative, Lake Tahoe Basin Community Wildfire Protection Plan, Liberty Utilities Resilience Corridors, Fuels Reduction and Understory Burning on State Park lands, LTBMU fuel reduction and healthy forest restoration, and compliance with defensible space requirements.

The related projects and plans described above combined with the proposed Tahoe PTEIR activities, would not result in a significant cumulative health hazard or cumulative hazard to the environment from the use of household hazardous materials because other projects, such as other vegetation treatment activities, urban development

regulated by local agencies, and others would also have to comply with all of the state and federal laws regulating the transport, storage, use, and disposal and hazardous materials. As described in Impact 3.11-1, treatment activities proposed under the Tahoe PTEIR would require the use of various types of equipment and vehicles, which need fuels, oils, and lubricants to operate. The use, transport, storage, and disposal of household hazardous materials would be required under the proposed program, which could result in an accidental upset or health hazard if released into the environment. SPR HAZ-1 would be implemented during later treatment activities and requires that all equipment be properly maintained per manufacturer's specifications, requires inspection of all equipment for leaks before the start of a project and every day until the project is complete, and requires that any equipment found leaking be promptly removed from a given project site. Furthermore, project proponents would adhere to the federal and state laws that regulate the use, transport, storage, and disposal of hazardous materials, including the California Department of Toxic Substances Control (DTSC's) Unified Program, Occupational Safety and Health Administration (OSHA), U.S. Environmental Protection Agency (EPA) regulations, Placer and El Dorado County regulations, City of South Lake Tahoe regulations, and TRPA regulations. Although implementation of the Tahoe PTEIR would increase the pace and scale of treatments and thus increase the use of household hazardous materials in the program area, no new or more severe significant hazards would be created from implementation of the proposed program. Therefore, the proposed program's contribution to short-term hazardous materials impacts from implementation of treatment activities **would not be cumulatively considerable**.

The related projects and plans described above combined with the proposed Tahoe PTEIR activities, would not result in significant cumulative impacts related to risks from the emission or use of hazardous materials within 0.25 miles of a sensitive receptor because the other projects and plans are implementing the same types of treatment activities as the proposed program. All projects and programs would comply with applicable federal, state, and local regulations that would minimize the risk of a spill or accidental release of hazardous materials during treatment activities in the program area. Because such laws are established to be protective of human health and the environment, compliance with applicable regulations is sufficient to ensure that any hazardous materials used by the proposed program would not result in adverse effects because of exposure of the public or environment to hazardous materials through the routine use, storage, or transport of hazardous materials or from accidental release or upset. Therefore, the proposed program's contribution to impacts associated with hazardous materials within 0.25 miles of sensitive receptors from implementation of treatment activities **would not be cumulatively considerable**.

The related projects and plans described above combined with the propose program, would not result in significant cumulative impacts related to risks from disturbance to known hazardous material sites because the other projects are implementing the same types of treatment activities as the proposed Tahoe PTEIR and would be implemented in undeveloped areas that have a low probability of containing hazardous materials sites. Those projects occurring in more developed areas where hazardous materials sites could be present, such as development directed by general plans, any hazardous materials would need to be identified and remediated before breaking ground. Furthermore, impacts associated with hazardous materials sites are project-specific and highly localized; thus, the potential for cumulative impacts in these undeveloped areas are even less likely to occur. As described in Impact HAZ-3, soil disturbance through mechanical treatments and the prescribed burning have the potential to expose workers and the public to risks associated with existing hazardous materials if present within a treatment site. Since there are so few documented, hazardous sites that have not been remediated in the cumulative program area that could be affected by treatment activities, the Tahoe PTEIR's contribution to impacts associated with known hazardous materials sites from implementation of treatment activities **would not be cumulatively considerable**.

5.3.11 Hydrology and Water Quality

The geographic scope within which cumulative impacts related to hydrology and water quality for the Tahoe PTEIR are within the Lake Tahoe Basin watershed and groundwater basins, which are described in Section 3.12.2, "Environmental Setting," of Section 3.12, "Hydrology and Water Quality."

Cumulative Conditions

Historical activities such as logging, milling, mining, and grazing within the Tahoe Basin combined with runoff from urban and recreational developments, have degraded the water quality of the tributaries to Lake Tahoe, resulting in an existing cumulative adverse condition. Within the Tahoe Basin, some tributaries (i.e., Upper Truckee River, Blackwood Creek, Trout Creek, and Ward Creek) continue to generate large amounts of sediment and other pollutants (i.e., nutrients) (Simon 2006, TRPA 2016). The Lake Tahoe, Blackwood Creek, Trout Creek, and Truckee River total maximum daily loads (TMDLs) were developed to address sediment levels in partnership with local jurisdictions. The most significant source of pollutant loading for fine sediments and phosphorus is surface runoff from developed lands (urban watersheds) (Lahontan RWQCB and Nevada Department of Environmental Protection 2010). Groundwater quality in the Lake Tahoe Basin is generally excellent. However, human-made contaminants from historical contamination are occasionally detected in groundwater wells.

Lake Tahoe West modeling evaluated how different vegetation management scenarios for fire suppression would impact water quality (i.e., sediment and phosphorus loads) over a 100-year period in an analysis area that includes the majority of the program area (Dobre and Long 2020, Eliot et al. 2019). These models incorporated current conditions, thinning, prescribed fire, wildfire, and road system management. Model results indicate that thinning of forests and prescribed burning in the WUI and across the landscape would result in little risk to water quality when analyzed at large landscapes over long periods. Sediment delivery supplied by traffic on access roads to support thinning operations increased during active use and loads returned to undisturbed levels shortly after activities ceased. Treatments could pose localized risks to water quality in some highly erodible watersheds (e.g., Blackwood, Ward, Meeks, General, and Eagle) that produce large sediment loads under current conditions; however, careful analysis, design, and monitoring specific to site conditions could help to mitigate risks and reduce the uncertainty associated with treatments. While modeling indicated that treatment could pose little risk to water quality, these models did not incorporate treatment scenarios at the proposed program scale (approximately 1,250 acres per year), small watersheds, program specific SPRs to reduce significant adverse effects to water quality, and restoration of aspen, meadow, riparian, and wet areas that would involve conifer removal in these areas. These program-specific scenarios would reduce the impacts of thinning and prescribed burning over the long-period of time. Furthermore, the model results indicate that impacts to water quality from thinning and prescribed burning are less than significant compared to wildfires.

Contribution to Cumulative Impacts

As described in Section 3.12, "Hydrology and Water Quality," the proposed program would avoid adverse effects on water quality and hydrology through the incorporation of SPRs that protect water quality by: identifying and protecting SEZs (i.e., creating buffer zones, avoiding placement of burn piles and ignition of prescribed fires in SEZs, and maintain a 75 percent surface cover within SEZs); minimizing erosion (i.e., suspend treatments in rain, suspend use of heavy equipment when soils are wet, monitor and evaluate erosion potential); prohibiting the use of heavy equipment in wet conditions and on steep slopes; requiring careful planning of prescribed burning to avoid severe burns; requiring ground disturbing activities to maintain pre-disturbance drainage features and conditions; avoiding construction of new roads; and complying with Lahontan RWQCB water quality regulations (i.e., Basin Plan [Lahontan RWQCB 2016]) and Timber Waiver [Lahontan RWQCB 2019]). The Tahoe PTEIR and later treatment activities implemented under the Tahoe PTEIR would not alter any applicable federal, TRPA, state, or local regulations pertaining to surface water or groundwater quality, surface water management, or source water management, so later treatment activities complying with these existing regulations as required by implementation of SPR HYD-1 would not contribute to an adverse cumulative effect on water quality.

Furthermore, later treatment activities would potentially provide an ecological benefit to the program area by removing encroaching conifers from aspen, meadow, riparian, and wet areas. These habitats would potentially minimize water quality degradation from treatment activities since they would reduce surface runoff velocities, increase the duration surface runoff can infiltrate into soils, and increase the filtration of surface runoff to minimize transport of sediment and nutrients into water bodies. An increase in the health of aspen, meadow, riparian and wet areas resulting from later treatment activities would potentially improve water quality by increasing the infiltration and trapping more sediment than occurs under existing conditions. Finally, later treatment activities would potentially result in a long-term benefit to water quality by significantly reduce the threat of high severity wildfire in treated

areas that would a) potentially produce significant amounts of erosion and transport sediments into water bodies during storm events after high severity burns; and b) eliminate vegetated areas that minimize transport of sediments into water bodies. Therefore, with implementation of relevant SPRs and restoration treatment methods, the proposed program's contribution to cumulative water quality impacts in the Lake Tahoe Basin watershed and groundwater basins **would not be cumulatively considerable**.

5.3.12 Noise and Vibration

The geographic scope of the cumulative noise analysis covers the program area and adjacent parcels. The proposed program would not create a long term (operational) source of vehicular trips or result in the operation of any permanent stationary noise-generating equipment; and thus, is not expected to result in any permanent increase in ambient noise levels. Therefore, cumulative noise impacts would be limited to short-term ambient noise increases during implementation of forest treatment activities.

As discussed in Section 5.2.3, "Related Projects and Plans," above, there are several similar past, present, and reasonably foreseeable projects that have affected and likely will affect vegetation and noise exposure, within and surrounding the program area. For a cumulative effect to occur, treatment activities under the proposed program would have to occur simultaneously with and near other noise sources, such as other vegetation treatment and management activities, timber harvesting, implementation of plans and policies related to forest health, regional habitat conservation, land management practices, and construction projects related to development. It is not anticipated that temporary noise generated by treatment activities under the proposed program and noise from projects unrelated to the proposed program would simultaneously impact the same noise-sensitive receptors because the size of the program area and duration of treatment activities would make it highly unlikely that two such projects would occur simultaneously and in close vicinity to one another. Moreover, SPR NOI-1 would restrict treatment activities to less sensitive daytime hours in accordance with the requirements of TRPA, Placer County, El Dorado County, and the City of South Lake Tahoe. Because some of the noise-generating activities that may be associated with other projects and plans identified in Section 5.2.3, "Related Projects and Plans," would not be subject to the SPRs of the proposed program, they could on their own result in a significant cumulative impact related to temporary short-term noise. Therefore, other past, present, and planned future projects identified in Section 5.2.3, "Related Projects and Plans," combined with the treatment activities implemented under the proposed program could result in a significant cumulative impact related to temporary short-term noise.

As discussed in Section 3.13, "Noise and Vibration," later treatment projects under the proposed program would integrate several SPRs into treatment design to avoid and minimize noise impacts. These include complying with local policies and ordinances related to noise to the extent the project is subject to them (SPR AD-2), limiting heavy equipment use, truck hauling, and helicopter use to daytime hours (SPR NOI-1), proper equipment maintenance (SPR NOI-2), keeping engine shrouds closed (SPR NOI-3), locating staging areas away from noise-sensitive land uses (SPR NOI-4), restricting equipment idling time (SPR NOI-5), proper notification of any potential nearby sensitive receptors (SPR NOI-6), and restricting helicopter flight patterns to avoid or minimize flights over residential areas (SPR NOI-7). With implementation of SPRs, exposure to and generation of noise during treatment activity would be avoided or minimized and any temporary increase above ambient conditions would not be considered substantial. Therefore, the proposed program's contribution to any significant cumulative impact related to temporary short-term noise **would not be cumulatively considerable**.

5.3.13 Recreation

The geographic scope of the cumulative impact analysis for recreation encompasses the public recreational areas within the program area and within the Lake Tahoe region. Implementation of the proposed program could increase demand for and use of recreation facilities that results in physical deterioration of recreation facilities because treatment activities would temporarily displace recreation users causing them to seek recreation opportunities elsewhere (see Impact 3.14-1). Individual treatment activities could potentially cause adverse physical effects on the environment resulting from creating new potential access points that could be used by recreation user motor vehicles

and off-highway vehicles (OHVs; see Impact 3.14-2). Implementation of the proposed program could also reduce the availability of recreation opportunities and adversely affect the quality of recreation user experiences from short-term, temporary closures of recreation resources; displacement of recreation users and special events; and nuisance effects from aesthetic, air quality, noise, and transportation impacts of the Tahoe PTEIR (see Impact 3.14-3).

The cumulative projects listed in Table 5-2 could each result in similar impacts on recreation as identified for the proposed program and would be dispersed throughout the Tahoe Basin. These projects could combine with the proposed program to result in significant cumulative impacts on recreation related to displacement of recreation users, creation of new access points for motor vehicles and OHVs, changes in the availability of recreation opportunities, and effects on the quality of recreation user experience. The number of active treatment projects that could occur under the proposed program and cumulative projects at any one time would be limited by the number of available project implementers and, for pile burning and prescribed understory burning, air quality regulations enforced by the ECAQMD and PCAPCD. Additionally, the cumulative projects would be required to implement SPRs, resource protection measures, or other standard operating procedures that reduce adverse impacts on recreation users, restore disturbed trails, and reduce adverse environmental effects that could affect the quality of recreation user experiences, such as air quality, noise, scenic resources, and transportation impacts.

As discussed in Impact 3.14-1, implementation of SPRs would minimize effects related to displacement of recreation users by notifying owners or managers of recreation facilities or recreation areas of anticipated closures and by maintaining access to treatment areas during non-operational periods (SPRs REC-1 and REC-5).

As discussed in Impact 3.14-2, implementation of SPR REC-3, SPR REC-4, and Mitigation Measure 3.14-2 would minimize adverse environmental effects related to new access points for motor vehicles into treatment areas by restoring disturbed trails to pre-project conditions, re-contouring trails and skid trails (as needed), and creating permanent, physical barriers that eliminate the potential for motor vehicle entrance into a treatment unit through landing areas or skid trails created by treatment activities.

As discussed in Impact 3.14-3, implementation of SPR REC-2 would minimize effects related to changing the availability of recreation opportunities and quality of recreation user experience by coordinating with special event organizers to identify treatment dates and roads or trails that would be closed, and assist in finding alternate locations for events if they are affected, by treatment activities. Additionally, implementation of SPRs would minimize reductions in the quality of recreation user experiences by using vegetation thinning and edge feathering techniques, avoid staging within viewsheds, and preserving sufficient vegetation in treatment areas to provide screening (SPRs AES-1, AES-2, and AES-3); through compliance with air quality regulations, preparation and implementation of smoke management and burn plans, and dust minimization efforts (SPRs AQ-1 through AQ-4); and properly maintaining equipment, engine shrouds are closed during equipment operation, and restricting equipment idling time (SPRs NOI-2, NOI-3, and NOI-5). Implementation of these SPRs would reduce nuisance effects from treatment activities (e.g., air quality, noise, scenic, and transportation impacts) that would adversely affect the quality of recreation user experiences.

For these reasons and because recreation demand in the Tahoe region is met with a wide variety and amount of recreational facilities and resources, the proposed program **would not result in a considerable contribution** to a cumulative impact on recreation resources.

5.3.14 Transportation

The geographic scope of the cumulative transportation analysis covers the roadway network used to access individual treatment sites and the entirety of the California portion of the Lake Tahoe Basin. The proposed program would not result in the generation of operational vehicular trips to the same location over the long term. Therefore, cumulative transportation impacts would be associated with short-term transportation effects that would occur during the implementation of later treatment activities.

As discussed in Section 5.2, "Cumulative Setting," above, there are several similar past, present, and reasonably foreseeable projects that have affected and likely will affect forested areas and the transportation network, within the Lake Tahoe region. For a cumulative effect to occur, later treatment activities under the proposed program would

have to take place simultaneously with and near other projects that could potentially result in transportation effects, such as other fuel treatment and management activities, implementation of plans and policies related to forest and watershed restoration, and construction projects related to development. There is a potential for temporary traffic generated by later treatment activities under the proposed program, including vehicle trips associated with biomass hauling, and traffic related to non-program projects to simultaneously affect the same roadway facilities because the cumulative projects are in close proximity to the program area. The potential for multiple projects to occur near each other and simultaneously would be influenced by available resources (e.g., crews and equipment availability) and project priorities.

SPR TRAN-2 would require project proponents to monitor prescribed burning operations and the associated smoke dispersion. During any such prescribed burns, traffic control operations would be implemented in the event burning activities begin to affect traffic safety along any roadways. SPR TRAN-1 would also require that the project proponent work with the agency(ies) with jurisdiction over affected roadways to prepare a Traffic Management Plan (TMP) before initiating treatment activities if traffic generated would result in obstructions, hazards, or delays exceeding applicable jurisdictional standards along access routes for individual treatment activities. The TMP will require implementation of measures to avoid and minimize traffic obstructions, prolonged roadway closures, and the degradation of traffic operations (i.e., level of service) along affected roadway facilities, as needed. Although the other past, present, and planned future projects identified in Section 5.2, "Cumulative Setting," are not subject to the SPRs of the proposed program, they would be required to undergo project-level environmental analysis and identify and implement mitigation measures if potentially significant impacts related to temporary traffic operations and transportation hazards could occur. Therefore, other past, present, and planned future projects identified in Section 5.2, "Cumulative Setting," combined with the later treatment activities under the proposed program could result in a significant cumulative impact related to temporary traffic operations and transportation hazards.

As discussed in Section 3.15, "Transportation," later treatment activities under the proposed program would integrate several SPRs into treatment design to avoid and minimize transportation impacts. These include complying with local policies and ordinances related to transportation to the extent the project is subject to them, and implementing TMPs to promote safe and efficient traffic movement during treatment activities. With implementation of TMPs by later treatment activities, as applicable by SPR TRAN-1, potential traffic operations and transportation hazards impacts would be avoided and/or minimized. Thus, with implementation of SPRs, temporary traffic operations and the potential for transportation hazards during treatment activities would be minimized or avoided and would not be considered substantial. Therefore, the proposed program's contribution to a significant cumulative impact related to temporary traffic operations or substantially increasing transportation hazards **would not be cumulatively considerable**.

The analysis in Impact 3.15-2 analyzes annual vehicle miles travelled (VMT) from the whole of the proposed program, including hauling of biomass and sawlogs, which is inherently cumulative and reflects a cumulative significance determination. Implementation of the proposed program could potentially result in a net increase in VMT and a significant cumulative impact related to VMT. The proposed program would reduce the risk of catastrophic wildfires consistent with the program objectives. Reducing the risk of catastrophic wildfires would result in a reduction in fire suppression activity and trips, which would be reasonably expected to decrease VMT over the long term, compared to conditions without the proposed program. However, it is not feasible to predict changes in wildfire occurrence sufficiently to quantify potential changes in fire response VMT. Additionally, as stated under Impact 3.15-2, there is no additional feasible mitigation to address the potential increases in VMT generated by the proposed program. Therefore, the proposed program's contribution to a significant cumulative impact related to VMT **would be cumulatively considerable**, in spite of the recognition that a net VMT reduction could be reasonably expected to occur in the long term and individual treatment activities would likely be less than significant pursuant to the thresholds identified in the Governor's Office of Planning and Research (OPR) Technical Advisory on Evaluating Transportation Impacts (OPR 2018), which would reduce the proposed program's contribution to cumulative transportation impacts.

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6 ALTERNATIVES

6.1 INTRODUCTION

The State CEQA Guidelines Section 15126.6(a) requires EIRs to describe "... a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather, it must consider a range of potentially feasible alternatives that will avoid or substantially lessen the significant adverse impacts of a project, and foster informed decision making and public participation. An EIR is not required to consider alternatives that are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason." This section of the State CEQA Guidelines also provides guidance regarding what the alternatives analysis should consider. Subsection (b) further states the purpose of the alternatives analysis is as follows:

Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code [PRC] Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

The State CEQA Guidelines require that the EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed program. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative must be discussed, but in less detail than the significant effects of the project as proposed (State CEQA Guidelines Section 15126.6[d]).

The State CEQA Guidelines further require that the "no project" alternative be considered in an EIR (Section 15126.6[e]). The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed program with the impacts of not approving the proposed program. If the no project alternative is the environmentally superior alternative, CEQA requires that the EIR "...shall also identify an environmentally superior alternative among the other alternatives." (Section 15126[e][2]).

In defining "feasibility" (e.g., "... feasibly attain most of the basic objectives of the project ..."), State CEQA Guidelines Section 15126.6(f) (1) states, in part:

Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

In determining what alternatives should be considered in the EIR, it is important to consider the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in Section 15126.6(a). Although, as noted above, EIRs must contain a discussion of "potentially feasible" alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by the lead agency's decision-making body, here the Board of Forestry and Fire Protection (Board) (See PRC Sections 21081.5, 21081[a] [3]).

The Forest Practices Rules do not include specific requirements for analysis of alternatives in a PTEIR addition to those required by CEQA (California Code of Regulations [CCR] 1092.01).

6.1.1 Summary of Alternatives Screening Criteria

In compliance with State CEQA Guidelines Section 15126.6, as described above, each alternative is evaluated in three ways:

- ▶ Does the alternative **accomplish all or most of the basic project objectives** (described below relative to each alternative)? The objectives of the program are to:
 - reduce the risk of catastrophic wildfires that could damage Lake Tahoe Basin forests, watersheds, habitats, and communities;
 - increase Lake Tahoe Basin forest resilience to effects of climate change, including prolonged drought, pest and disease outbreaks and increased tree mortality;
 - protect and restore meadow and riparian ecosystem processes and functions, and forest habitat quality in the Lake Tahoe Basin;
 - develop and implement all-lands fuel reduction, forest health improvement, and restoration projects that deliver multiple community and ecosystem service benefits; and
 - and increase the pace and scale of fuel reduction projects to assist in achieving the goals of Executive Order B-52-18.
- ▶ Is the alternative **potentially feasible** (from economic, legal, regulatory, and technological standpoints)?
- ▶ Does the alternative **avoid or substantially lessen any significant effects of the proposed project** (including consideration of whether the alternative could create significant effects additional to those of the proposed project)? Potentially significant and significant effects are described in Sections 3.2 through 3.15. Implementation of the Tahoe PTEIR would result in the following significant and unavoidable impacts:
 - Air Quality (one significant and unavoidable project-level impact related to: increased emissions from expanded treatment activities that could exceed California or national standards; two significant cumulatively considerable significant and unavoidable impacts related to contribution of PM₁₀ and ozone precursors by treatment activities under the program);
 - Greenhouse gas emissions and climate change (generate GHG emissions through treatment activities); and
 - Transportation (vehicle miles traveled [VMT] generated by the proposed program would conflict or be inconsistent with CEQA Guidelines Section 15064.3, Subdivision[b]).

Cumulative impacts for the issues listed above would also be significant and unavoidable (cumulatively considerable) as a result of implementation of the proposed program.

Each alternative that meets the evaluation criteria identified above is evaluated in the Tahoe PTEIR. Those that do not meet these criteria are described in Section 6.4, "Alternatives Considered and Eliminated from Detailed Analysis."

6.2 ALTERNATIVES EVALUATED IN THIS PROGRAM TIMBERLAND EIR

Alternatives evaluated in this PTEIR are:

- ▶ **Alternative A: No-Program**, which would include continuation of current fuel reduction efforts within the Tahoe PTEIR program area. There would be no prescribed fire with implementation of this alternative and all wildfires would be suppressed. It would reflect a slower pace and smaller scale of treatment activities compared to the proposed program;
- ▶ **Alternative B: Fire Suppression Only**, which would include active fire suppression but no active fuels treatment activities;
- ▶ **Alternative C: Manual and Mechanical Treatment Focus**, which would include a treatment approach that emphasizes mechanical and manual thinning, with limited pile burning and no understory burning; and

- ▶ **Alternative D: Limited Thinning Intensity and Expanded Prescribed Burning**, which would include a treatment approach with less manual and mechanical thinning, and greater use of understory burning.

These alternatives are described in comparison to the proposed program under the Tahoe PTEIR. A summary of the estimated annual average acres treatment by treatment type is provided for each alternative in Table 6-1. Where elements of the alternatives would remain the same as the proposed program, details are presented in Chapter 2, "Program Description." Accordingly, the alternative descriptions below focus on elements that differ from the proposed program.

Two additional factors common to all of the alternatives and the proposed program include the following:

- ▶ Salvage would be a priority over live thinning. Salvage of dead or dying trees in areas that were previously burned or affected by a beetle infestation would be a priority over live thinning.
- ▶ All wildfires would have 100 percent suppression.

Table 6-1 Summary of Estimated Annual Acres Treated by Treatment Type for Each Alternative

	Manual Treatments	Mechanical Treatments	Pile Burning	Prescribed Understory Burning	Total Acres Treated per Year
Proposed Program	500 (40%)	300 (24%)	250 (20%)	200 (16%)	1,250
Alternative A: No-Program Alternative	199 (40%)	200 (40%)	104 (20%)	0	503
Alternative B: Fire Suppression Only	0	0	0	0	0
Alternative C: Manual and Mechanical Treatment Focus	680 (38%)	630 (35%)	490 (27%)	0	1,800
Alternative D: Limited Thinning Intensity and Expanded Prescribed Burning	500 (40%)	100 (8%)	175 (14%)	475 (38%)	1,250

Source: Compiled by Ascent Environmental in 2019

Table 6-2 presents a comparison of the environmental effects of each alternative relative to the Tahoe PTEIR, which are further discussed in Section 6.2, below. It identifies whether an alternative would avoid any significant and unavoidable impact of the proposed program and presents the degree of environmental effects relative to the proposed program (e.g., similar, less, greater) for each resource area.

Table 6-2 Comparison of Environmental Effects of the Alternatives Relative to the Proposed Program

Resource Topic	Proposed Program	Alternative A: No-Program Alternative	Alternative B: Fire Suppression Only	Alternative C: Manual and Mechanical Treatment Focus	Alternative D: Limited Thinning Intensity and Expanded Prescribed Burning
Aesthetics	LTSM (program and cumulative)	less	similar	similar	similar
Agriculture and Forestry Resources	LTS (program and cumulative)	similar	similar	similar	similar
Air Quality	SU (program and cumulative)	similar	similar	similar	greater
Biological Resources	LTSM (program and cumulative)	similar	greater	similar	similar
Archaeological, Historical, and Tribal Cultural Resources	LTSM (program and cumulative)	less	less	greater	similar

Resource Topic	Proposed Program	Alternative A: No-Program Alternative	Alternative B: Fire Suppression Only	Alternative C: Manual and Mechanical Treatment Focus	Alternative D: Limited Thinning Intensity and Expanded Prescribed Burning
Energy Resources	LTS (program and cumulative)	similar	similar	greater	similar
Geology, Soils, and Land Capability	LTS (program and cumulative)	similar	similar	greater	similar
Greenhouse Gas Emissions and Climate Change	SU (program and cumulative)	similar	greater	less	greater
Hazards and Hazardous Materials	LTS (program and cumulative)	similar	similar	greater	similar
Hydrology and Water Quality	LTS (program and cumulative)	similar	similar	similar	similar
Noise and Vibration	LTS (program and cumulative)	similar	similar	greater	similar
Recreation	LTSM (program and cumulative)	less	less	greater	greater
Transportation	SU (program and cumulative)	similar	similar	greater	similar
Wildfire	LTS (program and cumulative)	greater	greater	less	similar

Notes: LTS = less than significant, LTSM = less than significant with mitigation, SU = significant and unavoidable.

Source: Compiled by Ascent Environmental in 2019

6.2.1 Alternative A: No-Program Alternative

DESCRIPTION OF THE ALTERNATIVE

Under the No-Program Alternative, project proponents would continue to implement fuel reduction efforts within the program area through existing programs, authorities, and funding and would continue to rely on the existing range of CEQA, Forest Practice Act (FPA), and California Forest Practice Rules (CFPR) compliance tools. The same range of silvicultural prescriptions, treatment methods, and biomass disposal approaches as the proposed program could occur under this alternative. Although Alternative A would comply with CFPRs where applicable, other applicable regulations, and current standard practices, it would not implement all of the Standard Project Requirements (SPRs) included in the proposed program. This alternative would reflect a slower pace and smaller scale of treatment activities compared to the proposed program. Under this alternative, an estimated 503 acres would receive fuel reduction treatments per year. Under this alternative, the current mix of treatment types would continue, resulting in 40 percent of treatments being mechanical treatments and 40 percent of treatments as manual treatments (see Table 6-1). Approximately 104 acres per year are also anticipated to be treated with pile burning. No prescribed understory burning would occur under this alternative. Project sites would be expected to be re-entered for maintenance treatment approximately 20 years after initial treatments.

Consistency with Program Objectives

CEQA requires that an EIR evaluate a no project alternative to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project, even if the no project alternative does not meet most of the basic project objectives (State CEQA Guidelines Section 15126[e]). To allow for an informed comparison of the merits of the No-Program Alternative, a discussion of the extent to which the No-Program Alternative would achieve the objectives of the Tahoe PTEIR is provided. As described below, the No-Program Alternative would achieve four of the five objectives of the Tahoe PTEIR, to some degree.

With implementation of the No-Program Alternative, fuel reduction treatment activities would continue similar to how they are implemented currently. Thus, this alternative would meet the objectives to reduce the risk of catastrophic wildfires; increase the Lake Tahoe Basin forest resilience to effects of climate change; and develop and implement all-lands fuel reduction forest health improvement, and restoration projects that deliver multiple community and ecosystem service benefits. The No-Program Alternative does not identify any meadow and riparian ecosystem restoration and, thus, would not explicitly contribute to attaining the project objective related to restore meadow and riparian ecosystem processes and functions; however, the fuels reduction treatments would contribute to all-lands fuel reduction and improving forest health. Because this alternative would result in a continuation of existing fuel reduction treatments, it would not meet the objective to increase the pace and scale of fuel reduction projects to assist in achieving the goals of Executive Order B-52-18. The No-Program Alternative would require project-by-project approvals by project proponents, which could tier from the California Vegetation Treatment Program (CalVTP) Program Environmental Impact Report (PEIR) for some activities within the State Responsibility Areas (SRA). However, treatment activities that meet the definition of timber operations for commercial purposes in PRC Section 4527(a) would still require review under the FPA. Additionally, implementation of treatment activities under the No-Program Alternative would not result in the benefits associated with having a uniform set of SPRs like the proposed program.

Feasibility

The No-Program Alternative would reflect a continuation of current practices. Because the No-Program Alternative would involve limited changes from existing practices, the alternative would be potentially feasible to implement; however, it would not feasibly attain the objective of the proposed program to increase the pace and scale of fuel reduction to assist in achieving the goals of Executive Order B-2-18.

ENVIRONMENTAL ANALYSIS OF ALTERNATIVE A

Wildfire

As shown under Impact 3.2-2 in Section 3.2, "Wildfire," Alternative A, which is similar to Scenario 2 modeled by the LANDIS II model, the No Program Alternative would have a greater impact related to overall risk of wildfire and high-severity wildfire compared to the proposed program. The short-term effects of Alternative A would be similar to, but slightly less than, the proposed program, because Alternative A would implement the same treatment activities, but these treatments would occur on fewer acres. Alternative A would comply with existing laws and regulations, and project-level mitigation measures would minimize risk associated with treatment activities. Over the long term, the risk of the uncontrolled spread of wildfire and high-severity wildfire would be greater than under the proposed program, because Alternative A would treat fewer acres than the proposed program.

Aesthetics

Under Alternative A, the same treatment activities as the proposed program could affect aesthetic resources across the program area. However, the extent of effects on aesthetic resources would be less than the proposed program, because fuel reduction efforts would occur at a slower pace and lesser scale. As with the proposed program, the visual effects of implementing treatments would be short-term and temporary. Like the proposed program, the long-term effects of most treatments would be increased viewing distance with the potential for significant scenic impacts in sensitive areas where vegetative screening is removed; however, the impact would occur in fewer locations than under the proposed program. Treatment activities that meet the definition of timber operations for commercial

purposes in PRC Section 4527(a) would comply with CFPRs, such as 14 CCR Section 956.7 that requires restoration activities in Watercourse and Lake Protection Zones (WLPZ) that are intended to reduce soil loss and 14 CCR Section 963 that requires planning and implementation of treatment activities to occur in a manner that considers safety and avoids or substantially lessens significant adverse impacts to, among other things, visual resources. These measures would help reduce aesthetic impacts in these areas from treatment activities. The potential for treatments under Alternative A to affect aesthetic resources would be evaluated and mitigated, if necessary, through project-level CEQA review. In the long term, Alternative A could result in a scenario in which the amount of acres burned by wildfire would be similar to that of the proposed program, but the proportion of high-severity of wildfire would be greater under Alternative A. Because the total acres that could be burned by wildfire would be similar between Alternative A and the proposed program, roughly affecting aesthetics over the same amount of area, and the amount of treatment activities would be less under Alternative A, the aesthetic effects of this alternative would be less than those of the proposed program.

Agriculture and Forestry Resources

The effects of Alternative A on forestry resources would be similar to the proposed program because it would include similar treatment activities in similar locations. However, because Alternative A would result in treatment of fewer acres than would occur under the proposed program, the magnitude of tree removal with implementation of Alternative A would be less. The alternative would alter forest land through vegetation removal, but forested treatment areas would generally continue to support at least 10 percent of native tree cover thereby maintaining consistency with the definition of forest land as defined by PRC Section 12220(g). Similar to the proposed program, treatment activities under Alternative A would not result in the loss of forest land or conversion of forest land to a non-forest use. Because the pace and scale of treatment activities would be reduced under Alternative A compared with the proposed program, overgrown forest conditions would persist for longer and over a greater area and the likelihood of a large, high-severity wildfire occurring would be greater under Alternative A. The effects of such a fire could result in greater impacts on forestry resources than those under the proposed program. This impact would be similar to the proposed program.

Air Quality

Under Alternative A, there would be no change in existing treatments; thus, there would be no change in existing air pollutant emissions. The effects of Alternative A on air quality would be less than the proposed program because it would not increase the amount of emissions-generating treatment activities. Because Alternative A could result in a greater number of acres burned at high-severity during a wildfire compared to the proposed program, Alternative A would reduce emissions of criteria air pollutants and precursors from wildfires and associated response and cleanup efforts to a lesser extent than the proposed program over the long term. Given the unpredictability of wildfire, and the possible variability in emissions from treatment activities under Alternative A and the proposed program, quantifying the net effect of the program on emissions associated with wildfire and wildfire response would be too speculative to provide meaningful information. The potential for treatments under Alternative A to affect air quality would be evaluated and mitigated, if necessary, through project-level CEQA review. For the reasons described herein, the air quality effects of Alternative A would generally be similar to the proposed program.

Biological Resources

Vegetation treatment activities similar to those for the proposed program would continue to be implemented under Alternative A through existing programs. Over the short term, the effects of Alternative A on terrestrial and aquatic biological resources would be similar to the proposed program because it would include similar treatment activities in similar locations. Alternative A would comply with existing laws and regulations, and project-level mitigation measures would minimize risk associated with treatment activities. However, because Alternative A would result in treatment of fewer acres than under the proposed program, the magnitude of effects with implementation of Alternative A would be less.

Over the long term, the reduction in area treated under Alternative A and the slower pace of treatment compared to the proposed program could result in an increased risk of uncontrolled spread of wildfire and high-severity wildfire, disturbances from associated fire suppression activities, with the potential for increased direct and indirect effects

related to forest and other upland habitat composition and structure, special-status plant and animal species, wildlife nursery sites, erosion and water quality, riparian function, and stream and nearshore aquatic habitat quality compared to the proposed program. For example, an uncontrolled wildfire and the resulting fire suppression activities that could occur under Alternative A have a greater potential to adversely affect water quality and aquatic habitat than the proposed program because such activities could increase erosion and sediment delivery, alter existing drainage patterns, reduce riparian vegetation, and discharge contaminants (e.g., fire retardants) into surface waters. Potential adverse effects on fish and aquatic habitat could include short- and long-term increases in turbidity concentrations and water temperatures, and short-term increases in contaminant levels from fire suppression chemicals. Emergency water drafting from fish-bearing waters for firefighting could also injure or kill fish if they become impinged on intake screens or entrained into intakes and would increase the risk of introduction or spread of AIS. Furthermore, the restoration of riparian and meadow ecosystem function would not occur under Alternative A, so the potential benefit of this proposed treatment to fish populations via improved riparian function and aquatic habitat conditions would not be realized under this alternative. However, similar project requirements (e.g., SPRs and CFPRs) would be implemented as part of project-level CEQA review under Alternative A, which would be expected to avoid or minimize adverse effects. Overall, effects on biological resources from Alternative A would be similar to those of the proposed program.

Archaeological, Historical, and Tribal Cultural Resources

Under Alternative A, the same treatment activities as the proposed program could affect archaeological, historical, and tribal cultural resources within the program area but with a smaller amount of acres treated annually. However, Alternative A would not implement all of the SPRs included in the proposed program. Because not all of the SPRs would be implemented, and fuel reduction efforts would continue within the program area, there is a greater potential for adverse impacts to known and unknown resources to occur. However, Alternative A would require project-level CEQA review by project proponents or preparation of Timber Harvest Plans (THPs), which could result in project-specific mitigation to protect and otherwise avoid known and unknown resources. In the long term, Alternative A could result in a scenario in which the amount of acres burned by wildfire would be similar to that of the proposed program, but the proportion of high-severity of wildfire would be greater under Alternative A. Because the total acres that could be burned by wildfire would be similar between Alternative A and the proposed program, potentially affecting cultural resources over the same amount of area, and the amount of treatment activities would be less under Alternative A, the cultural resources effects of this alternative would be less than the proposed program. Therefore, impacts to archaeological, historical, and tribal cultural resources under this alternative would be less than those of the proposed program.

Energy Resources

Alternative A would result in similar types of effects on energy resources as the proposed program. Less energy would be consumed in the form of fossil fuel (e.g., diesel and other petroleum fuels) during treatment activities than the proposed program because Alternative A would treat fewer acres. However, there could be more high-severity wildfires under Alternative A than with the proposed program; thus, response, containment, and cleanup efforts would involve a surge in the consumption of energy resources, including the consumption of fossil fuels associated with vehicle and aerial travel for personnel traveling from throughout the state or elsewhere. Efficient energy consumption is not a primary consideration during wildfires. Rather, protecting human life and property is prioritized. Thus, the energy impacts of Alternative A would be generally similar to the proposed program.

Geology, Soils, and Land Capability

Alternative A includes manual and mechanical treatments similar to the proposed program, but would treat fewer acres each year and would not include prescribed understory burning. Because the areal extent of manual and mechanical treatments would be less under Alternative A, the magnitude of impacts related to soil erosion, landslides, and avalanches would be lower than the proposed program, although these impacts would be less than significant for Alternative A and the proposed program. Because Alternative A would not include understory burning, fire-related impacts on geology and soils such as risk of loss of soil cover, increased risk of water repellency, or the breakdown of soil structure associated with prescribed burning would not occur. Like the proposed program, manual

and mechanical treatment activities for Alternative A would comply with applicable CFPRs to reduce the impacts of soil erosion and landslides. The potential for treatments under Alternative A to affect geology and soils would be evaluated and mitigated, if necessary, through project-level CEQA review. Because the pace and scale of treatment activities would be reduced under Alternative A compared with the proposed program, overgrown forest conditions would persist for longer and over a greater area and the likelihood of a large, high intensity wildfire occurring would be greater under Alternative A. The effects of such a fire could result in greater impacts on soil erosion and landslides than those under the proposed program because a wildfire would burn at a higher intensity than fires that could occur under the proposed program and could include areas prone to erosion that would be treated under the proposed program to avoid burning. Such a fire would likely cause large increases in overland flow erosion and landslides. Overall, the effects of Alternative A related to geology, soils, and land capability would be similar to the proposed program.

Greenhouse Gas Emissions and Climate Change

Under Alternative A, there would be no change in existing treatments; thus, there would be no change in existing greenhouse gas (GHG) emissions, which are estimated in Table 6-3. Under Alternative A, treatment activities would have the potential to reduce wildfire risk, which would reduce GHG emissions and could increase carbon sequestration over the long term. This would be consistent with applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions.

Because Alternative A would treat fewer acres per year than the proposed program, it would not reduce wildfire risk to the same extent as the proposed program and therefore could result in less potential long-term GHG emission reduction and carbon sequestration benefits. It is not possible to determine the exact GHG emissions from future potential wildfires under this alternative; however, it is estimated that implementation of this alternative would not reduce potential high-severity wildfires to the same extent as implementation of the proposed program. Thus, because this alternative would have less GHG emissions from treatment activities but would not avoid wildfire emissions to the extent they would be avoided by the proposed program, the GHG and climate change impacts of this alternative would be generally similar to those of the proposed program.

Table 6-3 Estimates of Greenhouse Gas Emissions Associated with Each Alternative

Treatment Method	GHG Emissions per Acre Treated (MTCO _{2e} /acre)	Proposed Program ¹	Alternative A: No-Program Alternative ¹	Alternative B: Fire Suppression Only ^{1,2}	Alternative C: Manual and Mechanical Treatment Focus ¹	Alternative D: Limited Thinning Intensity and Expanded Prescribed Burning ¹
Mechanical Treatments	1.69	507	338	NA	1,065	169
Manual Treatments	0.94	470	187	NA	639	84,500
Prescribed Understory Burning	63.2	12,640	0	NA	0	30,020
Pile Burning	38.7	9,675	4,025	NA	18,963	6,773
Total Emissions	--	23,292	4,550	NA	20,667	121,462

Notes: MTCO_{2e}/acre = metric tons of carbon dioxide–equivalent emissions per acre; NA = not available.

¹ The emissions were calculated by multiplying the GHG emissions per acre treated by the number of acres of each treatment method identified for the proposed program and alternatives included in Table 6-1.

² Because the future amount and severity of wildfires are unknown, it would be speculative to estimate greenhouse gas emissions for this alternative.

Source: Compiled by Ascent Environmental in 2019

Hazards and Hazardous Materials

Like the proposed program, the No-Program Alternative would also include compliance with applicable laws and regulations that reduce the risk associated with the use of fuels, oils, lubricants, and other hazardous materials. Effects related to hazardous materials would be similar to the proposed program. Even under the No-Program Alternative, individual projects must comply with CEQA's mandate to reduce impacts; therefore, it is assumed that project-level environmental review would identify and mitigate effects associated with proximity to sensitive receptors and known hazardous waste sites. Because the No-Program Alternative would treat fewer acres than the proposed program, thus using fewer hazardous materials, the hazards and hazardous materials impacts from this alternative would be less. However, there could be slightly more high-severity wildfires under this alternative than the proposed program, which would lead to the use of fuels, oils, and lubricants associated with vehicle and mechanical equipment use and the use of fire retardants. Overall, treatment activities under Alternative A would have generally similar effects on hazards and hazardous materials as the proposed program.

Hydrology and Water Quality

Fuel reduction treatment activities (i.e., manual treatment, mechanical treatment, and pile burning) similar to those listed for the proposed program would continue to be implemented under Alternative A through existing programs, so the types of effects from Alternative A on hydrology and water quality would be generally similar to the proposed program. There would be no prescribed understory burning under Alternative A, so the potential effects associated with this treatment activity would not occur (see Impact 3.12-2). While the treatment activities under Alternative A would have a similar effect on hydrology and water quality as the proposed program, a reduction in the area treated under Alternative A compared to the proposed program (see Table 6-1) would result in a reduction in the extent and magnitude of the effects. The reduction in area treated under Alternative A and the slower pace of treatment compared to the proposed program would result in a relative increase in the risk of high-severity wildfire, with the potential for increased risk of adverse effects on water quality and hydrology compared to the proposed program. Lake Tahoe West model results indicate that impacts on water quality from thinning and prescribed burning would be less than the water quality impacts of wildfires (Lake Tahoe West 2020). An uncontrolled wildfire and the resulting fire suppression activities that could occur under Alternative A have a greater potential to adversely affect water quality and hydrology than the proposed program because such activities could increase erosion, alter existing drainage patterns, reduce riparian vegetation, and discharge contaminants (e.g., fire retardants) into surface and groundwater. The potential effects on surface water quality include short- and long-term increases in turbidity concentrations, nutrient concentrations, and water temperatures. An increase in contaminant levels from fire suppression chemicals has the potential to occur in surface and groundwater. The potential effects to drainage patterns after wildfires include increased surface runoff velocities and reduced duration that surface water can infiltrate into soils. Furthermore, the restoration of riparian and meadow ecosystem function would not occur under Alternative A, so the potential benefit of this proposed treatment to hydrology and water quality would not be realized under this alternative. However, similar project requirements (e.g., SPRs and CFPRs) would be implemented as part of project-level CEQA review or THPs under Alternative A, which would avoid or minimize adverse effects of treatment activities. Overall, treatment activities under Alternative A would have generally similar effects on hydrology and water quality as the proposed program, but there would be a potential increase in adverse effects on hydrology and water quality under Alternative A compared to the proposed program because of the increased risk of high-severity wildfire and associated wildfire suppression activities.

Noise and Vibration

Short-term increases in noise under Alternative A would be similar to the proposed program; however, short-term noise increases would occur less often than the proposed program because Alternative A would treat fewer acres than the proposed program each year. As with the proposed project, vegetation treatment activities implemented under Alternative A would adhere to applicable CFPRs, other applicable regulations, and current standard practices, it would not implement all of the SPRs included in the proposed program that would help reduce potential noise or vibration impacts. The potential for treatments under Alternative A to cause noise and vibration impacts would be evaluated and mitigated, if necessary, through project-level CEQA review. With implementation of Alternative A, there could be slightly more high-severity wildfires than with the proposed program, which would generate noise associated with

fire suppression, which could include operation of fire engines, bulldozers, masticators or track chippers, water trucks, airplanes, and helicopters. Fire suppression activities would occur under emergency conditions and, as such, would not be required to adhere to local noise requirements or SPRs identified for treatment activities. Overall, the noise and vibration effects of Alternative A would be similar to the proposed program.

Recreation

The types of effects of Alternative A on recreation would be similar to the proposed program because it would include similar treatment activities in similar locations. However, because Alternative A would result in treatment of fewer acres than would occur under the proposed program, the magnitude of the effects from Alternative A on recreation would be less. The potential for treatments under Alternative A to affect recreation would be evaluated and mitigated, if necessary, through project-level CEQA review. In the long term, Alternative A could result in a scenario in which the amount of acres burned by wildfire would be similar to that of the proposed program, but the proportion of high-severity of wildfire would be greater under Alternative A. Because the total acres that could be burned by wildfire would be similar between Alternative A and the proposed program, roughly affecting recreation resources over the same amount of area, and the amount of treatment activities would be less under Alternative A, the recreation effects of this alternative would be less than those of the proposed program.

Transportation

Alternative A would implement the same treatment activities as the proposed program but would not result in an increase the amount of treatment that would occur in the program area and would not include prescribed understory burning. Thus, the extent of effects on transportation would be lesser than the proposed program because there would be no change in fuel reduction efforts from existing conditions and, thus, there would be no increase in transportation impacts. Although this alternative would not require compliance with and implementation of the SPRs of the proposed program, treatment activities would be subject to CEQA; and thus, it can be assumed that if any transportation impacts were identified during that process, project-specific mitigation similar to the aforementioned SPRs would be required. However, because Alternative A could result in a greater number of acres burned at high-severity during a wildfire than under the proposed program, which would result in use of more resources (e.g., fire crews and associated vehicles) traveling from outside of the program area to put out higher severity wildfires compared to the proposed program. Therefore, this alternative would result in similar transportation effects to those of the proposed program.

Summary

Alternative A would reduce some environmental impacts of the proposed program because it would implement fewer treatment activities. In comparison to the proposed program, because Alternative A would involve less treatment activities, there would be reduced impacts from treatment implementation related to all of the resource topics discussed above. However, because Alternative A would include less forest fuel treatment, the likelihood of a large, high-intensity wildfire occurring would increase and result in greater effects on agriculture and forestry resources; air quality; biological resources; energy; geology, soils, and land capability; greenhouse gas emissions and climate change; hazards and hazardous materials; noise; and hydrology and water quality. Thus, in the long term, impacts on these resource areas from Alternative A would be greater to those of the proposed program. Effects from Alternative A on aesthetics; archaeological, historical, and cultural resources; and recreation would be less severe than from the proposed program.

Effects related to wildfire from Alternative A would be greater over the long term, because the risk of the uncontrolled spread of wildfire and high-severity wildfire would be greater than under the proposed program since Alternative A would treat fewer acres than the proposed program.

6.2.2 Alternative B: Fire Suppression Only

DESCRIPTION OF THE ALTERNATIVE

This alternative would include no active forest management treatments. Defensible space requirements consistent with PRC 4291 would continue to be implemented within 100 feet of structures. Wildfire suppression would continue to occur throughout the program area. This alternative provides an opportunity for comparison of the effects of implementing the proposed fuel reduction treatments to the effects of not implementing fuel treatments.

Consistency with Program Objectives

Alternative B would not implement any fuels treatments and would not meet any of the objectives, which are related to increasing forest resilience, protecting and restoring meadow and riparian ecosystems and forest habitat quality, improving forest health, and increasing the pace and scale of fuel reduction projects to assist in achieving the goals of Executive Order B-52-18.

Feasibility

Alternative B would include no fuels reduction activities and would only include suppression of wildfires. Because Alternative B would not include any fuels reduction activities, the alternative would be potentially feasible to implement; however, it would not feasibly attain most of the basic objectives of the proposed program.

ENVIRONMENTAL ANALYSIS OF ALTERNATIVE B

Wildfire

As shown under Impact 3.2-2 in Section 3.2, "Wildfire," Alternative B, which is similar to Scenario 1 modeled by the LANDIS II model, would have a greater impact related to overall risk of wildfire and high-severity wildfire compared to the proposed program. The short-term effects of Alternative B would be less than the proposed program because Alternative B would not include any treatment activities, which would reduce risks related to the unintentional spread of a prescribed fire. Over the long term, the risk of uncontrollable spread of wildfire and high-severity wildfire would be greater than under the proposed program because Alternative B would not include fuel treatments to reduce wildfire risk. Thus, Alternative B would leave greater amounts of wildfire fuels, which would increase the risk of the uncontrollable spread of wildfire and high-severity wildfire. This impact would be more severe than the proposed program.

Aesthetics

Under Alternative B, no active forest management projects would occur. Fire suppression activities would be used to control the spread of forest fires, which would likely require emergency containment actions such as excavation of fire lines, back-burning, and aerial application of fire retardant. High-intensity fires could replace mature forest environments with blackened landscapes visible from a distance. Some forests could take decades to return to an appearance similar to pre fire scenic conditions. Fire-lines excavated during suppression would leave obvious linear scars contrasting with an otherwise natural landscape. The effects described above could significantly degrade the scenic quality of views from recreation areas, scenic roadways, protected vistas, as well as views of suppression sites and the surrounding area. Because Alternative B would not implement any fuel treatment activities but would result in more high-severity fires, the impacts on aesthetics would be similar to the proposed program.

Agriculture and Forestry Resources

Alternative B would have no impact on forestry resources because no treatment activities would be implemented. However, there could be slightly more high-severity wildfires under Alternative B than with the proposed program, which could result in greater loss of forestry resources.

Air Quality

Alternative B would have no direct impact on air quality because there would be no treatment activities that would emit criteria air pollutants and precursors, toxic air contaminants, or odors. Because there could be slightly more high-severity wildfires under Alternative B than with the proposed program, Alternative B would not reduce emissions of criteria air pollutants and precursors, as well as toxic air contaminants and odors, from high-severity wildfires (see Table 3.2-3 in Section 3.2, "Wildfire") and associated response and cleanup efforts compared to the proposed program. Given the unpredictability of wildfire, and the possible variability in emissions from treatment activities under the proposed program, quantifying the net effect of Alternative B on emissions associated with wildfire and wildfire response compared to those of the proposed program would be too speculative to provide meaningful information. Overall, although Alternative B would not implement fuel treatment activities, it would result in similar air quality impacts than the proposed program due to a greater amount of high-severity wildfire over the long term.

Biological Resources

Alternative B would result in no short-term adverse treatment-related effects on terrestrial or aquatic biological resources because this alternative does not include active forest management treatments. However, in the long-term, Alternative B could result in greater adverse effects on terrestrial and aquatic biological resources than the proposed program because of an increase in the extent and severity of wildfire compared to the proposed program.

The elimination of all fuel reduction treatment activities under Alternative B, including those that currently occur, would increase the risk of uncontrollable spread of wildfire and resultant effects related to forest and other upland habitat composition and structure, erosion and water quality, riparian function, and stream and nearshore aquatic habitat quality, as discussed for Alternative A. Wildfires and the associated fire suppression activities that could occur under Alternative B have a greater potential to adversely affect fish and aquatic habitat than the proposed program because of the likelihood of increased erosion, degraded water quality, reduced riparian vegetation, and discharge of contaminants (e.g., fire retardants) into surface waters. Emergency water drafting from fish-bearing waters for firefighting could also injure or kill fish if they become impinged on intake screens or entrained into intakes and would increase the risk of introduction or spread of AIS. Potential increases in runoff volume, timing, and water velocity from large and/or high severity wildfires would increase erosion and cause elevated turbidity and sediment deposition in receiving water bodies. Potential reductions in riparian vegetation associated with wildfires would also result in warmer water temperatures because more solar radiation would reach streams. Additionally, the long-term risk and magnitude of unmitigated removal or degradation of high-quality habitats, wildlife nursery sites, breeding sites for special-status wildlife species, and special-status plant occurrences would likely be greater under Alternative B.

While Alternative B would have no treatment-related effects on biological resources, potential increases in risk of wildfire and extensive wildfire suppression activities under Alternative B would result in a greater potential for long-term adverse effects compared with the proposed program.

Archaeological, Historical, and Tribal Cultural Resources

Alternative B would have no direct impact on archaeological, historical, or tribal cultural resources because no treatment activities would be implemented. In the event of a wildfire, standard fire suppression activities would be used to control the spread of forest fires, and it is possible that such fires could destroy or degrade known and unknown cultural resources within the program area and Tahoe Basin. Because the total acres that could be burned by wildfire would be similar between Alternative B and the proposed program, potentially affecting cultural resources over the same amount of area, and no treatment activities would occur under Alternative A, the cultural resources effects of this alternative would be less than the proposed program. Therefore, impacts to archaeological, historical, and tribal cultural resources under this alternative would be less than those of the proposed program.

Energy Resources

Alternative B would have no direct impact on energy resources because no treatment activities would be implemented. However, there could be more high-severity wildfires under Alternative B than with the proposed program; thus, similar to the effects of Alternative A on energy resources described above, Alternative B would reduce the relatively inefficient consumption of energy during wildfire response to a lesser extent than the proposed

program because there could be slightly more high-severity wildfires than with the proposed program that would require more resources for fire suppression. Thus, the energy impacts of Alternative B would be generally similar to the proposed program.

Geology, Soils, and Land Capability

There would be no short-term effects on geology and soils under Alternative B because there would be no treatment activities. Over the long term, the risk of uncontrollable spread of wildfire under Alternative B would be greater than the proposed program because the forests in the program area would become increasingly overgrown, increasing both the risk and likely severity of wildfire. High-severity fire conditions associated with catastrophic wildfire would produce hydrophobic compounds on soils, reducing soil infiltration and increasing runoff in the high-severity burn areas. Additionally, catastrophic wildfire would reduce vegetation, litter, and small woody debris on the forest floor, reducing surface roughness, increasing runoff velocities, and reducing infiltration of runoff into the soil. The potential increases in the magnitude of runoff and higher runoff velocities would increase soil erosion and increase the risk of shallow landslides and debris flows. Overall, Alternative B would result in similar effects related to geology, soils, and land capability as the proposed program over the long term.

Greenhouse Gas Emissions and Climate Change

Because no increase in treatment activity would occur under Alternative B, this alternative would not be consistent with the forest management goals identified California's *2017 Climate Change Scoping Plan*, the *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan*, and the *California Forest Carbon Plan* for reducing wildfire risk and increasing carbon sequestration. This would be a significant impact that would not occur under the proposed program.

Alternative B would not result in an increase in treatment activity that would generate a short-term increase in direct GHG emissions as would the proposed program. However, compared to the proposed program, Alternative B would have less potential to result in a cumulative net carbon benefit over the long term by reducing the severity of wildfires and increasing carbon sequestration. Alternative B would not reduce potential high-severity wildfires to the same extent as implementation of the proposed program. Although this alternative would have less GHG emissions from treatment activities, because Alternative B would not be consistent with plans or policies adopted for the purpose of reducing GHG emissions and would not avoid wildfire emissions to the extent they would be avoided by the proposed program, the GHG and climate change impacts of this alternative would be greater than those of the proposed program.

Hazards and Hazardous Materials

Implementation of Alternative B would result in use of hazardous materials, such as fuels, oils, and lubricants to operate equipment and vehicles used for wildfire suppression, which would be similar to those that would be used for some treatment activities, like building fire lines for prescribed burns. Additionally, fire retardant chemicals would be used to suppress wildfires. Overall, hazards and hazardous materials impacts from implementation of Alternative B would be similar to those of the proposed program.

Hydrology and Water Quality

There would be no short-term adverse treatment-related effects on hydrology and water quality under Alternative B because this alternative would include no active forest management treatments. However, in the long term, Alternative B would likely result in greater adverse effects on hydrology and water quality than the proposed program. The elimination of all fuel reduction treatment activities under Alternative B, including those that currently occur, would increase the risk of uncontrollable spread of wildfire and resultant effects on water quality and hydrology. Lake Tahoe West model results indicate that impacts on water quality from thinning and prescribed burning are less than those from wildfires (Lake Tahoe West 2020). An uncontrolled wildfire and the associated fire suppression activities that could occur under Alternative B have a greater potential to adversely affect water quality and hydrology than the proposed program because of the likelihood of increased erosion, altered drainage patterns, degraded water quality, reduced riparian vegetation, and discharge of contaminants (e.g., fire retardants) into surface water and groundwater. High-severity burn conditions associated with catastrophic wildfire would produce

hydrophobic compounds on soils, reduce infiltration in the high-severity burn areas, and cause increased runoff within burn areas. Additionally, high severity wildfire would reduce vegetation, litter, and small woody debris, thus reducing surface roughness and resulting in an increase in runoff velocities and reduction in the potential for runoff to infiltrate into the soil. Potential runoff increases and higher runoff velocities from high severity wildfires would increase erosion, altering the existing drainage patterns, and leading to elevated turbidity concentrations in receiving water bodies. Potential reductions in riparian vegetation associated with wildfires would also result in warmer water temperatures because more solar radiation would reach streams. Alternative B would have fewer short-term effects on hydrology and water quality than the proposed program, but the potential increases in runoff, erosion, turbidity, water temperature, and contaminants (e.g., fire retardants) associated with potential increases in risk of wildfire and wildfire suppression activities would increase the potential for greater adverse effects in the long term. Overall, Alternative B would have similar impacts on hydrology and water quality to those of the proposed program.

Noise and Vibration

Implementation of Alternative B would not generate noise or vibration associated with treatment activities that involve manual or mechanical thinning and, thus, would have less of a noise and vibration impact compared to the proposed program. However, Alternative B would generate noise associated with fire suppression, which could include operation of fire engines, bulldozers, masticators or track chippers, water trucks, airplanes, and helicopters. Fire suppression activities would occur under emergency conditions and, as such, would not be required to adhere to local noise requirements or SPRs identified for treatment activities. For these reasons, noise and vibration impacts during fire suppression could result in greater noise and vibration impacts on sensitive receptors than the proposed program; however, because Alternative B would involve fire suppression activities under emergency conditions that would be temporary and intermittent, the increase in noise and vibration would be a less-than-significant impact. Overall, the noise and vibration effects of Alternative B would be similar to the proposed program.

Recreation

Alternative B would have no impact on recreation, because there would be no treatment activities that could temporarily close recreation resources and displace recreation users. Also, it would not include any activities that could result in creating new unmanaged access for recreation use of motor vehicles or OHVs, or result in adversely affecting the quality of recreation user experiences. Because the total acres that could be burned by wildfire would be similar between Alternative B and the proposed program, roughly affecting recreation resources over the same amount of area, and there would be no treatment activities under Alternative B, the recreation effects of this alternative would be less than those of the proposed program.

Transportation

Under Alternative B, no active forest management projects would occur. Fire suppression activities would be used to control the spread of forest fires, which would likely require emergency containment actions such as excavation of fire lines, back-burning, and aerial application of fire retardant.

As described under Impact 3.15-2, the proposed program would result in an increase in treatment acreage and VMT associated with implementing treatment activities. Therefore, because Alternative B would not implement any VMT-generating treatment activities, and the VMT associated with wildfire cannot be quantified due to uncertainty around the frequency and intensity of such events, this alternative could result in reduced adverse effects related to VMT. Additionally, Alternative B would not require the construction, re-design, or alteration of any public roadways; and would not result in incompatible uses along the roadway network.

A primary objective of the proposed program is to reduce the risk of catastrophic wildfires; thus, if active forest fuel treatment activities such as those that could occur under the proposed program were not to occur then the frequency and intensity of wildfires could be greater under this alternative. As described under Impact 3.15-2, wildfires require an immediate response from emergency personnel and mobilization of equipment, and those that exceed the containment capacity of local fire suppression entities would require additional resources (i.e., personnel and equipment) to be transported in to assist in firefighting efforts. This movement of personnel and equipment associated with containment of wildfires results in a surge of VMT associated with vehicle travel.

The transportation impacts from implementation of Alternative B could be greater or less than those of the proposed program because the impacts depend on a number of factors, including the number and severity of wildfires and the availability of resources to respond to the wildfires. Thus, for the reasons described herein, transportation impacts from Alternative B would be generally similar to those of the proposed program.

Summary

In comparison to the proposed program, there would be reduced direct short-term effects related to all of the resource topics discussed above because Alternative B would not implement any treatment activities,. However, because Alternative B would not reduce fire fuels, the likelihood of a large, high-intensity wildfire occurring would increase and result in greater potential effects on agriculture and forestry resources; air quality; biological resources; energy; geology, soils, and land capability; greenhouse gas emissions and climate change; hazards and hazardous materials; noise; and hydrology and water quality. Effects from Alternative B on archaeological, historical, and cultural resources and recreation would be less severe than from the proposed program.

Effects related to wildfire from Alternative B would be greater over the long term, because the risk of the uncontrolled spread of wildfire and high-severity wildfire would be greater than under the proposed program because Alternative B would not include any fuel treatment activities.

6.2.3 Alternative C: Manual and Mechanical Treatment Focus

DESCRIPTION OF THE ALTERNATIVE

Alternative C includes a treatment approach that emphasizes mechanical and manual treatments, with no prescribed understory burning and limited pile burning. This alternative is intended to reduce potential environmental effects of prescribed burning that could result from the proposed program, such as effects related to air quality, greenhouse gas emissions, and wildfire risk. This alternative would include the same silvicultural prescriptions, manual and mechanical treatment approaches, and biomass disposal approaches as the proposed program, with the exception of prescribed burning. However, this alternative would treat an estimated 1,800 acres per year. As shown in Table 6-1, it would result in manual treatments on an estimated 680 acres per year (38 percent of acres treated) and mechanical treatments on an estimated 630 acres per year (35 percent). Pile burning would occur on an estimated 490 acres per year (27 percent). With implementation of Alternative C, diameter at breast height (dbh) targets would be increased to allow for removal of trees up to 38 inches dbh, which is greater than the 30 inches dbh limit that is typically applied within the program area (TRPA Code of Ordinances Section 61.1). The ability to remove larger trees would make commercial thinning projects more financially viable. There would be no prescribed fire for this alternative aside from pile burning to remove biomass in some project areas treated with manual treatments. Maintenance treatments would occur on the same timeframe as under the proposed program.

Consistency with Program Objectives

Implementation of Alternative C would result in fuels reduction through manual and mechanical treatments and pile burning, which would provide less flexibility in options for achieving fuel reduction goals compared to the proposed program. This alternative would meet the program objectives related to reducing the risk of catastrophic wildfires, increasing forest resilience, and increasing the pace and scale of fuel reduction projects; however, relying solely on manual and mechanical treatment methods and pile burning limits the flexibility of land managers and fire districts to use the most appropriate approach for specific fuel reduction projects. Although mechanical and manual treatments would mimic some of the forest health benefits of fire, those treatment methods would not be as effective as understory burning in achieving forest health benefits of fire. However, Alternative C would result in treating a greater number of acres per year than the proposed program. Thus, Alternative C would meet these program objectives to similar to the proposed program.

Alternative C would implement fuels treatments that would generally rely on manual and mechanical treatments and pile burning that can somewhat replicate the effects of a natural fire regime but to a lesser extent than prescribed understory burning would. However, because a greater number of acres would receive fuels treatments than the proposed program, this alternative would achieve the two program objectives related to restoration and improving forest health similar to the proposed program, which includes a prescribed burning component.

Feasibility

Because Alternative C proposes to implement manual and mechanical fuels treatments and pile burning that would be an expansion of existing fuels treatment practices it would be feasible to implement. However, this alternative would not achieve the program objectives as effectively as the proposed program because it would limit the types of fuel reduction treatment options to manual and mechanical treatments and pile burning and there may be areas that would be better treated by prescribed understory burning.

ENVIRONMENTAL ANALYSIS OF ALTERNATIVE C

Wildfire

As shown in Section 3.2, "Wildfire," Alternative C, which is similar to Scenario 3 modeled by the LANDIS II model, would have a similar, but less impact related to overall risk of wildfire and high-severity wildfire compared to the proposed program. The short-term effects of Alternative C would be less than the proposed program because Alternative C would only include pile burning and manual and mechanical treatments, which would reduce risks related to the unintentional spread of a prescribed fire. Like the proposed program, implementation of SPRs and stringent safety protocols would prevent the uncontrolled spread of wildfire from other treatment activities. Over the long term, Alternative C would seek to reduce the potential for the uncontrolled spread of wildfire through manual and mechanical treatments and pile burning. Over the long term, the risk of the uncontrollable spread of wildfire and high-severity wildfire would be less than under the proposed program because although Alternative C would limit prescribed burning, it would treat a greater number of acres through manual and mechanical treatments than the proposed program. Thus, Alternative C would leave less wildfire fuels, which would decrease the risk of the uncontrollable spread of wildfire and high-severity wildfire.

Aesthetics

Under Alternative C, understory burning would not be used to reduce fuel loading; however, the other treatment activities would affect aesthetics and visual resources in the same manner as the proposed program. As with the proposed program, the visual effects of implementing treatments would be short term and temporary. Like the proposed program, the long-term effects of most treatments would be increased viewing distance with the potential for significant scenic impacts in sensitive areas where vegetative screening is removed. As with the proposed program, this alternative would implement Mitigation Measures 3.3-2 and 3.3-3 to preserve screening vegetation and reduce adverse effects to scenic quality along key areas of scenic roadway corridors or shorelines. The aesthetic effects of this alternative would be similar to the proposed program.

Agriculture and Forestry Resources

The effects of Alternative C on forestry resources would be similar to the proposed program because it would include the manual and mechanical treatments, but with limited pile burning and no prescribed understory burning. However, because Alternative C would result in treatment of more acres than would occur under the proposed program, the magnitude of tree removal with implementation of Alternative C would be greater. The alternative would alter forest land through vegetation removal, but forested treatment areas would generally continue to support at least 10 percent of native tree cover thereby maintaining consistency with the definition of forest land as defined by PRC Section 12220(g). Similar to the proposed program, treatment activities under Alternative C would not result in the loss of forest land or conversion of forest land to a non-forest use. This impact would be similar to the proposed program.

Air Quality

Alternative C would include manual and mechanical treatments, but with a limited proportion of pile burning and no prescribed understory burning. Additionally, this alternative would result in treatment of a greater number of acres compared to the proposed program. As shown in Table 3.5-7, "Maximum Daily Emissions," under Section 3.5, "Air Quality," manual and mechanical treatment activity under the proposed program would generate emissions of ozone precursors (i.e., reactive organic gases [ROG] and oxides of nitrogen [NO_x]) that would exceed the mass emission thresholds established by the El Dorado Air Quality Management District (EDCAQMD) and Placer County Air Pollution Control District (PCAPCD). These emissions could result in, or contribute to, ambient concentrations of ozone that exceed the national ambient air quality standards and California ambient air quality standards. Therefore, the level of significance of the effects from Alternative C on ambient air quality in the Lake Tahoe Air Basin would be similar to the proposed program. However, prescribed burning emits approximately 58 times more ROG and 161 times more NO_x than manual treatments, and approximately 144 times more ROG and 15 times more NO_x than mechanical treatments, on a per-acre basis. Although Alternative C would not include prescribed understory burning, it would treat a greater number of acres than the proposed program through manual and mechanical treatments and would include a greater amount of pile burning; thus, the magnitude of the effects from Alternative C on ambient air quality in the Lake Tahoe Air Basin would be similar to those of the proposed program. Additionally, because of the increased amount of treatments, Alternative C may result in a slight decrease in the potential for high-severity wildfire compared to the proposed program.

The potential for emissions-generating treatment activity conducted under Alternative C to expose nearby receptors to toxic air contaminants and odors would be similar to the proposed program because it would include similar emissions-generating treatment activities in similar locations.

Biological Resources

The effects of Alternative C on aquatic and terrestrial resources would be generally similar to the proposed program because this alternative would include manual and mechanical treatments, but there would be no prescribed understory burning. While the magnitude of the effects on biological resources from manual and mechanical treatments would be slightly greater than with the proposed program due to more total acres being treated annually under Alternative C, the magnitude of any effects from understory burning would be reduced because of fewer acres burned per year. As with the proposed program, manual and mechanical treatment activities under Alternative C would incorporate SPRs and CFPR measures to avoid or minimize adverse impacts to special-status plants and wildlife, wildlife and fish nursery sites, fish populations and fish movement, and riparian and aquatic habitat, and avoid or prevent the introduction or spread of AIS. Increases in the extent of manual and mechanical treatment activities would potentially cause slight increases in erosion, risk of spills or leaks of contaminants from equipment, and the need for water drafting, but adverse effects would be minimized by implementation of SPRs and adherence to the CFPRs similar to the proposed program to protect water bodies and WLPZs/SEZs, limit crossings and equipment use near waterbodies, minimize adverse effects of water drafting, and prevent spill or leaks from equipment. Additionally, treatment-related disturbances to high-quality terrestrial habitats, wildlife nursery sites, breeding sites for special-status wildlife species, and special-status plant occurrences from manual and mechanical treatments with Alternative C would generally be slightly greater than with the proposed program, depending on the specific locations of these treatments. Compared to the proposed program, the elimination of prescribed understory burning with Alternative C would reduce erosion of sediment and sedimentation of aquatic habitats and removal or degradation of terrestrial habitats.

Overall, the differences in effects on fisheries and aquatic habitat, wildlife nursery sites, breeding sites for special-status wildlife species, and special-status plants between Alternative C and the proposed program may not be substantial because increases in the magnitude of effects from increased manual and mechanical treatments may be partly offset by elimination of prescribed understory burning. The impacts from Alternative D on biological resources would be similar to those of the proposed program.

Archaeological, Historical, and Tribal Cultural Resources

Alternative C would include the same silvicultural prescriptions, manual and mechanical treatment approaches, and biomass disposal approaches as the proposed program, with the exception of understory burning. Under this alternative, SPRs would be implemented and would help to reduce potential cultural resource impacts; however, a greater number of acres per year would be treated than as described for the proposed program. Because treatment activities would occur in a greater area than the proposed program, there is a greater potential to encounter known and unknown resources, and therefore the potential to adversely affect archaeological, historical, and tribal cultural resources is greater under Alternative C compared to the proposed program.

Energy Resources

Because Alternative C would include treatment of a greater number of acres per year and more mechanical treatments than the proposed program, a greater amount of energy would be consumed in the form of fossil fuel (e.g., diesel and other petroleum fuels) combustion in the engines of vehicles and equipment. Like the proposed program, Alternative C would reduce the relatively inefficient consumption of energy during wildfire response. Alternative C would have a greater effect on energy resources than the proposed program.

Geology, Soils, and Land Capability

The effects of Alternative C on geology and soils would be similar to the proposed program because this alternative would include the manual and mechanical treatments, but with limited pile burning and no prescribed understory burning. However, the magnitude of the effects would be greater than the proposed program, because the total acres treated per year and the amount of mechanical treatment under Alternative C would be greater. As with the proposed program, treatment activities under Alternative C would implement SPRs and CFPR measures to avoid or minimize the potential to increase erosion, avalanches, and landslides. Alternative C would reduce the potential effects of high-severity burns related to soil erosion and landslides, but the increased amount of mechanical treatment would increase soil disturbance and the potential for soil compaction and erosion. Similar to the proposed program, the impacts of Alternative C would be less than significant provided that SPRs and CFPR measures are implemented effectively. Although the magnitude of the increases in impacts compared to those of the proposed program would likely be small, Alternative C would result in a greater impact on geology, soils, and land capability.

Greenhouse Gas Emissions and Climate Change

Alternative C would include manual and mechanical treatments like the proposed program, but with limited pile burning and no prescribed understory burning. Additionally, this alternative would treat a greater number of acres than the proposed program. Manual and mechanical treatments would result in a short-term increase in GHG emissions that would be a cumulatively considerable contribution to global climate change and, therefore, a significant and unavoidable impact. As shown in Table 6-3, "Estimates of Greenhouse Gas Emissions Associated with Each Alternative," manual and mechanical treatment activity would generate substantially less GHG emissions than prescribed understory burning and pile burning on a per-acre basis. Although the number of acres treated would be greater for Alternative C than the proposed program and the number of acres treated by pile burning would be greater, because this alternative would not include prescribed burning, the overall GHG emissions would be similar to those of the proposed program, especially when considered relative to the GHG emissions from Alternatives A and D (see Table 6-3). Additionally, because this alternative would treat a greater area than the proposed program, the potential for a long-term increase in carbon sequestration and long-term reduction in GHGs emitted by wildfire would be greater under Alternative C than the proposed program. This Alternative would still result in a significant and unavoidable impact related to GHG emissions, but the impact would be less severe than under the proposed program.

Hazards and Hazardous Materials

Alternative C would include transportation, use, storage, and disposal of fuels, oils, and lubricants, which could result in risks related to human exposure when applied in areas in close proximity to the public. This risk would be greater under Alternative C than the proposed program, because more mechanical treatments would be implemented each year without the use of prescribed burning and would be implemented over a larger area each year. Alternative C would include compliance SPR HAZ-1, like the proposed program, which would minimize risks associated with the

handling and use of hazardous materials. Alternative C would also comply with applicable laws, regulations, and SPRs that reduce the risk associated with the use of fuels, oils, lubricants, and other hazardous materials. Although the impacts would remain less than significant, overall, effects related to hazardous materials from Alternative C would be greater than those of the proposed program.

Hydrology and Water Quality

The effects of Alternative C on hydrology and water quality would be generally similar to the proposed program because this alternative would include manual and mechanical treatments, but there would be no prescribed understory burning. While the magnitude of the effects on hydrology and water quality from manual and mechanical treatments would be slightly greater than the proposed program due to more total acres being treated per year under Alternative C, the magnitude of hydrology and water quality effects from pile burning and understory burning would be reduced due to fewer acres burned per year. As with the proposed program, manual and mechanical treatment activities under Alternative C would implement SPRs to avoid or minimize adverse impacts to hydrology and water quality. Manual and mechanical treatment activities would potentially disturb and/or compact soils, transport sediment and nutrients because of subsequent soil erosion, and introduce contaminants from equipment spills and leaks, but transport of sediment, nutrients, and contaminants to water bodies would be minimized by implementation of SPRs similar to the proposed program to protect water bodies, WLPZs, and stream environment zones (SEZs), limit equipment use on wet soils and steep slopes, stabilize highly disturbed areas, and prevent spill or leaks from equipment. Compared to the proposed program, decreases under Alternative C in the amount of land subject to prescribed pile burning and elimination of prescribed understory burning would result in more litter and small woody debris that would slow down runoff, increase soil infiltration, and reduce erosion of sediment and transport nutrients to water bodies. Overall, the effects on hydrology and water quality under Alternative C would be similar to the proposed program.

Noise and Vibration

Short-term increases in noise would be greater than those of the proposed program, because Alternative C would include mechanical and manual treatments over a greater area, which generate more noise than prescribed burning because of the use of motorized equipment. As with the proposed program, vegetation treatment activities implemented under Alternative C would adhere to SPRs that require consistency with local noise policies and ordinances to the extent the program is subject to them (e.g., limit vegetation treatment activities to daytime hours, ensure proper notification of nearby sensitive receptors, locate treatment activities and staging areas away from sensitive receptors to minimize noise exposure, and minimizing flights of residential areas and designated wilderness areas). Although Alternative C would result in less-than-significant impacts related to noise, because more areas would be subject to mechanical treatments, this alternative would generate more noise than the proposed program.

Recreation

The effects of Alternative C on recreation would be similar to the proposed program because the alternative would include the manual and mechanical treatments, but with limited pile burning and no prescribed understory burning. Alternative C would treat a greater number of acres than would be treated by the proposed program each year. As with the proposed program, treatment activities under Alternative C would implement SPRs that avoid or minimize the disruption of recreational activities within designated recreation areas. However, because of the greater number of acres treated by pile burning, Alternative C would have an increased nuisance effect on the quality of recreation user experiences related to adverse air quality conditions generated by smoke from the prescribed fire. Alternative C would also result in a greater nuisance effect from noise generated by mechanical treatments.

Transportation

Under this alternative, understory burning would not be used to reduce fuel loading; however, the other treatment activities would affect transportation in the same manner and extent described for the proposed program. Additionally, this alternative would treat a greater number of acres each year than the proposed program. As with the proposed program, the transportation effects of implementing treatments would be short term and temporary. Like the proposed program, the transportation effects of most treatment activities would include increases in VMT and

potential for hazards due to smoke associated with pile burning (even if limited in nature), and the operation of incompatible uses along the roadway network during later treatment activities. Because this alternative would treat a greater number of acres per year than the proposed program, impacts related to VMT would be greater. Implementation of Alternative C would result in transportation effects greater than those of the proposed program.

Summary

Alternative C would reduce some environmental impacts related to air quality, GHG emissions and climate change, and wildfire compared to the effects of the proposed program. Impacts related to aesthetics, agriculture and forestry resources, biological resources, hydrology and water quality from Alternative C would be similar to those of the proposed program. However, because Alternative C would treat a greater number of acres per year, it could result in greater impacts related to archaeological, historical, and cultural resources; energy resources; geology, soils, and land capability; hazards and hazardous materials; noise and vibration; recreation; and transportation.

6.2.4 Alternative D: Limited Thinning Intensity and Expanded Prescribed Burning

DESCRIPTION OF THE ALTERNATIVE

Alternative D would increase the pace and scale of fuel reduction treatments in the program area over existing conditions using a treatment approach with less mechanical treatments, and more understory burning. This alternative is intended to reduce potential environmental effects of mechanical treatments that could result from the proposed program, such as effects related to soils and water quality. As with the proposed program, this alternative would treat an estimated annual average of 1,250 acres per year. As shown in Table 6-1, prescribed understory burning would be used on an estimated average of 475 acres per year (38 percent of acres treated). Prescribed understory burning would only occur within the Planned CWPP Project areas of the program area. Manual treatments would occur on an estimated average of 500 acres per year (40 percent), ground-based mechanical thinning would occur on an estimated 100 acres per year (8 percent), and pile burning would occur on 175 acres per year (14 percent).

Consistency with Program Objectives

Implementation of Alternative D would result in fuels reduction that would primarily rely on prescribed understory burning treatments, which would result in less flexibility and options for achieving fuel reduction goals compared to the proposed program. For example, some areas within the program area (e.g., urban lots) would not be appropriate locations for using prescribed burning. Constraints related to air quality could also limit the number of days during which prescribed burning could be used resulting in fewer acres treated than planned. Thus, this alternative would meet the program objectives related to reducing the risk of catastrophic wildfires, increasing forest resilience, and increasing the pace and scale of fuel reduction projects compared to existing conditions; however, relying primarily on prescribed burning treatment methods limits the flexibility for project proponents to implement fuel reduction projects. Alternative D would meet these program objectives similar to the proposed program.

Alternative D would implement fuels treatments that would generally rely on prescribed understory burning that can replicate the effects of a natural fire regime. However, there may be restoration plans, such as removing conifers from meadows, that could not be implemented using prescribed burning. Thus, this alternative would achieve the two program objectives related to restoration and improving forest health but to a lesser degree than the proposed program.

Feasibility

Because Alternative D proposes to implement prescribed burning treatments that would be an expansion of existing fuels treatment practices it would be potentially feasible to implement. However, this alternative would not achieve the program objectives as effectively as the proposed program because it would limit the types of fuel reduction treatment options to primarily consist of prescribed burning and manual treatments. There may be areas that would be better treated by mechanical treatments.

ENVIRONMENTAL ANALYSIS OF ALTERNATIVE D

Wildfire

As shown in Section 3.2, "Wildfire," Alternative D, which is similar to Scenario 4 modeled by the LANDIS II model, would be similar to the proposed program because it would reduce the risk of high-severity wildfire to a similar degree as the proposed program. Additionally, Alternative D would treat the same number of acres each year; however, this alternative would include less mechanical treatment and pile burning but more prescribed understory burning than would occur for the proposed program. Therefore, the short-term effects of Alternative D would be greater than the proposed program because Alternative D would include more prescribed burning, which would increase risks related to the unintentional spread of a prescribed fire. Like the proposed program, SPRs and stringent safety protocols would prevent the uncontrolled spread of wildfire from other treatment activities. Over the long term, the risk of the uncontrollable spread of wildfire and high-severity wildfire would be greater than under the proposed program because Alternative D would treat a greater number of acres each year through prescribed burning than the proposed program.

Aesthetics

The expanded prescribed fire alternative would result in short-term scenic effects due to the greater extent of blackening of tree trunks and woody debris as described for the proposed program, compared to the proposed program. Scenic effects would be temporary in most cases; however, some areas may experience higher severity burns, which could have long-lasting scenic effects. Although burning would temporarily alter the appearance of the forest environment, naturally occurring fires occur on a cyclical basis in program area forests and program-related burning scenic effects would be consistent the natural forest environment. Like the proposed program, the long-term effects of most treatments would be increased viewing distance with the potential for significant scenic impacts in sensitive areas where vegetative screening is removed; however, the impact would occur in fewer locations than under the proposed program because there would be fewer manual and mechanical treatments that would remove mature trees, which would retain a limited viewing distance in more places. As with the proposed program, this alternative would implement Mitigation Measures 3.3-2 and 3.3-3 to preserve screening vegetation and reduce adverse effects to scenic quality along key areas of scenic roadway corridors or shorelines. The aesthetic effects of this alternative would be similar to the proposed program.

Agriculture and Forestry Resources

The effects of Alternative D on forestry resources would be the same as the proposed program because the alternative would treat the same number of acres of land each year as the proposed program. The alternative would alter forest land through vegetation removal, but forested treatment areas would generally continue to support at least 10 percent of native tree cover thereby maintaining consistency with the definition of forest land as defined by PRC Section 12220(g). Similar to the proposed program, treatment activities under Alternative D would not result in the loss of forest land or conversion of forest land to a non-forest use. This impact would be similar to the proposed program.

Air Quality

Alternative D would include limited manual and mechanical treatments and more prescribed burning. As shown in Table 3.5-7, "Maximum Daily Emissions," under Section 3.5, "Air Quality," prescribed burning would generate emissions of ozone precursors (i.e., ROG and NO_x) that would exceed the mass emission thresholds established by EDCAQMD and PCAPCD. These emissions could result in, or contribute to, ambient concentrations of ozone that exceed the national ambient air quality standards and California ambient air quality standards. Prescribed burning emits approximately 58 times more ROG and 161 times more NO_x than manual treatments, and approximately 144 times more ROG and 15 times more NO_x than mechanical treatments, on a per-acre basis. Thus, the effects of Alternative D on ambient air quality in the Lake Tahoe Air Basin would be more severe than the proposed program.

The potential for emissions-generating treatment activity conducted under Alternative D to expose nearby receptors to toxic air contaminants and odors would be similar to the proposed program because, like the proposed program,

prescribed burning would only take place in the Planned CWPP Project areas and still be subject to burn requirements of local air districts and TRPA.

Biological Resources

The effects of Alternative D on aquatic and terrestrial biological resources would be similar to the proposed program, but this alternative would include less mechanical treatment acreage and a greater amount of prescribed understory burning. In addition, the area subject to pile burning each year would be less under Alternative D than with the proposed program. Alternative D would treat the same number of acres as the proposed program each year, so variations in the effects on aquatic and terrestrial habitats compared to the proposed program would result solely from changes in the amount of area treated by the different types of treatment activities. As with the proposed program, pile burning and prescribed understory burning treatment activities under Alternative D would incorporate SPRs and CFPR measures to avoid or minimize the potential to substantially degrade aquatic habitat, cause other adverse impacts to fish populations, or cause the introduction or spread of AIS. SPRs and CFPR measures would promote low-severity understory burns that protect WLPZs/SEZs and the majority of soil and organic materials on the forest floor, thus minimizing sediment and nutrient transport to waterbodies. Decreases in the area of mechanical treatment activities under Alternative D would reduce the extent and magnitude of disturbance to riparian and aquatic habitats and the risk of introduction or spread of AIS compared to the proposed program by reducing soil disturbance, soil compaction, stream crossings, and the potential for equipment spills and leaks that could deliver sediment, nutrients, or contaminants to water bodies and by reducing the need for water drafting. Similarly, the extent and magnitude of treatment-related disturbances to high-quality terrestrial habitats, wildlife nursery sites, breeding sites for special-status wildlife species, and special-status plant occurrences from mechanical thinning would be reduced with Alternative D; and, although effects of prescribed burning could increase, incorporation of applicable SPRs, CFPR measures, and project-specific mitigation measures would protect these resources from substantial loss or degradation.

Overall, the differences in effects on fisheries and aquatic habitat, wildlife nursery sites, breeding sites for special-status wildlife species, and special-status plant occurrences between Alternative D and the proposed program may not be substantial because increases in the magnitude of effects from increased prescribed broadcast burning may be partly offset by decreases in the magnitude and extent of effects from reduced mechanical treatment. The impacts from Alternative D on biological resources would be similar to those of the proposed program.

Archaeological, Historical, and Tribal Cultural Resources

Under Alternative D, fuel reduction treatments would increase in pace and scale compared to existing conditions, and would include fewer mechanical treatments and increased understory burning. As with the proposed program, this alternative would treat an estimated annual average of 1,250 acres per year. Project-level protection measures would still be required by CEQA and the FPA to reduce potential cultural resource impacts. Because this alternative would include the same pace, scale, and area of treatment, there is a potential to affect known and unknown cultural resources through implementation of treatment activities within the program area. Therefore, Alternative D would result in similar impacts to archaeological, historical, and tribal cultural impacts as the proposed program.

Energy Resources

Alternative D would include fewer mechanical treatments and more prescribed burning, which would require some less energy use than mechanical treatments. Compared to the proposed program, less energy would be consumed in the form of fossil fuel (e.g., diesel and other petroleum fuels) combustion in the engines of vehicles and equipment. Like the proposed program, Alternative D would reduce the relatively inefficient consumption of energy during wildfire response. Overall, Alternative D would have a similar effect on energy resources to those of the proposed program.

Geology, Soils, and Land Capability

The effects from implementation of Alternative D on geology and soils would be similar to the proposed program, but this alternative would include less mechanical treatment acreage and a greater amount of prescribed understory burning. In addition, the amount of area subject to pile burning each year would be less under Alternative D than under the proposed program. Alternative D would treat the same number of acres as the proposed program each

year, so variations in the effects on geology and soils compared to the proposed program would be due entirely to changes in the percentage of the area treated by the different types of treatment activities. Understory burning can lead to an increase in the extent of impermeable soils and decreased roughness of the soil surface. These changes would alter overland flows and hence lead to potential increase in soil erosion. As with the proposed program, pile burning and prescribed understory burning treatment activities under Alternative D would implement SPRs and CFPRs to avoid or minimize potential for erosion and landslides. SPRs would promote low-severity prescribed understory burns that partially char and consume litter and small woody debris in confined areas while leaving few mineral soils exposed, and would reduce the potential for escaped fire that could lead to increased soil erosion. Decreases in the area of mechanical treatment activities under Alternative D would lessen the magnitude of potential impacts on geology and soils compared to the proposed program by reducing soil compaction and soil disturbance that could increase soil erosion. Overall, the effects on geology and soils under Alternative D would be similar to the proposed program since increases in the magnitude of effects from increased prescribed understory burning would likely be offset by decreases in the magnitude of effects from reductions in mechanical treatments. Under both the proposed program and Alternative D, the impacts on geology and soils would be less than significant.

Greenhouse Gas Emissions and Climate Change

Alternative D would include more prescribed burning and less manual and mechanical treatments than the proposed program. As shown in Table 6-3, "Greenhouse Gas Emissions Associated with Treatment Activity," prescribed burning would generate substantially higher GHG emissions than manual and mechanical treatments on a per-acre basis. Additionally, Table 6-3 shows that this alternative would be estimated to emit over five times the GHG emissions from the proposed program. Therefore, the cumulatively considerable contribution to climate change under Alternative D within the Basin would be significant and unavoidable, and more severe than the proposed program. However, because Alternative D would treat the same number of acres as the proposed program, its potential to reduce wildfire risk and increase carbon sequestration over the long term would be the same as the proposed program.

Hazards and Hazardous Materials

Alternative D would include similar transportation, use, storage, and disposal of fuels, oils, and lubricants as would occur with the proposed program, which could result in risks related to human exposure when applied in areas in close proximity to the public. Although more prescribed burning would occur under Alternative D than the proposed program, hazards and hazardous materials impacts from Alternative D would be similar to those of the proposed program because fewer mechanical treatments would be implemented each year. Alternative D would implement SPR HAZ-1, like the proposed program, which would minimize risks associated with the handling and use of hazardous materials. Alternative D would also comply with applicable laws, regulations, and SPRs that reduce the risk associated with the use of fuels, oils, lubricants, and other hazardous materials. Effects related to hazardous materials from Alternative D would be similar to those of the proposed program.

Hydrology and Water Quality

The effects of Alternative D on hydrology and water quality would be similar to the proposed program, but this alternative would include less mechanical treatment acreage, a greater amount of prescribed understory burning. Alternative D would treat the same number of acres as the proposed program each year, so variations in the effects on hydrology and water quality compared to the proposed program would be due entirely to changes in the percentage of the area treated by the different types of treatment activities. Lake Tahoe West model results indicate that production of fine sediment and phosphorus is slightly lower with thinning treatments compared to prescribed fire without the implementation of SPRs (Lake Tahoe West 2020). As with the proposed program, pile burning and prescribed understory burning treatment activities under Alternative D would include SPRs and CFPRs that avoid or minimize the potential to substantially degrade or alter hydrology and water quality. SPRs and CFPRs would promote low-severity prescribed burns that partially char and consume litter and small woody debris in confined areas while leaving few mineral soils exposed, reduce the potential for escaped fire, and preserve unburned vegetated islands, WLPZs, and SEZs that reduce sediment and nutrient transport from runoff originating in treatment areas. Decreases in the area of mechanical treatment activities under Alternative D would reduce the magnitude of hydrology and water quality effects from these treatment activities compared to the proposed program by reducing the soil disturbance,

soil compaction, and potential for equipment spills and leaks that could transport sediment, nutrients, or contaminants to water bodies. Increases in the area of prescribed burning activities under Alternative D would increase the potential for escaped fire or severe burns and increase sediment and nutrient transport in runoff from burned areas. Overall, the effects on hydrology and water quality under Alternative D would be similar to the proposed program with implementation of SPRs and CFPRs.

Noise and Vibration

Short-term increases in noise would be less than the proposed program, because less mechanical treatments would occur, which generate more noise than other treatment types. While Alternative D would generate less noise from mechanical treatments, it would generate more noise from prescribed burning activities than the proposed program. As with the proposed program, vegetation treatment activities implemented under Alternative D would adhere to SPRs that require consistency with local noise policies and ordinances to the extent the project is subject to them, limit vegetation treatment activities to daytime hours, ensure proper notification of nearby sensitive receptors, locate treatment activities and staging areas away from sensitive receptors to minimize noise exposure, and minimizing flights of residential areas and designated wilderness areas.

Recreation

The effects of Alternative D on recreation would be similar to the proposed program, because this alternative would treat the same number of acres per year but would include fewer manual and mechanical treatments and a greater amount of prescribed understory burning in the Planned CWPP Project areas than would occur for the proposed program. As with the proposed program, treatment activities under Alternative D would implement SPRs that avoid or minimize the disruption of recreational activities within designated recreation areas. However, because of the increased use of prescribed burning, Alternative D would have a greater nuisance effect on the quality of recreation user experiences related to adverse air quality conditions generated by smoke from the prescribed fire.

Transportation

Implementation of Alternative D would result in the same potential effects related to VMT and hazards as described for the proposed program. This alternative could potentially result in greater hazards due to smoke associated with a greater amount of prescribed burning than would occur for the proposed program. Because mechanical treatments are the most vehicle-intensive treatment methods and this alternative would include fewer mechanical treatments, this alternative would result in a reduced VMT impact. Alternative D would comply with and implement the SPRs identified for the proposed program. Implementation of Alternative D would result in transportation effects similar to those of the proposed program.

Summary

Alternative D would not reduce environmental impacts associated with any environmental resource area. This alternative would result in greater impacts related to air quality, GHG emissions and climate change, and recreation.

6.3 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires that an EIR identify an environmentally superior alternative, but it does not provide a definition for the term (State CEQA Guidelines Section 15126.6(e)). For the purposes of this PTEIR, the environmentally superior alternative is the alternative that would result in the fewest potentially significant impacts while achieving most of the basic program objectives to the greatest extent. Table 6-2 presents a comparison of the environmental effects of each alternative relative to the proposed program and identifies whether an alternative would avoid any significant and unavoidable impact of the proposed program.

With each alternative, there would be environmental tradeoffs; that is, impacts to certain resource areas from an alternative would increase while others would decrease relative to the proposed program. Additionally, each alternative would result in some significant and unavoidable impacts. Each alternative, except Alternative D: Limited Thinning Intensity and Expanded Prescribed Burning, would reduce one or more impacts of the proposed program,

and all alternatives would result in greater impacts than the proposed program for some resource areas. The extent to which an alternative achieves the program objectives should also be considered when identifying the environmentally superior alternative, particularly in this PTEIR where the program objectives have been developed to achieve environmental benefits. The proposed program would achieve the objectives to the greatest degree of any alternative. The following summarizes the overall comparison of effects between the alternatives and the proposed program as well as their ability to achieve the program objectives.

Alternative A: No-Program Alternative would not achieve project objectives to restore meadow and riparian ecosystem processes and functions or to increase the pace and scale of fuel reduction projects to assist in achieving the goals of Executive Order B-52-18 and, thus, would not increase forest resiliency and reduce potential wildfire risk to the extent that could be achieved with implementation of the proposed program. Additionally, Alternative A would require project-by-project approvals by project proponents. In some cases, projects could tier from the CalVTP PEIR; however, projects outside of the SRA and commercial timber projects would still require a project-by-project review. Additionally, implementation of treatment activities under the No-Program Alternative would not result in the benefits associated with having a uniform set of SPRs like the proposed program. Alternative A would continue to implement fuel reduction treatments resulting in fewer acres treated than the proposed program. This alternative would result in reduced impacts on a number of resources associated with treatment activities (e.g., aesthetics, air quality, cultural resources, recreation). Alternative A could result in potentially more high-severity wildfires than the proposed program over the long term and, thus, under those conditions would result in greater impacts on resources such as air quality, GHG emissions and climate change, geology and soils, and hydrology and water quality.

While Alternative B would not directly result in environmental impacts because it would not propose any fuel treatment activities, it would not reduce wildfire risk or meet any of the program objectives.

Although Alternative C would limit the types of fuel treatments (i.e., would not include understory burning). Because it would expand the amount of acres treated per year, it would effectively achieve the program objectives. In fact, because Alternative C would implement fuel treatments over a greater area than the proposed program, it would likely result in a greater benefit related to reducing potential wildfire risk compared to the proposed program. An increase in the amount of acres treated compared to the proposed program could result in greater potential impacts to a number of resource areas compared to the proposed program (i.e., cultural resources, energy resources, geology and soils, hazardous materials, noise, recreation, and hydrology and water quality).

Alternative D would not achieve the program objectives as effectively as the proposed program. Although it would treat the same number of acres per year, it would limit the types of fuel reduction treatment options to primarily consist of prescribed burning and manual treatments. There may be areas where project objectives would more effectively be met through mechanical treatments. Although implementation of this alternative would result in achieving the program objectives to a similar extent as the proposed program and would replicate the effects of a natural fire regime, it would limit the flexibility for project proponents to implement fuel reduction projects. Because Alternative D would involve more prescribed understory burning than the proposed program (more than twice the amount; see Table 6-1), this alternative would result in greater impacts on air quality, GHG, climate change, and recreation than the proposed program.

In summary, the proposed program would achieve all of the basic program objectives, but would result in potentially significant impacts and require the application of mitigation to reduce some, but not all, of the significant impacts to less-than-significant levels. The alternatives, particularly Alternative C: Manual and Mechanical Treatment Focus and Alternative D: Limited Thinning Intensity and Expanded Prescribed Burning, would reduce the severity of some resource impacts and exacerbate impacts for other resources, but would also achieve the basic program objectives to the same extent as the proposed program. Of the action alternatives (Alternatives A, C, and D), Alternative A would result in the least amount of environmental effects directly caused by treatment activities while meeting most of the program objectives, with the exception of the objective to increase the pace and scale of fuel treatments. It is worthwhile to note that, as further discussed in Chapter 4, "Social and Economic Effects," increases in fuel treatments over existing conditions that would occur with implementation of the proposed program would result in an increase in the net revenue associated with implementing fuel treatments and biomass removal and would result in a decrease in costs of property damage, health effects, tourism effects, and municipal revenue from a decrease in incidence of

wildfire. In light of these tradeoffs among the alternatives and the proposed program, none of the alternatives clearly stands out as environmentally superior. Identification of the environmentally superior alternative is, therefore, not an objective choice based on quantifiable criteria, but rather, an exercise of discretion in balancing environmental priorities among potential impacts in relation to the extent to which the alternative would meet the program objectives. If the key criterion for identifying the environmentally superior alternative is avoiding significant and unavoidable impacts and priority is given to issues related to human health, Alternative A would become the environmentally superior alternative, because it would reduce air quality impacts of the proposed program related to short-term exposure of people to toxic air contaminants during prescribed burning. If the key criterion for identifying the environmentally superior alternative is achieving the environmentally-beneficial program objectives and reducing the risk of high severity wildfire, then the proposed program would be the environmental superior alternative.

6.4 ALTERNATIVES CONSIDERED AND ELIMINATED FROM DETAILED ANALYSIS

As described above, State CEQA Guidelines Section 15126.6(c) provides that the range of potential alternatives for the project shall include those that could feasibly accomplish most of the basic objectives of the project, and could avoid or substantially lessen one or more of the significant effects. Alternatives that fail to meet the fundamental project purpose need not be addressed in detail in an EIR. (*In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143, 1165-1167.)

In determining what alternatives should be considered in the PTEIR, it is important to acknowledge the objectives of the project, the project's significant effects, and unique project considerations. These factors are crucial to the development of alternatives that meet the criteria specified in Section 15126.6(a). Although, as noted above, EIRs must contain a discussion of "potentially feasible" alternatives, the ultimate determination as to whether an alternative is feasible or infeasible is made by lead agency decision-maker(s). (See Pub. Resources Code, Section 21081(a)(3).) At the time of action on the project, the decision-maker(s) may consider evidence beyond that found in this PTEIR in addressing such determinations. The decision-maker(s), for example, may conclude that a particular alternative is infeasible (i.e., undesirable) from a policy standpoint, and may reject an alternative on that basis provided that the decision-maker(s) adopts a finding, supported by substantial evidence, to that effect, and provided that such a finding reflects a reasonable balancing of the relevant economic, environmental, social, and other considerations supported by substantial evidence. (*City of Del Mar v. City of San Diego* (1982) 133 Cal.App.3d 401, 417; *California Native Plant Society v. City of Santa Cruz* (2009) 177 Cal.App.4th 957, 998.)

The EIR should also identify any alternatives that were considered by the lead agency, but were rejected during the planning or scoping process and briefly explain the reasons underlying the lead agency's determination.

The following alternative was considered by CAL FIRE but is not evaluated further in this PTEIR.

6.4.1 Reduced Treatment Alternative

The project team, which includes CAL FIRE, California Tahoe Conservancy, and North Tahoe Fire Protection District, considered an alternative that would result in an annual treatment acreage goal that would be an incremental increase over the acres treated within the program area under existing conditions (or the amount of acres treated under the No-Program Alternative) but would be fewer acres than treated under the proposed program. The proportion of the types of treatment methods used would be similar to those considered for the proposed program, with an increase in the use of prescribed fire compared to existing conditions. Under existing conditions, or the No-Program Alternative, an average of 503 acres are treated each year. Implementation of the proposed program would result in up to 1,250 acres treated each year. The project team determined that the incremental difference in acres treated between the Reduced Treatment Alternative and the proposed program would not result in a substantial reduction in potential impacts that could occur with implementation of the proposed program such that any significant and unavoidable impacts from the proposed program or impacts requiring mitigation would be avoided. For these reasons, the Reduced Treatment Alternative is not evaluated further in this PTEIR.

7 OTHER SECTIONS REQUIRED BY STATUTE

7.1 GROWTH INDUCEMENT

California Environmental Quality Act (CEQA; Public Resources Code [PRC] Section 21100[b][5]) specifies that the growth-inducing impacts of a project must be addressed in an environmental impact report (EIR). The State CEQA Guidelines provides the following guidance for assessing growth-inducing impacts of a project (California Code of Regulations [CCR], Title 14, Chapter 3, Section 15126.2[d]):

Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also, discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

A project can induce growth directly, indirectly, or both. Direct growth inducement would result if a project involved construction of new housing. Indirect growth inducement would result, for instance, if implementing a project resulted in any of the following:

- ▶ substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises);
- ▶ substantial short-term employment opportunities (e.g., construction employment) that indirectly stimulates the need for additional housing and services to support the new temporary employment demand; and/or
- ▶ removal of an obstacle to additional growth and development, such as removing a constraint on a required public utility or service (e.g., construction of a major sewer line with excess capacity through an undeveloped area).

Growth inducement itself is not an environmental effect but may foreseeably lead to environmental effects. If substantial growth inducement occurs, it can result in secondary environmental effects, such as increased demand for housing, demand for other community and public services and infrastructure capacity, increased traffic and noise, degradation of air or water quality, degradation or loss of plant or animal habitats, conversion of agricultural and open-space land to urban uses, and other effects.

7.1.1 Growth-Inducing Effects of the Proposed Program

Implementation of the proposed program could result in an increase in workers to implement fuel reduction treatments. Employee demand generated by the later treatment activities would be met by Licensed Timber Operators, other forestry contractors, or public agency field crews, such as California Conservation Corps, Tahoe Conservancy forestry crews or fire district crews. The demand for employees would be a small incremental increase over existing regional job demands, and workers would be expected to come from the existing local workforce or could result in some people relocating to near or within the program area. Implementation of the proposed program would not result in substantial unplanned population growth such that construction of additional housing would be required.

Additionally, development in the Tahoe region is guided by the Regional Plan, which allows new development and redevelopment through authorization of residential allocations, commercial floor area, tourist accommodation units, and residential bonus units. As a result, development is capped in the region and implementation of fuels treatment projects, such as those that could occur under the proposed program would not result in a direct or indirect increase or change in the planned development patterns in the region.

For these reasons, the amount of employment generated by the proposed program would be minimal, would not result in substantial population growth such that construction of additional housing would be required, and would not result in substantial growth-inducing effects.

7.2 SIGNIFICANT AND UNAVOIDABLE ADVERSE IMPACTS

Public Resources Code PRC Section 21100(b)(2)(A) directs that an EIR shall include a detailed statement setting forth "in a separate section: any significant effect on the environment that cannot be avoided if the project is implemented." Accordingly, this section provides a summary of significant environmental impacts of the Tahoe PTEIR that cannot be mitigated to a less-than-significant level.

Section 2.5 of Chapter 2, "Program Description," introduces the Standard Project Requirements (SPRs) and applicable California Forest Practice Rules (CFPRs) and sections of the TRPA Code of Ordinances relevant to implementation of the proposed program, which are all listed in Appendix B. The SPRs, CFPRs, and TRPA Code sections would be incorporated by CAL FIRE or other project proponent into all later treatment activities seeking to qualify for coverage under the proposed program as a standard part of treatment design and implementation. SPRs, CFPRs, and TRPA Code sections would be implemented for all treatments to the extent they are applicable, analogous to standard operating procedures or best management practices. SPRs, CFPRs, and TRPA Code sections are intended to avoid and minimize environmental impacts and, in some cases, promote compliance with applicable laws and regulations. For some environmental resources in specific locations or circumstances, there may be residual impacts that cannot be adequately avoided or minimized with implementation of SPRs, CFPRs, and TRPA Code sections. Chapter 3, "Existing Impacts and Mitigation Measures," provides a description of the potential environmental impacts of the proposed program, implementation of applicable SPRs, CFPRs, and TRPA Code sections, and includes various mitigation measures to reduce residual impacts, to the extent feasible. Chapter 5, "Cumulative Impacts," determines whether the incremental effects of the proposed program are significant when viewed in connection with the effects of past, present, and probable future projects and programs. After implementation of SPRs, CFPRs, and TRPA Code sections and mitigation measures, most of the impacts associated with the Tahoe PTEIR would be reduced to a less-than-significant level.

The following impacts are considered significant and unavoidable; that is, no feasible mitigation is available or the mitigation measures available were not enough to reduce the impact to a less-than-significant level. It is reasonably anticipated that the majority of later treatment activities under the proposed program would result in less-than-significant impacts or impacts that can be reduced to less than significant with implementation of mitigation. However, in some cases (e.g., Air Quality, Greenhouse Gas Emissions, and Transportation), impacts are described as significant and unavoidable, even though the potential exists for impacts to be less than significant, because of uncertainty related, in part, to the potential infeasibility of implementing specific emission reduction techniques, the need for a balance between achieving treatment rate objectives and minimizing GHG impacts or immediate smoke impacts, and the infeasibility of purchasing and retiring carbon credits that would consume financial resources needed to achieve the wildfire risk reduction objectives of the proposed program. Additionally, because of the rural nature of the majority of the program area and the required equipment and number of employees associated with each later treatment activity, it would not be feasible to reduce VMT generated under the proposed program beyond encouraging workers to carpool. Note, this is only a summary of potentially significant and unavoidable impacts; it is important to review the discussions in Chapters 3 and 5 of this PTEIR to understand the full context of the impact significance determinations.

Implementation of the proposed program would result in the following significant unavoidable environmental impacts after implementation of feasible mitigation measures:

- ▶ Impact 3.4-1: Potential to Generate Emissions that Would Contribute to an Exceedance of CAAQS or NAAQS in the LTAB
- ▶ Impact 3.9-2: Generate GHG Emissions through Treatment Activities
- ▶ Impact 3.14-2: Conflict or be Inconsistent with CEQA Guidelines Section 15064.3, Subdivision(b)

Cumulative impacts for the issues listed above would also be significant and unavoidable (cumulatively considerable) as a result of implementation of the proposed program.

7.3 SIGNIFICANT AND IRREVERSIBLE ENVIRONMENTAL CHANGES

The State CEQA Guidelines requires a discussion of any significant irreversible environmental changes that would be caused by the project. Specifically, the State CEQA Guidelines Section 15126.2(c) states:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible, since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generation to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Generally, a project would result in significant irreversible environmental changes if:

- ▶ the primary and secondary impacts would generally commit future generations to similar uses;
- ▶ the project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project;
- ▶ the project would involve a large commitment of nonrenewable resources; or
- ▶ the proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

The proposed program would include implementation of the treatment activities described in Chapter 2, "Program Description," which include various methods of treating vegetation to reduce wildfire risk. Vegetation removal is generally a temporary change, and the proposed program would not include any changes to land use or construction of any structures that would commit future generations to similar uses. The proposed program would not involve any construction that would use nonrenewable resources. Energy would be consumed for implementation of the proposed program in the form of fossil fuel (e.g., diesel and other petroleum fuels) combustion in the engines of vehicles and equipment that would be used for vegetation removal. However, as discussed in Section 3.7, "Energy," the proposed program would not result in significant environmental impacts related to the unnecessary, inefficient, or wasteful use of resources. For these reasons, the proposed program would not result in significant irreversible environmental changes.

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