

US 50 / South Shore Community Revitalization Project

CA SCH No. 2011112009

Public Draft
Environmental Impact Report/
Environmental Impact Statement/
Environmental Impact Statement



April 2017



PREPARED FOR:



US 50/South Shore Community Revitalization Project

Volume 2

Environmental Impact Report/Environmental Impact Statement/Environmental Impact Statement (EIR/EIS/EIS) and Proposed Section 4(f) *De Minimis* Determination

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General Information about this Document

What's in this document:

The Federal Highway Administration, California Division (FHWA-CA), FHWA Nevada Division (FHWA-NV), California Department of Transportation (Caltrans), Tahoe Transportation District, and Tahoe Regional Planning Agency have jointly prepared this Environmental Impact Report/Environmental Impact Statement/Environmental Impact Statement (EIR/EIS/EIS), which examines the potential environmental impacts of the alternatives being considered for the US 50/South Shore Community Revitalization Project located in the City of South Lake Tahoe, California and Stateline, Nevada. FHWA-CA is the lead agency under the National Environmental Policy Act (NEPA). The Tahoe Transportation District is the lead agency under the California Environmental Quality Act (CEQA). The Tahoe Regional Planning Agency (TRPA) is the lead agency pursuant to the TRPA Compact, Lake Tahoe Regional Plan, and Code of Ordinances. The document tells you why the project is being proposed, what alternatives we have considered for the project, how the existing environment could be affected by the project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- ▲ Please read the document.
- ▲ Copies of the Draft EIR/EIS/EIS are available for review at the following locations.

Tahoe Transportation District 128 Market Street, Suite 3F Stateline, NV 89449	Tahoe Regional Planning Agency 128 Market Street Stateline, NV
South Lake Tahoe Public Library 1000 Rufus Allen Boulevard South Lake Tahoe, CA 96150	Zephyr Cove Library 338 Warrior Way Zephyr Cove, NV 89448
- ▲ The document may be downloaded at the following websites: www.trpa.org/get-involved/major-projects/ and www.tahoetransportation.org/us50.
- ▲ We'd like to hear what you think. Please attend the public hearings and/or send your written comments to TTD or FHWA by the deadline. Oral comments on the Draft EIR/EIS/EIS may be provided at a series of public hearings as listed below. Additional hearings or informational meetings, if scheduled, will be posted on TTD's website.
 - **June 9, 2017:** TTD Board of Directors Meeting, TRPA Board Rooms, 128 Market Street, Stateline, Nevada.
 - **June 14, 2017:** TRPA Advisory Planning Committee Meeting, TRPA Board Rooms, 128 Market Street, Stateline, Nevada.
 - **June 28, 2017:** TRPA Governing Board Meeting, TRPA Board Rooms, 128 Market Street, Stateline, Nevada.
- ▲ Send comments via postal mail to either of the following:

Tahoe Transportation District Attn: Russ Nygaard, Transportation Capital Program Manager PO Box 499 Zephyr Cove, NV 89448	Federal Highway Administration Attn: Scott McHenry, Local Programs Manager, Project Delivery Team 650 Capitol Mall, Suite 4-100 Sacramento, CA 95814
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- ▲ Send comments via email to: info@tahoetransportation.org or Scott.McHenry@dot.gov
- ▲ Be sure to send comments by the deadline: July 7, 2017

What happens next:

After comments are received from the public and reviewing agencies, FHWA-CA, TTD, and TRPA, may: (1) give environmental approval to the proposed project, (2) do additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is obtained, Caltrans could design and construct all or part of the project.

Realign US 50 in the Stateline casino corridor area (postmile 79.00 to postmile 80.44) and convert the existing US 50 roadway, between a location southwest of Pioneer Trail in the City of South Lake Tahoe, California and Lake Parkway in Stateline, Nevada, into a two-lane local street (one travel lane in each direction).

**Draft Environmental Impact Report/Environmental Impact Statement/
Environmental Impact Statement and Proposed *De Minimis* Determination**

Submitted Pursuant to: (State) Division 13, California Public Resources Code (Federal) 42 USC 4332(2)(C) and 49 USC 303

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration-California Division, Federal Highway Administration-Nevada Division,
THE STATE OF CALIFORNIA
Department of Transportation, and
THE STATE OF NEVADA

Department of Transportation, and Tahoe Transportation District, and Tahoe Regional Planning Agency

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Abstract

The purpose of the proposed project is to address existing transportation deficiencies and projected transportation requirements along the US 50 corridor between Pioneer Trail and SR 207, to alleviate cut-through traffic in local neighborhoods in the City of South Lake Tahoe, and to support community revitalization goals in the California/Nevada state line area while minimizing environmental impacts. The build alternatives would potentially result in the short-term and/or long-term adverse effects related to: traffic noise and community character and cohesion. Comments on the public draft EIR/EIS/EIS are due by July 7, 2017 and should be sent to Russ Nygaard at PO Box 499, Zephyr Cove, NV 89448 (or email at info@tahoetransportation.org) or to Scott McHenry at 650 Capitol Mall, Suite 4-100, Sacramento, CA 95814 (or email at Scott.McHenry@dot.gov).

¹ FHWA is the lead agency under the National Environmental Policy Act (NEPA), in cooperation with Caltrans.

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
µin/sec	micro inch per second
2017 RTP	2017 Regional Transportation Plan
AASHTO	American Association of State Highway Transportation Officials
AB	Assembly Bill
ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
ADL	Aerially deposited lead
afy	acre feet per year
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
APC	TRPA Advisory Planning Commission
APE	area of potential effect
APN	Assessor Parcel Number
ARB	California Air Resources Board
ASR	Archaeological Survey Report
AST	aboveground storage tank
ATP	<i>Linking Tahoe: Active Transportation Plan</i>
bgs	below ground surface
BMP	best management practices
BTEX	benzene, toluene, ethylbenzene, and xylene
BWQP	Bureau of Water Quality Planning
CAA	Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CAAQS	California ambient air quality standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Office of Emergency Services
Cal/OSHA	California Occupational Safety and Health Administration
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
California TRPA	CTRPA
Caltrans	California Department of Transportation
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDP	Census Designated Place
CDPR	California Department of Parks and Recreation

CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFA	commercial floor area
CFR	Code of Federal Regulations
CGS	California Department of Conservation, California Geological Survey
CHP	California Highway Patrol
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO Maintenance Plan	Carbon Monoxide Maintenance Plan
COC	Chemicals of Concern
Code	TRPA Code of Ordinances
Conservancy	California Tahoe Conservancy
CRHR	California Register of Historical Resources
CTC	California Tahoe Conservancy
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibels
dbh	diameter at breast height
DCMP	Douglas County Comprehensive Master Plan 2035
DTSC	California Department of Toxic Substances Control
DVTE	daily vehicle trip ends
DWR	California Department of Water Resources
EIP	Environmental Improvement Program
EIP	Lake Tahoe Environmental Improvement Program
EIR	environmental impact report
EIR/EIS/EIS	Environmental Impact Report/Environmental Impact Statement/Environmental Impact Statement
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986
ERC	Environmental Resources and Conservation
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zones
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FTE	full-time equivalent

FTIP	Federal Transportation Improvement Program
gC/m ²	grams of carbon per square meter
GHG	greenhouse gas
gpm	gallons per minute
HAP	hazardous air pollutant
HFRA	Healthy Forests Restoration Act of 2003
HRA	hydrologically related area
HRER	Historical Resources Evaluation Report
Hz	hertz
IEC	Initial Environmental Checklist
IPaC	Information, Planning, and Conservation System
IS/IEC	initial study/initial environmental checklist
km	kilometers
Lahontan RWQCB	Lahontan Regional Water Quality Control Board
LCD	land capability districts
L _{den}	Day-Evening-Night Level
L _{dn}	Day-Night Level
L _{eq}	Equivalent Continuous Sound Level
L _{eq[h]}	1-hour A-weighted equivalent sound level
LID	Low Impact Development
L _{max}	Maximum Sound Level
LOS	Level of Service
LPF	linear public facilities
LRWQCB	Lahontan RWQCB
LTAB	Lake Tahoe Air Basin
LTBMU	U.S. Forest Service, Lake Tahoe Basin Management Unit
LTGRP	Lake Tahoe Geographic Response Plan
LTT	Lake Tahoe Transportation
LTUSD	Lake Tahoe Unified School District
LUST	Leaking Underground Storage Tank
L _{xx}	Percentile-Exceeded Sound Level
MCAB	Mountain Counties Air Basin
MEP	Maximum Extent Practicable
mgd	million gallons per day
MLD	Most Likely Descendent
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mPa	micro-Pascals

mph	miles per hour
MPO	Metropolitan Planning Organization
MS4s	municipal separate storm sewer systems
MSAT	mobile source air toxics
MTBE	methyl tertiary butyl ether
MUTCD	Manual on Uniform Traffic Control Devices
NAAQS	national ambient air quality standards
NAC	Nevada Administrative Code
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
National AAQS	National Ambient Air Quality Standards
NDEP	Nevada Division of Environmental Protection
NDMV	Nevada Department of Motor Vehicles
NDOT	Nevada Department of Transportation
NDSL	Nevada Division of State Lands
NEHRP	National Earthquake Hazards Reduction Program
NEPA	National Environmental Policy Act
NEPA	National Environmental Policy Act of 1969
NESHAP	national emissions standards for HAPs
Nevada OSHA	Nevada Occupational Safety and Health Administration
Nevada SHPO	Nevada State Historic Preservation Office
Nev-OSHA	Nevada Occupational Safety and Health Act
NHPA	National Historic Preservation Act
NNHP	Nevada Natural Heritage Program
NO	nitric oxide
NO ₂	nitrogen dioxide
NOI	Notice of Intent
NOP	Notice of Preparation
NO _x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NSP	Nevada Division of State Parks
NTU	Nephelometric Turbidity Units
NVCRIS	Nevada Cultural Resource Information System
OEHHA	Office of Environmental Health Hazard Assessment
ONRW	Outstanding National Resource Water
OSHA	Occupational Safety and Health Administration
PAOT	persons at one time
PAS	plan area statements

PCAPCD	Placer County Air Pollution Control District
PCB	polychlorinated biphenyls
PCE	perchloroethylene
pCi/L	picocuries per liter
PDT	Project Development Team
PeMS	Performance Measurement System
PM ₁₀	respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
PM _{2.5}	fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less
PPV	peak particle velocity
PRC	Public Resources Code
REC	recognized environmental condition
RHMA	rubberized hot-mix asphalt
RMS	root-mean-square
ROD	record of decision
ROG	reactive organic gases
ROW	right-of-way
RPU EIS	Regional Plan Update Environmental Impact Statement
RTP	Lake Tahoe 2035 Regional Transportation Plan
RTP/SCS	Tahoe Regional Transportation Plan/Sustainable Communities Strategy
RTP/SCS EIR/EIS	Sustainable Communities Strategy Environmental Impact Report and Environmental Impact Statement
RWQCB	regional water quality control boards
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SDC	Seismic Design Criteria
SER	Standard Environmental Reference
SERC	Nevada State Emergency Response Commission
SEZ	stream environment zone
SGC	Southwest Gas Corporation
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO ₂	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SPL	sound pressure level
SQIP	Scenic Quality Improvement Plan
SR	State Route
SRA	State Responsibility Area
SSAP	City of South Lake Tahoe and the South Shore Area Plan
SSAP	South Shore Area Plan

SSMH	sanitary sewer manhole
STPUD	South Tahoe Public Utility District
STR	South Tahoe Refuse
SWPPP	storm water pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TAU	tourist accommodation unit
TAUs	and tourist accommodation unit
TCAP	Tourist Core Area Plan
TFFT	Tahoe Fire & Fuels Team
THPO	Tribal Historic Preservation Officer
TMDL	total maximum daily load
TMPO	Tahoe Metropolitan Planning Organization
TOD	transit-oriented development
TPH	total petroleum hydrocarbons
TPY	tons per year
TRPA	Tahoe Regional Planning Agency
TTD	Tahoe Transportation District
Unified Program	Unified Hazardous Waste and Hazardous Materials Management Regulatory Program
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
US 50	US Highway 50
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
VdB	vibration decibel
VEC	vapor encroachment conditions
VMT	Vehicle miles traveled
VOC	volatile organic compound
WRCC	Western Regional Climate Center
WUI	wildland-urban interface
WWTP	Wastewater Treatment Plant

3.9 FLOODPLAINS

This section describes the potential impacts to existing hydrology and regulated floodplains resulting from the implementation of the US 50/South Shore Community Revitalization Project. The analysis includes a description of existing conditions and an analysis of changes to hydrologic conditions and floodplain elevations. Regulations and guidelines established by the Tahoe Regional Planning Agency (TRPA) and local jurisdictions, along with the California Environmental Quality Act (CEQA) statute and guidelines, provide the regulatory background that guides the assessment of potential environmental effects to these resources. Potential environmental effects related to water quality resulting from soil erosion and other stormwater issues are addressed in Section 3.10, “Water Quality and Stormwater Runoff.” In addition, a discussion of potential impacts resulting from a seiche wave in Lake Tahoe is included with seismic hazards in Section 3.11, “Geology, Soils, Land Capability, and Coverage.”

3.9.1 Regulatory Setting

FEDERAL

Regulated Floodplain

Executive Order (EO) 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration (FHWA) requirements for compliance are outlined in 23 Code of Federal Regulations (CFR) 650 Subpart A.

To comply, the following must be analyzed:

- ▲ the practicability of alternatives to any longitudinal encroachments,
- ▲ risks of the action,
- ▲ impacts on natural and beneficial floodplain values,
- ▲ support of incompatible floodplain development, and
- ▲ measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

The base floodplain is defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the base floodplain.”

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) oversees federal floodplain management policies and runs the National Flood Insurance Program (NFIP) adopted under the National Flood Insurance Act of 1968. FEMA prepares Flood Insurance Rate Maps (FIRM) that delineate the regulatory floodplain to assist local governments with land use and floodplain management decisions to meet the requirements of the NFIP. In general, the NFIP mandates that development is not to proceed within the regulatory 100-year floodplain, if the development is expected to increase flood elevation by one foot or more. Very limited development is allowed in designated 100-year floodways (i.e., flood flow channels and areas with sufficient directional flow velocity of 100-year floodwaters).

TAHOE REGIONAL PLANNING AGENCY

Lake Tahoe Regional Plan

The two components of the Lake Tahoe Regional Plan that address policies and regulations pertaining to hydrology and floodplains are the Goals and Policies and the Code of Ordinances.

Goals and Policies

Goals and policies applicable to hydrology and floodplains are included in the Natural Hazards Subelement of the Goals and Policies document of the Regional Plan. The Natural Hazards Subelement addresses risks from natural hazards (e.g., flood, fire, avalanche, and earthquake). Specifically, Goal 1, Policy 2 prohibits new construction on, or disturbance of land within the 100-year floodplain and in the area of wave run-up, except as necessary to implement the goals and policies of the Plan. It also requires all public utilities, transportation facilities, and other necessary public uses located in the 100-year floodplain and area of wave run-up to be constructed or maintained to prevent damage from flooding and to not cause flooding.

Code of Ordinances

Chapter 35 of the TRPA Code prohibits development, grading, or filling of lands within 100-year floodplains with certain exceptions, including specific public outdoor recreation facilities, public health or safety facilities, access to buildable sites across a floodplain, and erosion control projects or water quality control facilities when it can be proven there are no viable alternatives and all potential impacts can be minimized.

TRPA relies on FEMA and U.S. Army Corps of Engineers (USACE) 100-year floodplain delineations; however, in areas where no floodplain has been previously delineated and TRPA has reason to believe that a flood hazard may exist, TRPA may require a site-specific floodplain evaluation completed by a qualified professional (TRPA Code Section 35.4.1.D).

STATE

No California or Nevada state regulations related to hydrology and floodplains are applicable to the alternatives evaluated in this EIR/EIS/EIS.

LOCAL

Because there are no floodplains on the California side of the study area, local regulations from California jurisdictions that pertain to floodplains are not described in this section. Provisions from Nevada jurisdictions are described below.

Douglas County Master Plan

The 15-year update of the Douglas County Master Plan was adopted on March 1, 2012. This update included the adoption of the South Shore Area Plan (SSAP), which incorporated the relevant TRPA Regional Plan updates into the Douglas County Code and Douglas County Master Plan. The Environmental Resources and Conservation Element Goal 3 is to provide the residents of Douglas County with increased protection from flooding (Douglas County 2012).

Douglas County Floodplain Management Code

Section 20.50 of the Douglas County Code provides regulations pertinent to floodplain management and development within flood areas. Section 20.50.100 requires that all projects with construction on a parcel with any portion within a special flood hazard area must obtain a floodplain development permit. This permit includes a survey by a licensed engineer detailing the floodplain boundaries on the parcel, an elevation certificate, and proof that the proposed construction does not encroach into the special flood hazard area. If the project cannot avoid the special flood hazard area, the applicant must include a hydrology and hydraulics study to demonstrate that the project will not increase the water surface of the base flood elevation (BFE) by more than one foot at any point within the community (Section 20.50.160). If the project would change the BFE by more than 0.5 feet, the applicant must obtain a Conditional Letter of Map Revision from FEMA (Douglas County 2016).

3.9.2 Affected Environment

REGIONAL HYDROLOGY

The project is located within the southern portion of the Lake Tahoe Hydrologic Unit. The project site straddles the southern California/Nevada border and is located at the base of the Bijou Park and Edgewood Creek watersheds, as delineated by TRPA. Exhibit 3.9-1 shows the watersheds, drainages, and floodplains within the study area and just beyond.

The total area of the Edgewood Creek watershed is 4,270 acres, with approximately 4,010 acres located above the project site and 160 acres below. Edgewood Creek is one of 63 streams that drain into Lake Tahoe. Major land uses within the Edgewood Creek watershed include state park and federal forest land, residential neighborhoods, commercial areas, a portion of Heavenly Mountain Resort, the Stateline casino core area, and the Edgewood Tahoe Golf Course.

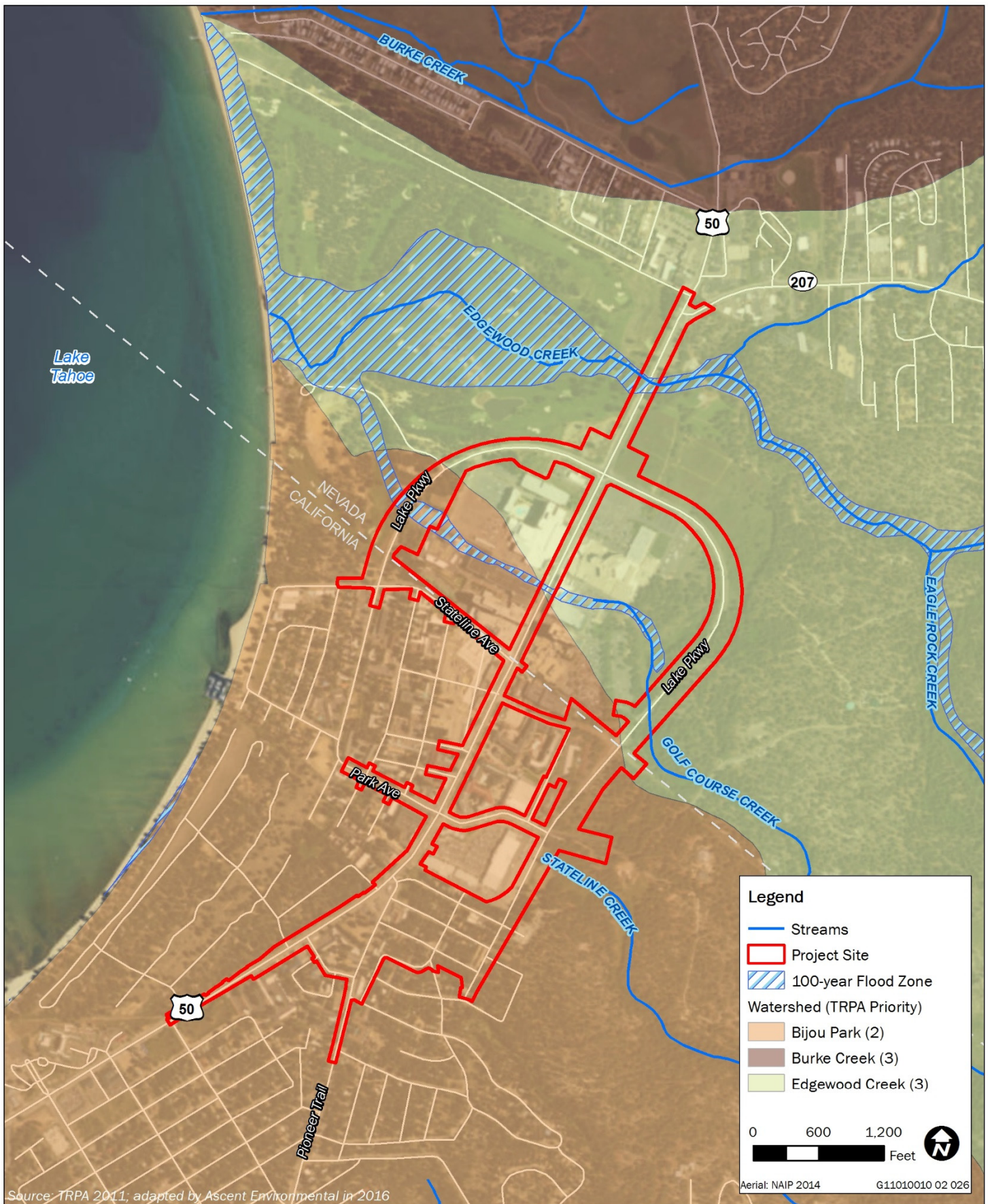
Bijou Park watershed encompasses approximately 1,980 acres and includes Stateline Creek and Little Heavenly Creek, both of which terminate in meadow areas and do not directly drain into Lake Tahoe. Major land uses within this watershed include Heavenly Mountain Resort, residential neighborhoods, state park and federal forest land, commercial areas, and the Ski Run Marina.

LOCAL HYDROLOGY

The primary aquatic feature in the study area is Edgewood Creek. Edgewood Creek is a perennial stream that is located at the north end of the project site. Flowing east to west, the stream passes under US 50 and ultimately discharges into Lake Tahoe. Edgewood Creek supports a relatively well developed riparian canopy upstream of US 50; however, downstream of US 50 the creek flows through the Edgewood Tahoe Golf Course and, as a result, has been substantially modified. The flow of Edgewood Creek is controlled by a gate structure in Friday Station Pond, which is located approximately 500 feet upstream of the US 50 crossing. Below US 50, the creek flows through a series of constructed ponds, which provide irrigation water to the golf course.

The study area also contains two smaller drainages, Golf Course Creek and Stateline Creek. Golf Course Creek is an intermittent drainage located in Nevada, and crosses Lake Parkway approximately 400 feet north of the state line. Two small forks of the creek converge immediately east of Lake Parkway, flow under the road via a corrugated metal pipe (CMP) culvert, and through a montane meadow before flowing into underground drains near the north end of the Harrah's parking lot. Golf Course Creek was culverted through the Stateline resort-casino area, where flow from the stream is comingled with stormwater runoff from the resort-casino area in underground vaults. A diversion structure located between the Harvey's and the Hard Rock properties diverts approximately 10 percent of the piped flow to Golf Course Creek and 90 percent of the flow to the Common Stormwater Treatment Facilities associated with the Stateline Stormwater Association (SSWA) treatment system described in detail in Section 3.10, Water Quality and Stormwater Runoff. Flows directed to Golf Course Creek daylight in an earthen ditch that runs adjacent to the cart path on golf hole number eight at Edgewood Tahoe Golf Course, and merge with Edgewood creek near the Edgewood Clubhouse. Stateline Creek is an ephemeral drainage that intersects with US 50 approximately 1,200 feet south of the state line. It serves as a conduit for snow melt and runoff and supports the meadow complex south of the Van Sickle Bi-State Park entrance.

The Natural Environment Study for the project (TTD 2015a) identifies several potential wetlands within the study area. The largest of these are two features located around Golf Course Creek on either side its intersection with Lake Parkway. Another small potential wetland was mapped on the margins of Edgewood Creek at its intersection with US 50. The remaining potential wetlands are associated with roadside drainage along Lake Parkway and US 50. In total, 0.89 acres of potential wetlands were mapped within the project's study area. Descriptions of wetlands in the project site and effects on wetlands are also addressed in Section 3.16, "Biological Environment."



Source: TRPA 2011; adapted by Ascent Environmental in 2016

Exhibit 3.9-1

Watersheds, Drainages, and Floodplains

FLOODPLAINS

Exhibit 3.9-1 shows the two locations within the study area that are mapped as 100-year flood zone, which is defined by the FEMA Special Flood Hazard Area Zone A (also known as 100-year floodplain). Both areas are located within the Nevada portion of the study area: the US 50 crossing of Edgewood Creek and the Lake Parkway crossing of Golf Course Creek. FEMA has not established base flood elevations or flood depths for either of these areas. The project site is located within FEMA FIRM panels 32005C0210G (January 20, 2010), 32005C0205G (January 20, 2010), and 06017C0380F (April 3, 2012). A third location in the study area mapped as 100-year flood zone is the Golf Course Creek crossing of US 50. While this area is identified on the FEMA map, this part of the creek has been covered by development.

3.9.3 Environmental Consequences

METHODS AND ASSUMPTIONS

Evaluation of potential hydrologic and floodplain impacts is based on a review of documents pertaining to the project site, including the FEMA Flood Insurance Rate Maps; previous studies conducted for the watersheds within the study area; environmental impact reports; background reports prepared for plans and projects in the vicinity; and published and unpublished hydrologic literature. The information obtained from these sources was reviewed and summarized to understand existing conditions and to identify potential environmental effects, based on thresholds of significance. In determining the level of significance, the analysis assumes that the project would comply with relevant federal, state, and local laws, regulations, and ordinances.

SIGNIFICANCE CRITERIA

NEPA Criteria

An environmental document prepared to comply with NEPA must consider the context and intensity of the environmental effects that would be caused by or result from the locally preferred action. Under NEPA, the significance of an effect is used solely to determine whether an EIS must be prepared. The factors that are taken into account under NEPA to determine the significance of an action in terms of the context and the intensity of its effects are encompassed by the CEQA criteria used for this analysis. No specific factors related to hydrology and floodplains are contained in NEPA, CEQ Regulations Implementing NEPA, or FHWA NEPA regulations in 23 CFR 771 et seq.

Executive Order 11988 requires federal agencies to avoid to the extent possible the long-term and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

TRPA Criteria

The “Water Quality” criteria from the TRPA Initial Environmental Checklist include questions regarding hydrology and flooding, so they are used to evaluate impacts of the alternatives. The project would result in a significant adverse impact if it would result in:

- ▲ alterations to the course or flow of 100-year flood waters; or
- ▲ exposure of people or property to water related hazards such as flooding and/or wave action from 100-year storm occurrence.

CEQA Criteria

In accordance with Appendix G of the State CEQA Guidelines, an alternative was determined to result in a significant impact to hydrology or floodplains, if it would:

- place within a 100-year flood hazard area structures that would impede or redirect flood flows; or
- expose people or structures to a significant risk of loss, injury, or death involving flooding.

ENVIRONMENTAL EFFECTS OF THE PROJECT ALTERNATIVES

Impact 3.9-1: 100-year flood hazard and floodplain impacts

Alternatives B, C, and D would require the extension of the US 50 culvert over Edgewood Creek and the Lake Parkway culvert over Golf Course Creek. This expansion would result in an encroachment into the 100-year floodplain of both streams; however, compliance with the Douglas County Floodplain Development Permit would require that the encroachment would not result in an increase in the Base Flood Elevation and would not adversely affect the direction or velocity of flood waters.

NEPA Environmental Consequences: The design features of Alternatives B, C, D, and E would avoid or minimize significant encroachment into the 100-year floodplain of any waterbody; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, D, and E; No Impact for Alternative A

The project crosses the 100-year floodplain of Edgewood and Golf Course Creeks. Both of these streams are low volume drainages with culverts that do not show evidence of lack of conveyance. Additionally, and there is no history of flooding at either location (TTD 2015b). The project would widen and restructure existing roadways to better accommodate traffic volumes and improve pedestrian safety, but would not place housing or structures within the flood zones. The proposed roadway widening (in Alternatives B, C, and D) would require encroachment into the designated 100-year flood hazard area zone of both creeks.

Development that reduces the volume of a 100-year floodplain or alters the direction, rate, or speed of 100-year floodwaters would be considered a significant impact. Floodplain encroachment is categorized in two ways: longitudinal encroachment and transverse encroachment. Longitudinal encroachment (parallel) occurs when a structure crosses a portion of the floodplain outside of the channel. Transverse encroachment (perpendicular) occurs when a structure crosses both the floodplain and the channel. Transverse encroachment would occur at two locations within the Nevada portion of the project site for Alternatives B, C, and D: at the Edgewood Creek crossing of US 50; and the tributary to Edgewood Creek through Lake Parkway and US 50. Alternatives A (No Build/No Project) and E (Skywalk) would not result in any floodplain encroachments. Table 3.9-1 provides the square feet of potential floodplain encroachment for each alternative.

Table 3.9-1 Potential Floodplain Encroachment by Alternative

Alternative	Edgewood Creek	Golf Course Creek	Total
A	No Build/No Project		
B	0.16 acres	0.22 acres	0.38 acres
C	0.30 acres	0.22 acres	0.52 acres
D	0.16 acres	0.22 acres	0.38 acres
E	No impact		

Source: FEMA 2010a, FEMA 2010b

Alternative A: No Build (No Project)

Under Alternative A, no highway realignment would take place and no additional floodplain impacts would occur at Edgewood or Golf Course Creeks. Therefore, Alternative A would have **no impact** relative to 100-year flood hazards or floodplain impacts for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Edgewood Creek currently passes under US 50 through a culvert. For Alternative B, the existing culvert would be lengthened by approximately 15 feet to accommodate the wider roadway. The project would result in the encroachment of construction onto 0.16 acres of land within the 100-year floodplain at Edgewood Creek. No potential replacement housing areas are located within 100-year floodplains.

The proposed Lake Parkway East crossing at Golf Course Creek would be widened; however, this portion of the stream is located outside of the FEMA delineated floodplain (FEMA 2010b). Encroachment into approximately 0.22 acres of the FEMA-delineated Golf Course Creek 100-year floodplain would occur with the Alternative B widening at Lake Parkway West and the existing alignment of US 50 (refer to Exhibit 3.11-1). Golf Course Creek has been piped beneath the casino core in these locations and project-related disturbances such as restriping or repaving the roadways would not alter the course of flow of 100-year flood waters.

The potential for the project to significantly alter the 100-year floodplain would be avoided through compliance with the Douglas County Floodplain Management Code. As required by Section 20.50.100 of the Douglas County Code, the county would require a Floodplain Development Permit, including a floodplain survey completed by a licensed engineer delineation the floodplain boundaries on all affected parcels, as well as an elevation certification and proof that the project would not encroach into the special flood hazard area. If this survey shows that the project would encroach into the special flood hazard area, the applicant must also submit a hydrology and hydraulics study that demonstrates the project would not create an increase in the BFE of more than 1 foot. If this study shows that the project would increase the BFE by more than 0.5 feet, the applicant would be required to obtain a Conditional Letter of Map Revision from FEMA (Douglas County 2016).

Although the project would create new encroachment within the 100-year floodplain of two creeks, the Douglas County code provides protective conditions that would avoid the potential for a significant adverse impact to people and properties, and require that Alternative B would not result in a substantial increase in the BFE of Edgewood or Golf Course Creeks. Through compliance with these conditions, the potential for Alternative B to adversely alter the course, level, or flow of 100-year flood waters would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would not result in a significant encroachment on a floodplain such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

The locations of the three mixed-use development sites are outside of the 100-year floodplains. Because the Alternative B mixed-use development sites would not alter existing floodplain conditions, the mixed-use development sites would have **no impact** relative to 100-year flood hazards and floodplains for the purposes of CEQA, TRPA, and NEPA.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential for significant encroachment on a floodplain as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of floodplain encroachment at another location would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on floodplains.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative B would minimize the floodplain impacts such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way**Transportation Improvements**

Alternative C would encroach into a greater area of the 100-year floodplain when compared to Alternative B. Alternative C would result in an encroachment into 0.30 acres of 100-year floodplain at Edgewood Creek, which exceeds the Alternative B encroachment by 0.14 acres. Like Alternative B, Alternative C would encroach into approximately 0.22 acres of the Golf Course Creek floodplain. As described above for Alternative B, any project that proposes to alter the 100-year floodplain would be required to complete a Floodplain Development Permit in accordance with Douglas County Code Section 20.50. Prior to permit approval, the project would be required to demonstrate that the proposed floodplain encroachment would not create an increase in the BFE of more than 1 foot. For the reasons described above for Alternative B, implementation of Alternative C would have a **less-than-significant** impact relative to 100-year flood hazards and floodplains for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would not result in a significant encroachment on a floodplain such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

The locations of the mixed-use development sites are outside of the 100-year floodplains. Because the Alternative C mixed-use development sites would not alter existing floodplain conditions, the mixed-use development sites would have **no impact** relative to 100-year flood hazards and floodplains for the purposes of CEQA, TRPA, and NEPA.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential for significant encroachment on a floodplain as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of floodplain encroachment at another location would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on floodplains.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative C would minimize the floodplain impacts such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2**Transportation Improvements**

The potential floodplain impacts of Alternative D are similar to those described for Alternative B above. Alternative D would include encroachment into approximately 0.16 acres of 100-year floodplain at Edgewood Creek and 0.22 acres of 100-year floodplain at Golf Course Creek, because of proposed road

widenings at the creek crossings. As described above for Alternative B, any project that alters the 100-year floodplain would be required to complete a Floodplain Development Permit in accordance with Douglas County Code Section 20.50. Prior to permit approval, the project would be required to demonstrate that the proposed floodplain encroachment would not create an increase in the BFE of more than 1 foot.

For the reasons described above for Alternative B, implementation of Alternative D would have a **less-than-significant** impact relative to 100-year flood hazards and floodplains for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would not result in a significant encroachment on a floodplain such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

The locations of the mixed-use development sites are outside of the 100-year floodplains. Because the Alternative D mixed-use development sites would not alter existing floodplain conditions, the mixed-use development sites would have **no impact** relative to 100-year flood hazards and floodplains for the purposes of CEQA, TRPA, and NEPA.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential for significant encroachment on a floodplain as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of floodplain encroachment at another location would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development including replacement housing would result in a **less-than-significant** impact on floodplains.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative D would minimize the floodplain impacts such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

No portion of the Alternative E construction would be located within a 100-year floodplain. Because Alternative E would not alter existing floodplain conditions, this alternative would have **no impact** relative to 100-year flood hazards and floodplains for the purposes of CEQA, TRPA, and NEPA.

3.9.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required to reduce hydrological or floodplain effects to a less-than-significant level for the purposes of CEQA and TRPA or to no significant encroachment for the purposes of NEPA.

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3.10 WATER QUALITY AND STORMWATER RUNOFF

This section describes the potential impacts related to water quality and stormwater runoff resulting from the implementation of the US 50/South Shore Community Revitalization Project. The analysis includes a description of existing conditions and an analysis of changes to water quality and stormwater volumes or treatment systems. Regulations and guidelines established by the Tahoe Regional Planning Agency (TRPA) and local jurisdictions, along with the California Environmental Quality Act (CEQA) statute and guidelines, provide the regulatory background that guides the assessment of potential environmental effects to these resources.

Scoping comments were submitted on the Notice of Preparation/Notice of Intent by the City of South Lake Tahoe requesting that the EIR/EIS/EIS should describe the proposed drainage system and associated stormwater treatment, discuss the potential impacts of constructing the systems, including impacts on existing drainage and stormwater improvements; and include detailed modeling (broken down by jurisdiction) of the project's effects on Total Maximum Daily Load (TMDL) pollutants. The League to Save Lake Tahoe requested a commitment to effective and frequent road sweeping on both the loop road and the casino corridor road as mitigation for impacts of road sanding, as well as implementation of stormwater best management practices (BMPs). At the Advisory Planning Commission (APC) meeting in December 2011, Tom & Carolyn Petersen requested a discussion of the effect of the project on the City of South Lake Tahoe's completed drainage projects in the area.

Primary sources of information used in the preparation of this analysis are the Hydraulic and Floodplain Evaluation Report, U.S. Highway 50/South Shore Community Revitalization Project (TTD 2015a) and Natural Environment Study, U.S. Highway 50/South Shore Community Revitalization Project (TTD 2015b); Edgewood Lodge and Golf Course Improvement Project – Monitoring, Inspection, Maintenance and Operations Plan (Nichols Consulting Engineers 2011); Final Lake Tahoe Total Maximum Daily Load Report (Lahontan RWQCB and NDEP 2010); Storm Water Quality Handbooks: Construction Site BMPs Manual (Caltrans 2003); Nevada Contractors Field Guide for Construction Site Best Management Practices (NDEP 2008); and TRPA BMP Handbook (TRPA 2014).

Potential environmental effects related to 100-year flood hazards are addressed in Section 3.9, "Floodplains." Impacts on Stream Environment Zones (SEZs) are discussed in Section 3.11, "Geology, Soils, Land Capability, and Coverage," and in Section 3.16, "Biological Environment."

3.10.1 Regulatory Setting

FEDERAL

Federal Antidegradation Policy

The Federal Antidegradation Policy was enacted to provide protection to high-quality water resources of national importance. It directs states to develop and adopt statewide antidegradation policies that include protecting existing instream water uses and maintaining a level of water quality necessary to protect those existing uses and the water quality of high-quality waters. In the U.S. Environmental Protection Agency's (EPA's) Clean Water Act regulations regarding water quality standards (40 CFR Chapter 1, Section 131.12[a][3]), the criteria for requiring an antidegradation standard includes: "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." EPA has designated Lake Tahoe an Outstanding National Resource Water (ONRW). ONRWs are provided the highest level of protection under EPA's Antidegradation Policy, stipulating that states may allow some limited activities that result in temporary and short-term changes to water quality, but such changes

should not adversely affect existing uses or degrade the essential character or special uses for which the water was designated an ONRW. EPA interprets this provision as a prohibition to prohibit new or increased discharges to ONRWs that would degrade water quality.

Clean Water Act (Public Law 92-500)

Section 404

The Clean Water Act (CWA) consists of the Federal Water Pollution Control Act of 1972 and subsequent amendments. The CWA provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation's waters. Section 404 of the act 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 the 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."

Section 401

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification for the discharge. 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 CWA Section 401. Water quality certification requires evaluation of potential impacts in light of water quality standards and CWA Section 404 criteria governing discharge of dredged and fill materials into waters of the United States. The federal government delegates water pollution control authority under CWA Section 401 to the states. In California, CWA administration is provided by the Regional Water Quality Control Boards (RWQCBs) in California and the Nevada Division of Environmental Protection (NDEP) in Nevada.

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 sources discharging pollutants into waters of the United States and establishes monitoring and reporting requirements, as well as special conditions. Two types of nonpoint source discharges are controlled by the NPDES program: discharges caused by general construction activities and the general quality of stormwater in municipal stormwater systems. The goal of the NPDES nonpoint-source regulations is to improve the quality of stormwater discharged to receiving waters to the maximum extent practicable. The RWQCBs in California and NDEP in Nevada are responsible for implementing the NPDES permit system (see the discussion of state regulations below).

Section 303

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 the state develop a total maximum daily load (TMDL) for each of the listed pollutants. The TMDL is the amount of the pollutant that the water body can receive and still be in compliance with water quality objectives. The TMDL is also a plan to reduce loading of a specific pollutant from various sources to achieve compliance with water quality objectives. EPA must either approve a TMDL prepared by the state or disapprove the state's TMDL and issue its own. NPDES permit limits for listed pollutants must be consistent with the waste load allocation prescribed in the TMDL. After implementation of the TMDL, it is anticipated that the problems that led to listing of a given pollutant on the Section 303(d) list would be remediated. The Lake Tahoe TMDL is administered at the state level by Lahontan RWQCB and the Nevada Division of Environmental Protection and is discussed below.

TAHOE REGIONAL PLANNING AGENCY

Lake Tahoe Regional Plan

Regional Plan priorities and policies include accelerating water quality restoration by targeting environmental redevelopment and Environmental Improvement Program opportunities, retaining the current regional growth system that prevents unchecked overdevelopment and encourages preservation of open space, and integrating with the Regional Transportation Plan to address congestion and support pedestrian and bike improvement projects that reduce vehicle dependency.

Goals and Policies

TRPA has established a number of goals and policies related to water quality. Goals include supporting the Lake Tahoe TMDL through the reduction of sediment and nutrients to Lake Tahoe and the elimination or reduction of other pollutants; comprehensive water quality planning and coordination with public agencies and the private sector; and maximizing the efficiency and effectiveness of water quality programs. Policies address a range of issues including snow removal, wastewater spill prevention, underground storage tanks, dredging, and reduction of impacts from motorized watercraft.

Code of Ordinances

The TRPA Code contains the requirements and standards intended to achieve water quality thresholds, goals, and policies. Chapter 60 of the TRPA Code is directed specifically at water quality, but a number of other chapters and sections contain provisions related to design and installation of best management practices (BMPs) and standards for grading and excavation (Table 3.10-1).

Table 3.10-1 Water Quality Code Requirements Related to the Action Alternatives

Ordinance	Requirement
Section 60.4	Runoff shall be controlled with implementation of BMPs.
Chapter 35	Regulations pertaining to recognition of natural hazards, including floodplains, prevention of damage to property, and protection of public health relating to such natural hazards. The TRPA Code prohibits development, grading or filling of lands within 100-year floodplains with certain exceptions, including specific public outdoor recreation facilities, public health or safety facilities, access to buildable sites across a floodplain, and erosion control projects or water quality control facilities when it can be proven there are no viable alternatives and all potential impacts can be minimized (TRPA 2012a).
Section 33.4	Requirements for special investigations, reports, and plans, determined to be necessary by TRPA to protect the environment against significant adverse effects from grading projects.
Section 33.5	Requirements for grading and construction schedules when grading or construction is to occur pursuant to a TRPA permit.
Chapter 33.3	Standards for grading and excavation. Grading is permitted only between May 1 and October 15.
Section 60.1	Discharge standards for runoff and discharge to surface and groundwater.
Section 60.2	For projects that result in increased impervious coverage, implementation of off-site water quality control or stream environment zone mitigation projects is required; or payments into the Water Quality Mitigation Fund.

Source: TRPA 2012a

Numerical discharge standard limitations are specified in the TRPA Code for nitrogen, phosphorus, iron, turbidity, suspended sediments, and grease and oil. Pollutant concentrations in surface runoff may not exceed the concentrations listed in Table 3.10-2 at the 90th percentile for discharge to surface waters. Surface runoff infiltrated into soils may not exceed the concentrations listed in Table 3.10-2 for discharge to groundwater. In addition to numerical discharge limits, TRPA Code also restricts the discharge of wastewater and toxic substances, sets requirements for snow removal, sets requirements for salt and abrasive use, and sets criteria for pesticide use and fertilizer control.

Table 3.10-2 TRPA Discharge Limits for Surface Runoff and Discharge to Groundwater

Constituent	Maximum Concentration
Surface Runoff	
Dissolved Inorganic Nitrogen as N	0.5 mg/l
Dissolved Phosphorus as P	0.1 mg/l
Dissolved Iron as Fe	0.5 mg/l
Grease and Oil	2.0 mg/l
Suspended Sediment	250 mg/l
Discharge to Groundwater	
Total Nitrogen as N	5 mg/l
Total Phosphate as P	1 mg/l
Iron as FE	4 mg/l
Turbidity	200 NTU ¹
Grease and Oil	40 mg/l
Source: TRPA 2012a	
¹ NTU = Nephelometric Turbidity Unit	

Environmental Threshold Carrying Capacities

Water quality standards adopted by TRPA set a target to return the lake to the transparency observed in the late 1960s. Six major indicator themes are currently used by TRPA to assess the water quality of Lake Tahoe and its tributaries. Table 3.10-3, TRPA Summary of Findings by Threshold Category (Water Quality), lists each threshold category, indicator reporting category (indicator theme), and generalized characterization of current status, trend, and confidence (TRPA 2016).

Table 3.10-3 TRPA Summary of Findings by Threshold Category (Water Quality)

Threshold Category	Indicator Reporting Category (Indicator Theme)	Generalized Characterization of Current Status and Trend ¹
Water Quality	Pelagic Lake Tahoe (open waters of Lake Tahoe)	Indicators range from somewhat worse than target to somewhat better than target, trending toward little or no change ¹ . The exception to this is the indicator for Phytoplankton Primary Productivity, which is described as considerably worse than target with a trend toward rapid decline.
Water Quality	Littoral Lake Tahoe (nearshore waters of Lake Tahoe)	Indicators are at or somewhat better than target with insufficient data to determine trend. There is insufficient data to determine the status or trend for Attached Algae or Aquatic Invasive Species.
Water Quality	Tributaries	Suspended sediment concentrations in tributaries are considerably better than target however Phosphorus and Nitrogen concentrations are still worse than target for most tributary streams. There is insufficient data to determine the status of sediment and nutrient loading in tributaries, however these indicators are trending toward no change or moderate improvement.
Water Quality	Surface Runoff (stormwater runoff to surface waters)	There is insufficient data to determine status or trend of Surface Runoff indicators.
Water Quality	Groundwater (stormwater runoff to soil)	There is insufficient data to determine status or trend of Groundwater indicators.
Water Quality	Other Lakes (Fallen Leaf Lake)	There is insufficient data to determine status or trend of indicators for Other Lakes.
¹ Range of Qualifiers from best to worst: Possible Status Categories: Considerably better than, at or somewhat better than, somewhat worse than, considerably worse than, and insufficient data to determine status or no target established. Possible Trend Categories: Rapid movement, moderate improvement, little or no change, moderate decline, rapid decline, and insufficient data to determine trend. Source: TRPA 2016		

Nearshore Water Quality

The quality of water in the nearshore area, the primary point of contact for most residents and visitors to the lake, is tracked by measuring turbidity, which is an indication of the cloudiness of water expressed in Nephelometric Turbidity Units (NTU). Higher turbidity measurements indicate cloudier water. TRPA maintains standards for nearshore turbidity, <3NTU in areas influenced by stream discharge, and <1NTU in areas not influenced by stream discharge. Nearshore turbidity monitoring completed between November 2014 and November 2015 did not result in a single value that exceeded the <1NTU standard (TRPA 2016).

Deep Water (Pelagic) Transparency and Clarity

Long-term changes to the transparency and clarity of Lake Tahoe are influenced by the amount of particulate material in the water, which includes inorganic particles that scatter light (e.g., fine sediment suspended in the water column) and organic particles that absorb light (e.g., suspended algae). Tahoe's transparency is currently 25 feet worse than 1968 values, based on average annual Secchi disk measurement (TERC 2016). In 2015, the average annual Secchi disk visibility depth measured from the surface of the lake was 73.1 feet, which is a decrease in clarity of 4.8 feet from the previous year, but still 9 feet greater than the lowest value recorded, which was an average annual measurement of 64.1 feet in 1997 (TERC 2016). These measurements confirm the long-term halt in clarity degradation; however, year-to-year fluctuations are expected (TERC 2015).

Deep Water Primary Productivity

Primary productivity measures the rate at which algae grow. Measurements of primary productivity are expressed as grams of carbon per square meter (gC/m²). The phytoplankton primary productivity indicator is used to determine compliance with TRPA's Lake Tahoe phytoplankton productivity standard of 52 gC/m²/yr, which is based on data collected over 4 years (1968-1971). Phytoplankton primary productivity has remained well above the standard since it was established in 1982 (TRPA 2016).

Other Thresholds

In addition to water quality thresholds and standards that specifically measure the water quality of Lake Tahoe, additional thresholds are used by TRPA to assess the quality of water in tributary streams to Lake Tahoe or other waters directly discharged to Lake Tahoe. These thresholds include standards that define: maximum allowable pollutant concentrations for various constituents in tributaries to Lake Tahoe; surface runoff concentrations discharged to surface waters; surface runoff concentrations discharged to land surfaces for infiltration; stormwater runoff to soil (affecting groundwater); and the quality of other lakes in the Tahoe Region. Table 3.10-3, above, provides the current status for these additional Water Quality Indicator Reporting Categories.

Tourist Core Area Plan

The City of South Lake Tahoe, in conjunction with and approval from TRPA, adopted the Tourist Core Area Plan (TCAP) on October 15, 2013, which replaced the Stateline/Ski Run Community Plan of 1994. The tourist core stretches approximately 2 miles along US 50 extending from Fairway Drive to the California and Nevada State Line and along Ski Run Boulevard from Lake Tahoe to Pioneer Trail. This area functions as the primary visitor and tourist district in the City of South Lake Tahoe and provides direct access to recreation opportunities such as Heavenly Ski Resort, Edgewood Golf Course, Ski Run Marina, Lakeside Marina, and Van Sickle Bi-State Park. TCAP policies applicable to the action alternatives are discussed below.

Natural and Cultural Resources

TCAP goals and policies applicable to water quality and stormwater management are found in the Natural and Cultural Resources section. Water quality policies include a requirement for installation of BMPs on all projects identified in the Memorandum of Understanding (MOU) between TRPA and the City of South Lake Tahoe (Policy NCR-3.1); continued collaboration with Lahontan to update and refine pollutant load reduction targets beyond 2016 and to update the *Pollutant Load Reduction Plan* as necessary to achieve the Lake Tahoe TMDL targets (Policy NCR-3.4); and continued collaboration with Caltrans to implement water quality improvement projects along US 50 (NCR-3.5). The full text of these policies and the overarching goal of protecting and enhancing the clarity of Lake Tahoe and water quality in other water bodies (Goal NCR-3),

along with a discussion of the project's consistency with these policies and goal, is included in Appendix E, "Goals and Policies Consistency Analysis."

South Shore Area Plan

Douglas County, in conjunction with and with approval from TRPA, prepared and approved the South Shore Area Plan (SSAP) on November 21, 2013. The SSAP replaced the Stateline Community Plan, Kingsbury Community Plan, and a portion of Plan Area Statements 070A (Edgewood), including Special Area #1 (C-070A SA1), and a portion of Plan Area Statement 080 (Kingsbury Drainage), including Special Area #2 (R-080 SA2). The SSAP was designed to be consistent with the goals and policies in the 2012 Regional Plan. The SSAP includes four separate components that are integrated into Douglas County planning documents, including the Douglas County Master Plan, Zoning Map, Development Code, and Design Criteria and Improvement Standards.

STATE

California

Lahontan Regional Water Quality Control Board

The Porter-Cologne Act created the California State Water Resources Control Board (SWRCB) and nine 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. The Lahontan RWQCB Region is approximately 570 miles long, covering an area of 33,131 square miles, from the California-Oregon border to the Antelope Valley watershed in Los Angeles and San Bernardino Counties. In addition to the Tahoe Region, the Lahontan Region includes Death Valley, Mount Whitney, Owens Valley, Mono Lake, and portions of Lassen and Modoc Counties.

On the California side of the Tahoe Region, Lahontan RWQCB implements the CWA, the California Water Code (including the Porter-Cologne Act), and a variety of laws related to control of solid waste and toxic and hazardous wastes. 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 the California Environmental Quality Act (CEQA).

Water Quality Control Plan for the Lahontan Basin

Water quality standards and control measures for surface and ground waters of the Lahontan Region are contained in the Water Quality Control Plan for the Lahontan Region (Basin Plan). The Basin Plan designates beneficial uses for water bodies. It establishes water quality objectives, waste discharge prohibitions, and other implementation measures to protect those beneficial uses. Chapter 5 of the Basin Plan, Water Quality Standards and Control Measures for the Lake Tahoe Basin, summarizes a variety of control measures for the protection and enhancement of Lake Tahoe.

The Basin Plan was first adopted in 1975, and most recently updated in 2014. The Basin Plan contains both narrative and numeric water quality objectives for the region. The 2014 Basin Plan amendments include additional language related to: "mixing zones" for dilution of discharged water; compliance schedules for NPDES permits; discharge prohibition exemptions for low treat discharges such as incidental runoff from landscape irrigation or construction dewatering; simplification of existing prohibition exemptions; and the removal of language describing programs administered by TRPA (Lahontan RWQCB 2014).

Waste Discharge Prohibition for the Lake Tahoe Hydrologic Unit

The Basin Plan prohibits the discharge of any waste or deleterious material to the surface waters of Lake Tahoe, the 100-year floodplain of any tributary to Lake Tahoe, or any SEZ within the Lake Tahoe hydrologic unit. The Board may grant an exception for public service facilities provided that the following findings can be made:

- ▲ the project is necessary for public health, safety, or environmental protection;
- ▲ there is no reasonable alternative, including spans that avoids or reduces the extent of encroachment;
- ▲ the impacts are fully mitigated;
- ▲ SEZ lands are restored in an amount of 1.5 times the area of SEZ developed or disturbed by the project; and
- ▲ wetlands are restored in an amount at least 1.5 times the area of wetland disturbed or developed. Certain wetlands may require restoration of greater than 1.5 times the area developed or disturbed.

General Permit for Stormwater Discharges Associated with Construction Activity in the Lake Tahoe Basin

The Lahontan RWQCB adopted the NPDES Construction Stormwater Permit for the Lake Tahoe Basin in April 2011. Projects disturbing more than 1 acre of land during construction must file a Notice of Intent with the Lahontan RWQCB to be covered under this permit. Construction activities subject to the Lake Tahoe Construction Stormwater Permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce non-stormwater discharges to storm sewer systems and other waters. A storm water pollution prevention plan (SWPPP) must be developed and implemented for each site covered by the permit. The SWPPP must include BMPs designed to prevent construction pollutants from contacting stormwater and keep products of erosion from moving off-site into receiving waters throughout the construction and life of the project; the BMPs must address source control and, if necessary, pollutant control. Under this General Permit any stormwater generated from the construction site must meet the effluent limits shown in Table 3.10-4, Lake Tahoe Stormwater Effluent Limits.

Table 3.10-4 Lake Tahoe Stormwater Effluent Limits

Parameter	Units	Maximum Daily Effluent Limitations for Discharge
Total Nitrogen (as N)	Mg/L	0.5
Total Phosphorus (as P)	Mg/L	0.1
Total Iron	Mg/L	0.5
Turbidity	NTU	20*
Grease and Oil	Mg/L	2

*Note: For Active Treatment Systems use 10 NTU as daily average and 20 NTU for any single sample

Source: Lahontan RWQCB 2011c

Statewide Stormwater Permit for the State of California Department of Transportation

Section 402(p) of the CWA requires storm water permits for discharges from municipal separate storm sewer systems (MS4s). The EPA defines an MS4 as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutter, ditches, man-made channels, or storm drains) owned or operated by a State (40 CFR 122.26(b)(8)). The California Department of Transportation (Caltrans) is responsible for the design, construction, and maintenance of the State highway system and related properties, including the Caltrans MS4 facilities that receive stormwater runoff from the State owned right-of-way. Initially, all Caltrans MS4 discharges were issued individual NPDES permits. In 1999, the SWRCB issued a statewide permit that regulated all discharges from Caltrans MS4s. This statewide permit was renewed in 2013. The Caltrans Statewide Stormwater Permit is implemented through the Statewide Stormwater Management Plan (SWMP) that describes the procedures and practices used to reduce or eliminate the discharge of pollutants to storm drainage systems and receiving waters.

The Caltrans Statewide Stormwater Permit (in compliance with Section 402 of the CWA) requires the use of stormwater BMPs to control and abate the discharge of pollutants to the Maximum Extent Practicable (MEP). Monitoring of effluent and receiving waters is required to determine the effectiveness of BMPs. If stormwater discharges are found to be causing or contributing to an exceedance of an applicable Water Quality Standard, Caltrans is required to revise its BMPs. Additionally, the MEP standard does not apply to TMDL-based requirements. Caltrans must implement all controls necessary to meet the Waste Load Allocations assigned to it through an adopted TMDL.

El Dorado County and City of South Lake Tahoe Municipal NPDES Permit.

Portions of El Dorado County and Placer County and the entire jurisdiction of the City of South Lake Tahoe lie with the Lake Tahoe Hydrologic Unit. Because Lake Tahoe is an Outstanding National Resource Water and is negatively affected by urban runoff from these municipalities, the Lahontan RWQCB adopted a Phase 1 NPDES program to regulate these MS4s in 1992. The NPDES (CAG616001) is generally updated every five years with the most recent update occurring in 2011. The current permit (Order No. R6T-2011-0101) includes: numeric effluent limits for fine sediment, total nitrogen, and total phosphorus; requirements for comprehensive Stormwater Management Plans; Pollutant Load Reduction Plans (as required by the Lake Tahoe TMDL); assessment of load reduction requirements using the Lake Tahoe Clarity Crediting Program Handbook; and effectiveness monitoring.

Nevada

Nevada Division of Environmental Protection

The Bureau of Water Quality Planning (BWQP) is part of the NDEP and is responsible for several water quality protection functions in the state. These include collecting and analyzing water data, developing standards for surface waters, publishing informational reports, providing water quality education, and implementing programs to address surface water quality. The BWQP is divided into four branches: water quality standards, monitoring, nonpoint source pollution management, and the Lake Tahoe management program. The branches are responsible for the following duties and responsibilities:

- ▲ The Water Quality Standards Branch is responsible for developing and reviewing water quality standards; determining total maximum daily loads and wasteload allocations from point sources; and determining load allocations from non-point sources.
- ▲ The Monitoring Branch is responsible for administering the state's water quality monitoring program. This branch maintains and updates water quality data for the national water quality database (Water Quality Exchange Network - WQX) and is responsible for preparation of Nevada's Water Quality Assessment Report, which is required under Section 305(b) of the Clean Water Act (CWA).
- ▲ The Nonpoint Source (NPS) Pollution Management Program aims to control nonpoint sources of pollution in Nevada. NPS pollution results from a variety of diffuse and dispersed human activities.
- ▲ The Lake Tahoe Watershed Program unit collaborates with Lahontan RWQCB to develop the Total Maximum Daily Load for Lake Tahoe.

Nevada relies on EPA criteria when establishing numeric water quality standards for toxics. Water quality standards are contained in the Nevada Administrative Code (NAC), chapter 445A.119 – 445A.225. Lake Tahoe water quality standards for Nevada are prescribed in 445A.191. Similar to the California requirements under the Lahontan RWQCB, the NDEP stipulates that a Stormwater General Permit must be obtained, which includes the development of a SWPPP. SWPPPs must demonstrate adequate BMP selection and installation for any construction project that is to disturb one or more acres. When the receiving waters of the discharge are Section 303(d) Impaired Water Bodies with an established TMDL, such as in the case of the Lake Tahoe Region, the project must comply with all applicable TMDL requirements.

Lake Tahoe TMDL

The Lake Tahoe TMDL was developed as a partnership between Lahontan RWQCB and the NDEP and approved by the EPA in 2011. The TMDL addresses the declining clarity and transparency of Lake Tahoe. Each TMDL represents a goal that may be implemented by adjusting pollutant discharge requirements in individual NPDES permits or establishing nonpoint source controls. Because California and Nevada must comply with, administer, and enforce their own state laws and policies, each state has developed its own Lake Tahoe TMDL to address the impairment of Lake Tahoe as addressed in each state's Section 303(d) filings with EPA. The following items highlight the differences in implementation approaches between the two states:

- ▲ California's Lake Tahoe TMDL (dated November 2010 and approved by EPA in 2011) requires attainment of the California transparency objective for Lake Tahoe over a 65-year implementation period. Based on California law, Lahontan RWQCB has the obligation to implement and enforce the California Lake Tahoe TMDL through NPDES discharge permits (over which EPA has jurisdiction) issued to California government entities (City of South Lake Tahoe, Placer County, El Dorado County, and the California Department of Transportation).
- ▲ Nevada's Lake Tahoe TMDL (dated August 2011 and approved by EPA in 2011) is a modified version of the California Lake Tahoe TMDL. The Nevada Lake Tahoe TMDL clarifies Nevada's regulatory structure and approach to implementation and emphasizes that the proposed implementation timelines may need to be adjusted for a variety of reasons, but particularly based on the availability of future funding. NDEP's stated plan for implementing the Lake Tahoe TMDL for Washoe County and Douglas County is through Memorandum of Agreement (MOA) with each jurisdiction. MOAs are a collaborative, legally non-binding approach to implementing a TMDL. NDEP regulates the Nevada Department of Transportation NPDES discharge permit.

LOCAL

City of South Lake Tahoe Municipal Code

As a provision of the NPDES permit, the City of South Lake Tahoe in partnership with Placer County and El Dorado County developed a Storm Water Management Plan that describes the process and procedures the City will take to move towards greater compliance with the TRPA and Lahontan RWQCB's water quality requirements. The City of South Lake Tahoe developed a 2008 Drainage Master Plan that identifies specific drainage improvement and stormwater quality facilities. Section 8-6 of the City Code describes requirements for the preparation and submittal of grading plans and standards to ensure the proposed construction does not damage adjoining properties or streets due to increases in flow or flooding.

The City of South Lake Tahoe adopted the 2030 General Plan on May 17, 2011. The 2030 General Plan is the City's policy document containing elements that guide land use, transportation, public facilities and services, recreation, natural resources, and other decisions in compliance with the Regional Plan. General Plan Policies applicable to the action alternatives are discussed below.

Douglas County Code

Douglas County provides drainage design requirements and guidance through Douglas County Code Section 20.100 and the Storm Drainage section of its Design Criteria and Improvements Standards Manual (Douglas County 2008). This manual does not allow for any increase in the peak rate of flow from development, and emphasis is given to the use of detention facilities sized to minimize runoff to pre-developed levels. Retention and infiltration facilities are permitted for projects in the Tahoe Basin with approval by TRPA (Douglas County 2008).

3.10.2 Affected Environment

SURFACE WATER QUALITY

Edgewood Creek and Golf Course Creek flow through the study area. Golf Course Creek joins with Edgewood Creek for approximately 1,200 feet before entering Lake Tahoe.

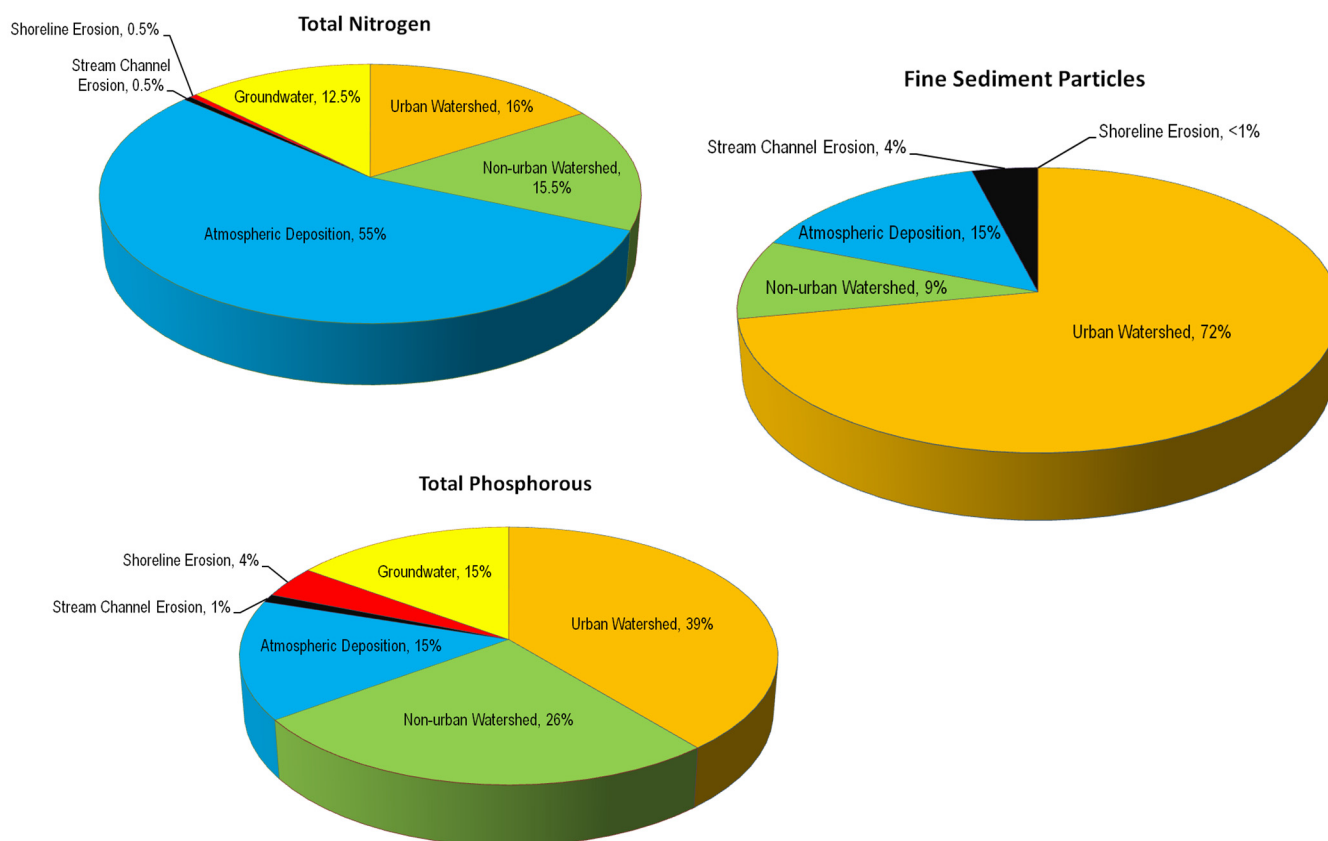
Lake Tahoe

Lake Tahoe is classified by limnologists 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: p. 6.15). The exceptional transparency of Lake Tahoe results from naturally low inputs of nutrients and sediment from the surrounding watersheds. The most recent scientific research points to inorganic fine sediment particles (particles defined as less than 16 micrometers in diameter) as the primary pollutant of concern impairing Lake Tahoe's transparency. This finding is based on the ability of inorganic fine sediment particles to efficiently scatter light and decrease observed transparency. Swift et al. (2006) determined that light scattering by inorganic particles for the period between 1999 and 2002 was responsible for approximately 55 to 60 percent of measured light attenuation in the lake. Additional pollutants of concern include phosphorus and nitrogen, which stimulate algal growth in the lake contributing to declines in transparency and the quality of the near-shore environment.

Research during the development of the Lake Tahoe TMDL included an analysis of pollutant sources to identify the magnitude of pollutant loads to Lake Tahoe from specific source categories. These categories were defined as: surface runoff from developed lands (urban watershed); atmospheric deposition; forested runoff (non-urban watershed); stream channel erosion; groundwater; and shoreline erosion. Exhibit 3.10-1 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 Exhibit 3.10-1, the Lake Tahoe TMDL identifies surface runoff from developed lands as the most significant source of pollutant loading for fine sediment particles and phosphorus. For example, developed lands are estimated to deliver over 70 percent of the average annual fine sediment particle load and approximately 40 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 load.

The Lake Tahoe TMDL established the goal of restoring Lake Tahoe's historic deep water transparency to 29.7 meters (97.4 feet) annual average Secchi depth (Lahontan RWQCB and NDEP 2010). The deep-water transparency water quality objective for Lake Tahoe has not been met since its adoption. To achieve the transparency standard, estimated fine sediment particle, phosphorus, and nitrogen loads must be reduced by 65 percent, 35 percent, and 10 percent, respectively. It is anticipated that attainment of these load reduction standards will take 65 years from implementation (Lahontan RWQCB and NDEP 2010).

A 20-year interim transparency goal, known as the Clarity Challenge requires basin wide pollutant load reductions to be achieved within 15 years, followed by five years of monitoring to confirm that 24 meters of Secchi depth transparency has been reached. To attain the goals of the Clarity Challenge, implementation efforts must reduce basin-wide fine sediment particle, phosphorus, and nitrogen loads by 32 percent, 14 percent, and 4 percent, respectively.



Source: Adapted from Lahontan RWQCB and NDEP 2010

Exhibit 3.10-1

Lake Tahoe TMDL Pollutant Sources

Edgewood Creek

The Edgewood Creek Watershed lies predominantly within Douglas County, Nevada, with a small upper portion within California. The watershed drains an area of about 6.6 square miles where it feeds into Lake Tahoe. The land within the watershed has a variety of uses including the Stateline Casino area, Edgewood Tahoe Golf Course, Heavenly Ski Resort, state and interstate highways, local roads, utility right-of-way corridors, residential neighborhoods, and public lands (state and federal).

Edgewood Creek is a perennial stream that is located at the north end of the study area and flows east to west under US 50, ultimately discharging into Lake Tahoe. Edgewood Creek supports a relatively well-developed riparian canopy upstream of US 50; however, downstream of US 50 the creek flows through a golf course and, as a result, has been substantially modified. Water quality in Edgewood Creek is impacted by increased runoff volumes associated with increased impervious cover; changes to morphology; alteration of riparian vegetation; in-stream ponds and sediment basins; the frequency and extent of maintenance activities; addition of dissolved iron of natural origin; and the discharge of potentially untreated stormwater from roadways. Use of the Creek and the riparian zone for snow storage also affects water quality since the snow contains significant volumes of de-icing abrasives.

The upper reaches of Edgewood Creek (from the source to Palisades Drive) are designated as a 303(d) Impaired Waterbody due to high iron levels, which constitutes an impairment for aquatic life. The Nevada Administrative Code has established separate water quality standards for the upper and lower reaches of Edgewood Creek. The project site crosses the lower portion (from Palisades Drive to Lake Tahoe) and the water quality standards are described in Table 3.10-5.

Table 3.10-5 Water Quality Standards for Lower Edgewood Creek

Parameter	Requirements to Maintain Existing Higher Quality	Water Quality Standards for Beneficial Uses
Temperature (°C)		Oct. – May ≤ 10.0 June – Sept. ≤ 20.0
pH	7.0 – 8.4	6.5 – 9.0
Dissolved Oxygen (mg/L)		≥ 6.0
Total Phosphates (mg/L)	≤ 0.065	Annual Average ≤ 0.05
Nitrogen Species (mg/L)	Total Nitrogen ≤ 0.4	Nitrate ≤ 10.0 Nitrite ≤ 0.06
Unionized Ammonia (mg/L)		≤ 0.004
Total Suspended Solids (mg/L)	≤ 17.0	≤ 25.0
Turbidity – NTU		≤ 10.0
Color – PCU	No increase > 10	≤ 75.0
Total Dissolved Solids (mg/L)		Annual Average ≤ 500.0
Chloride (mg/L)		≤ 250.0
Sulfate (mg/L)		≤ 250.0
Sodium – SAR		Annual Average ≤ 8.0
E. coli – No./100 mL		≤ 126.0

Source: Nevada Administrative Code Section 445A.1666

The in-line pond system at Edgewood Tahoe Golf Course was constructed to provide irrigation water storage and golf course amenities; however, the series of ponds and wetlands also provides water treatment. Ongoing monitoring of Edgewood Creek indicates that on an average monthly basis, all on and off-site nitrogen, phosphorus, and total suspended sediment entering the Edgewood pond system is treated to within TRPA and NDEP water quality standards; however, during storm events, nitrogen and phosphorus levels within the creek at the outfall to Lake Tahoe exceed water quality limits (Nichols Consulting Engineers et al. 2011:86 - 87).

Golf Course Creek

Golf Course Creek is located in the eastern portion of the study area in Nevada. The creek has two forks that converge immediately east of Lake Parkway, flow under the road via a culvert, and through a montane meadow before entering underground drains near the resort-casinos. Golf Course creek is piped beneath the resort-casinos and comingled with stormwater runoff before emerging in an earthen ditch that runs adjacent to the cart path on the eighth fairway at Edgewood Tahoe Golf Course. Golf Course Creek joins with Edgewood Creek approximately 1,200 feet above the outfall to Lake Tahoe. The flow of Golf Course Creek is managed via headgates between resort-casinos—Harvey’s and the Hard Rock Hotel. Currently, the system is configured to direct baseflow through the Edgewood Tahoe Golf Course pond system (see discussion of stormwater management systems below), and the remnant reach of Golf Course Creek only flows during large storm events when it receives bypass stormwater from the SSWA system.

STORMWATER MANAGEMENT

Stormwater runoff within the project site is managed by the three independent systems described below. Exhibit 3.10-2 provides an overview of the existing stormwater infrastructure.

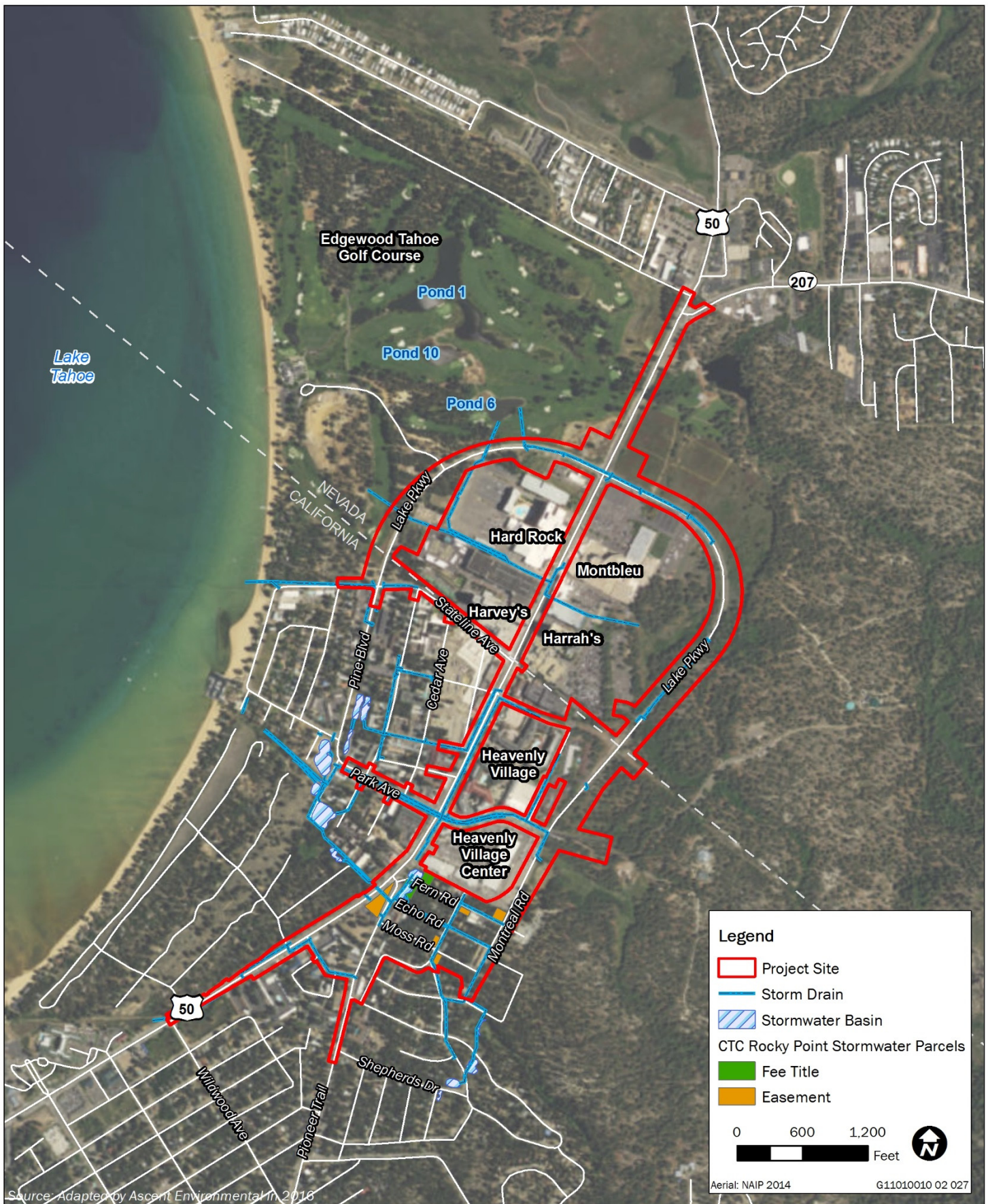


Exhibit 3.10-2

Existing Stormwater Collection and Treatment

Rocky Point Stormwater System

Drainage from the Fern Road, Echo Road, and Moss Road area is collected via storm drains and enters two drainage basins at the Fern Road/Pioneer Trail intersection. Overflow from these basins is routed west for additional treatment in the Upper and Lower Pine basins before discharging via the North Ditch to Lake Tahoe. In addition to drainage basins, several undeveloped lots within the Fern Road area were purchased by the California Tahoe Conservancy (CTC) as part of the Rocky Point Erosion Control Project. These lots provide a natural infiltration area for runoff from adjacent impervious areas and reduce the volume of runoff that must be treated in the drainage basin system. Any development on these parcels that affects their ability to accomplish this purpose would require mitigation.

Pine Boulevard Stormwater System

Stormwater runoff from the California portion of US 50 in the Tourist Core is currently conveyed through a series of storm drains and drainage basins west of US 50, known as the Pine Boulevard Stormwater System or the North Ditch, before being discharged to Lake Tahoe. Flow from Stateline Creek crosses Montreal Road and enters the same storm drain system through a 42-inch reinforced concrete pipe and headwall near the southeast portion of the project site.

Stateline Stormwater Association

Runoff from the Stateline casino corridor and Golf Course Creek is commingled beneath the resort-casinos. A diversion structure located between the Harvey's property and the Hard Rock Hotel directs approximately 10 percent of the flow in the piped system to Golf Course Creek and approximately 90 percent to a series of sediment vaults under the Horizon parking lot. Runoff that passes through the vaults is then routed to pond 6 and then pond 10 on the Edgewood Tahoe Golf Course. Pond 6 is a constructed wet basin and is the final treatment component of the SSWA treatment system. Flows from pond 6 are then discharged to pond 10, before entering pond 1, which is an in-line pond on Edgewood Creek. The Desert Research Institute monitored the effectiveness of the SSWA treatment system for 2 years in the early 2000s. The final report summarized research findings as follows (Desert Research Institute 2004):

- ▲ Over the 2 years of monitoring, 25 storm events were sampled. The average reduction of pollutants from the treatment vaults were: 34 percent of the total nitrogen, 23 percent of the ammonia, 31 percent of the phosphate, and 46 percent of the total suspended solids. Through chemical reactions that occurred in the treatment vaults, an increase in nitrate by 34 percent and orthophosphate by 9 percent was observed.
- ▲ The pond/constructed wet basin treatment system on the Edgewood Tahoe Golf Course (ponds 6 and 10) was sampled on a monthly basis in the spring and summer 2004. The wet basin system further reduced the nutrients and sediment due to the low-energy environment, which allows settling of fine particles and uptake by vegetation.

Additional water quality analyses of the wet basin treatment component of the SSWA treatment system (ponds 6 and 10) were conducted during the environmental review process for the Edgewood Lodge and Golf Course Improvement Project. This analysis used the Lake Tahoe Pollutant Load Reduction Model to develop a representation of the stormwater management system and well as physical measurements of sediment capture in the treatment ponds. The results indicate that the wet basin treatment system retains approximately 83,000 pounds of total suspended sediment per year. Almost 14,000 pounds per year of the retained sediment is estimated to be fine sediment particles (Nichols Consulting Engineers et al. 2011:26–41).

SNOW STORAGE

Snow storage along existing US 50 is limited due to right-of-way constraints. Snow management activities conducted by the City of South Lake Tahoe, Douglas County, NDOT, and Caltrans along the roadway affect the timing and amount of runoff. In response to snow and freezing rain events, Caltrans performs one or more of the following activities:

- ▲ application of sand and salt to aid in traction;
- ▲ use of high-efficiency sweepers to remove traction sand;
- ▲ plowing the snow off the active traffic lanes, which is then stored in the two-way center turn lane;
- ▲ collecting the snow from the right-of-way and trucking it to an off-site disposal yard, a practice typically performed in the urban area of South Lake Tahoe; and
- ▲ returning after a snow event to remove any remaining snow from the roadway, shoulder and gutter.

The application of sand and salt causes the snow and ice to melt at lower temperatures and sometimes runoff is produced during periods when the air temperature is at or below freezing. The plowing and collecting of snow to remove it from the surface of the roadways reduces the amount of snow available to generate runoff. The majority of the snow is typically removed from the roadway before it has a chance to melt. The roadway snow is collected and transported to a TRPA- and LRWCQB-approved disposal site; blown well into the woods adjacent to the roadway; or plowed beyond the curb and out of the drainage area so very little snow melt drains back to the roadway and into the storm drainage systems. Snowmelt is often a very slow process that occurs over several days with only a small amount of runoff generated on each of those days. Snow piles can contain trash, nutrients, fine sediments, salt, sand, pollutants from vehicles such as petroleum hydrocarbons, antifreeze, oil, or heavy metals and materials from road and tire wear.

GROUNDWATER

The most extensive and productive groundwater reservoirs (aquifers) in the Lake Tahoe Basin are composed of coarse textured alluvial deposits and deposits of glacial till and outwash. Five aquifers have been defined around the Lake Tahoe Basin, generally based on surface contact between basin fill and bedrock. The project site is located within the South Lake Tahoe/Stateline aquifer, which extends from Emerald Bay on the southwest side of the lake, to north of Stateline, Nevada on the southeast side (USGS 2007). The thickness of deposits, including the unsaturated zone, is highly variable within the South Lake Tahoe/Stateline aquifer. The portion of the aquifer located beneath the project site contains sand and gravel deposits extending 40 to 50 feet from the land surface, underlain by a sequence of clays with a similar thickness, followed in turn by more sand and gravel 50 or more feet thick. Because of the interbedded nature of coarse and fine-grained deposits, the aquifer is likely to include a shallow water table aquifer (perched above the first clay deposit) and one or more deeper confined aquifers (USGS 2007). Industrial pollutants (MTBE) have had a major impact on the groundwater supply in the South Lake Tahoe area. Low concentrations of volatile organics, primary inorganics, and radiological constituents have rendered 12 South Tahoe Public Utility District wells useless and have forced a reduction in pumping in one well (DWR 2013). Monitoring wells within the tourist core area indicate that the depth to groundwater is typically between 20 and 34 feet (Parikh Consultants 2011).

3.10.3 Environmental Consequences

METHODS AND ASSUMPTIONS

This evaluation of potential water quality and stormwater management impacts was based on a review of documents pertaining to the project site, including: previous studies conducted for the watersheds within the study area; other environmental review documents; background reports prepared for plans and projects in the study area; and published and unpublished hydrologic literature. The information obtained from these sources was reviewed and summarized to understand existing conditions and to identify potential environmental effects, based on the thresholds of significance. In determining the level of significance, the analysis assumes that the project would comply with relevant federal, state, and local laws, regulations, and ordinances.

SIGNIFICANCE CRITERIA

NEPA Criteria

An environmental document prepared to comply with NEPA must consider the context and intensity of the environmental effects that would be caused by or result from the locally preferred action. Under NEPA, the significance of an effect is used solely to determine whether an EIS must be prepared. The factors that are taken into account under NEPA to determine the significance of an action in terms of the context and the intensity of its effects are encompassed by the CEQA criteria used for this analysis. No specific factors related to water quality and stormwater management are contained in NEPA, CEQ Regulations Implementing NEPA, or FHWA NEPA regulations in 23 CFR 771 et seq.

TRPA Criteria

The “Water Quality” criteria from the TRPA Initial Environmental Checklist were used to evaluate the water quality and stormwater runoff impacts of the alternatives. The project would result in a significant adverse impact if it would:

- ▲ result in discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity;
- ▲ create changes in currents, or the course or direction of water movements;
- ▲ change in the amount of surface water in any water body;
- ▲ create changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff so that a 20 year 1-hour storm runoff (approximately 1 inch per hour) cannot be contained on the site;
- ▲ alter the direction or rate of flow of groundwater;
- ▲ result in the potential discharge of contaminants to the groundwater or any alteration of groundwater quality; or
- ▲ adversely affect the quality of a drinking water source.

CEQA Criteria

In accordance with Appendix G of the State CEQA Guidelines, an alternative was determined to result in a significant impact related to water quality and stormwater runoff if it would:

- ▲ violate any water quality standards or waste discharge requirements;
- ▲ substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in substantial erosion, siltation or flooding on- or off-site;
- ▲ create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage, infiltration, and treatment systems or facilities resulting in increased sources of pollutants reaching surface waters or causing detrimental flooding to property or infrastructure;
- ▲ substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted); or
- ▲ otherwise substantially degrade water quality.

ENVIRONMENTAL EFFECTS OF THE PROJECT ALTERNATIVES

Impact 3.10-1: Potential for degradation of surface water quality due to construction activities

Alternatives B, C, and D would include construction and operational activities that could result in contaminants being carried into storm drains and adjacent surface waters. Degradation of surface water quality could result from construction activities and pollutant loading in surface runoff. Because TRPA, Lahontan RWQCB, and NDEP regulations are in place to minimize erosion and transport of sediment and other pollutants during construction, and appropriate project-specific measures would be defined to secure necessary permits and approvals, project-related impacts would be minimized and would not result in substantial adverse effects on water quality. Alternative E could require construction dewatering; however, compliance with Lahontan RWQCB, NDEP, and TRPA regulations would minimize the potential threat to water quality. Alternative A is the no build alternative and would not impact these resources.

NEPA Environmental Consequences: The design features of Alternatives B, C, D, and E would avoid or minimize the degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, D, and E; No Impact for Alternative A

Alternatives B, C, and D would include the removal of existing roadway surfaces, grading and ground disturbance for modification of the existing roadbed, demolition and removal of up to 76 housing units, excavation, extension of culverts at Edgewood and Golf Course Creeks, temporary stockpiling of soil, and realignment of storm drain systems. These activities would create ground disturbance that could accelerate soil erosion. Soils exposed during rain events could generate sediment that could be carried in runoff into storm drains and surface waters. Vehicle traffic into and out of construction areas could carry sediment onto roadways where it could be ground into fine sediments. The amount of temporary and permanent soil disturbance for each alternative is shown in Table 3.10-6 below. Temporary disturbance areas would be stabilized and revegetated following construction as required by TRPA Code Section 61.4.

Alternative A: No Build (No Project)

Alternative A is the no build alternative and would not result in land disturbance or the potential for increased erosion or sedimentation. For this reason, Alternative A would have **no impact** on water quality for purposes of NEPA, CEQA, and TRPA.

Table 3.10-6 Acres of Ground Disturbance by Alternative

Alternative/Segment	Acres of Ground Disturbance		
	Temporary	Permanent	Total
Alternative A: No Build (No Project)	0	0	0
Alternative B: Triangle	22.50	33.99	56.49
Alternative C: Triangle One-Way	24.20	28.00	52.20
Alternative D: PSR Alternative 2	19.88	32.51	52.39
Alternative E: Skywalk	0.76	0.03	0.79

Source: Adapted by Ascent Environmental in 2015

Alternative B: Triangle (Locally Preferred Action)**Transportation Improvements**

Alternative B transportation improvements would require the demolition and removal of 76 housing units and would disturb 56.49 acres of soil, which could adversely affect water quality through construction activities (including accidental spills and possibly dewatering), changes to stormwater runoff patterns, or pollutant loading in stormwater runoff (including melt water from snow storage areas). This is the highest amount of soil disturbance that would be created by any build alternative.

With respect to construction water quality, all projects that disturb one or more acres of soil would be subject to the relevant NDEP and Lahontan RWQCB NPDES permits (depending on the portion of the project site, this may include the NDEP Stateline Stormwater Association NPDES Discharge Permit, the Caltrans Statewide NPDES Permit, and Lake Tahoe Basin Construction General NPDES Permit from Lahontan RWQCB). A condition of all the NPDES permits would be the preparation of a SWPPP. The SWPPP would be prepared by a qualified SWPPP practitioner and/or a qualified SWPPP developer that identifies water quality controls consistent with Lahontan RWQCB and TRPA requirements, and would ensure that runoff quality meets TRPA water quality requirements under the TRPA Code and maintains the beneficial uses of Lake Tahoe and Edgewood Creek. The SWPPP would describe the site controls, erosion and sediment controls, means of waste disposal, implementation of approved local plans, control of post-construction sediment and erosion control measures, and management controls unrelated to stormwater. BMPs identified in the SWPPP would be implemented during all site development activities. All construction site BMPs would follow the latest edition of the Caltrans *Storm Water Quality Handbooks: Construction Site BMPs Manual* (Caltrans 2003), the *Nevada Contractors Field Guide for Construction Site Best Management Practices* (NDEP 2008), and the *TRPA BMP Handbook* (TRPA 2014) to control and minimize the impacts of construction-related activities, materials, and pollutants on the watershed. The following would be required elements of the SWPPP:

- ▲ Temporary BMPs to prevent the transport of earthen materials and other construction waste materials from disturbed land areas, stockpiles, and staging areas during periods of precipitation or runoff, including: filter fence, fiber roll, erosion control blankets, mulch (such as pine needles and wood chips), and temporary drainage swales and settling basins.
- ▲ TRPA pre-grade inspection a minimum of 48 hours prior to commencement of construction-related activities to ensure proper and adequate installation of the temporary erosion control measures.
- ▲ Designated contractor staging areas for materials and equipment storage outside of SEZ areas. Designated staging and storage areas would be protected by construction fencing and/or silt barriers, as appropriate. Following project completion, all areas used for staging would be restored in accordance with TRPA Code Section 61.4.
- ▲ Temporary BMPs to prevent the tracking of earthen materials and other waste materials from the project site to offsite locations, including stabilized points of entry/exit for construction vehicles/equipment and designated vehicle/equipment rinse stations, and sweeping.
- ▲ Temporary BMPs to prevent wind erosion of earthen materials and other waste materials from the project site, including routine application of water to disturbed land areas and covering of stockpiles with plastic or fabric sheeting.
- ▲ Earthmoving activities would be limited to May 1 through October 15, unless a grading ordinance exemption is granted by TRPA. At the end of the grading season or before completion of the project, all surplus or waste earthen materials from the project site would be removed and disposed of at a TRPA-approved disposal site or stabilized on-site in accordance with TRPA regulations.
- ▲ A spill prevention and containment plan would be prepared and implemented. Project contractors would be responsible for storing on-site materials and temporary BMPs capable of capturing and containing

pollutants from fueling operations, fuel storage areas, and other areas used for the storage of hydrocarbon-based materials. This would include maintaining materials on-site (such as oil absorbent booms and sheets) for the cleanup of accidental spills, drip pans beneath construction equipment, training of site workers in spill response measures, immediate cleanup of spilled materials in accordance with directives from NDEP, Lahontan RWQCB, and TRPA, and proper disposal of waste materials at an approved off-site location that is licensed to receive such wastes.

- ▲ Temporary BMPs to capture and contain pollutants generated by concrete construction including lined containment for rinsate to collect runoff from washing of concrete delivery trucks and equipment.
- ▲ Protective fencing to prevent damage to trees and other vegetation to remain after construction, including tree protection fencing and individual tree protection such as wood slats strapped along the circumference of trees.
- ▲ Temporary BMPs for the containment and removal of drilling spoils generated from construction of bridge foundations and abutments.
- ▲ Daily inspection and maintenance of temporary BMPs. The prime contractor would be required to maintain a daily log of temporary construction site BMP inspections and keep the log on site during project construction for review by NDEP, Lahontan RWQCB, and TRPA.
- ▲ Tree removal activities, including the dropping of trees, would be confined to the construction limit boundaries.
- ▲ Construction boundary fencing to limit disturbance and prevent access to areas not under active construction.

Construction associated with Alternative B would also require the use and handling of hazardous materials such as fuels, lubricants, coolants, hydraulic fluids, and cleaning solvents. The use and handling of these materials presents the potential to degrade water quality through accidental spills. Implementation of the hazardous materials spill response plan (a required component of the NPDES permit SWPPP) would reduce the potential of directly and indirectly effecting water quality through construction-related hazardous material spills.

Excavation for construction of the pedestrian bridge pilings would range from 20 to 60 feet deep, depending on the footings selected during final design. Excavation at these depths could encounter groundwater, and may require dewatering. The Lake Tahoe Hydrologic Unit Construction General allows dewatering operations provided that the dewatering discharge cannot be eliminated, complies with the BMPs described in the SWPPP, is filtered or treated, does not exceed numeric action levels for pH and turbidity, and would not cause or contribute to a violation of water quality standards (SWRCB 2009). Dewatering under this NPDES permit must not be used to clean up failed or inadequate construction or post-construction BMPs designed to keep materials onsite. The potential water quality effects resulting from these actions would be minimized through compliance with the applicable permits and regulations described above. Therefore, the potential for Alternative B transportation improvements to affect water quality would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative B would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any

residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The Alternative B mixed-use development, including replacement housing, would involve ground disturbance related to site preparation and excavation, vegetation removal, and removal of existing structures as necessary. The mixed-use development sites under consideration all exceed 1 acre in size and would therefore be required to meet the NDEP and Lahontan RWQCB NPDES permit requirements described above.

Because TRPA, Lahontan RWQCB, and NDEP regulations are in place to minimize erosion and transport of sediment and other pollutants during construction, and appropriate project-specific measures would be defined to secure necessary permits and approvals, project-related impacts would be minimized and would not result in a substantial adverse effect on water quality. Therefore, the potential for Alternative B mixed-use development, including replacement housing, to affect water quality would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative B would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from construction activities as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative B would minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

Alternative C transportation improvements would require the demolition and removal of 71 housing units, and would disturb approximately 52.20 acres of soil (4.0 acres less than Alternative B). Alternative C would be subject to the same permitting requirements, including completion of a SWPPP and installation of permanent and temporary BMPs, as with Alternative B.

The potential for adverse effects to water quality during rehabilitation would be minimized through compliance with the permits and regulations described above. For the same reasons described for Alternative B, the potential impact on surface water quality resulting from implementation of Alternative C transportation improvements would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative C would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The mixed-use development, including replacement housing, considered with Alternative C is similar to that evaluated for Alternative B. The mixed-use development would be required to comply with the TRPA and Lahontan RWQCB NPDES permit conditions described for Alternative B. For the same reasons described for Alternative B, the potential impact on surface water quality resulting from implementation of Alternative C mixed-use development, including replacement housing, would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative C would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from construction activities as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative C would minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

Alternative D transportation improvements would require the demolition and removal of 68 housing units, and would disturb approximately 52.39 acres of soil (4.3 acres less than Alternative B). Alternative D would be subject to the same permitting requirements, including completion of a SWPPP and installation of permanent and temporary BMPs, as with Alternative B.

The potential for adverse effects on water quality during rehabilitation would be minimized through compliance with the permits and regulations described for Alternative B above. For the same reasons described for Alternative B, the potential impact on surface water quality resulting from implementation of Alternative D transportation improvements would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative D would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The mixed-use development, including replacement housing, considered with Alternative D is similar to that evaluated for Alternative B. The mixed-use development would be required to comply with the TRPA and Lahontan RWQCB NPDES permit conditions described for Alternative B. For the same reasons described for Alternative B, the potential impact on surface water quality resulting from implementation of Alternative D mixed-use development, including replacement housing, would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative D would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from construction activities as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative D would minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

Implementation of Alternative E would require excavation for the installation of footings and pilings to support the skywalk structure, resulting in approximately 0.79 acre of ground disturbance. Deep excavation within the project site could intercept groundwater and require dewatering activities during the construction phase. Water pumped from excavation activities would contain suspended sediments and other solids, but would not be discharged directly into SEZs, wetlands, or municipal storm drains.

Because ground disturbance would be less than 1 acre, construction activities for Alternative E would not be subject to NDEP or Lahontan RWQCB NPDES permits or the associated SWPPP measures; however, for projects that create less than 1 acre of disturbance, TRPA holds the regulatory responsibility for erosion control and water quality protection. TRPA requires the use of temporary water quality BMPs in accordance with the *TRPA BMP Handbook* and disposal of materials in a location approved by TRPA. Potential temporary BMPs may include measures similar to those required in a SWPPP as well as:

- ▲ Inlet Protection – Storm drain inlets would be installed to prevent sediment from entering the stormwater management system. Inlet protection devices that could be used include fiber rolls, gravel

bag barriers, geotextile fabric or pre-made device, silt fence, or block and gravel filter. Drain inlet protection devices would be inspected and maintained prior to forecast rain events, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the dry season.

- ▲ **Stock Pile Management** – Stock piles would be located on paved areas away from drain inlets and SEZs. All stock piles would be protected from stormwater runoff using temporary perimeter sediment barriers, such as berms, dikes, fiber rolls, silt fences, or gravel bags. Stock piles would be covered with tarp, plastic, or other waterproof material overnight when precipitation is forecast.
- ▲ **Sweeping** – This BMP includes daily sweeping of paved areas when grading activities are taking place. Sediment would be disposed of at a TRPA-approved location or removed from the Lake Tahoe Region.

Because Alternative E would disturb less than 1 acre and would be subject to TRPA oversight and the permit requirements discussed above, the potential for Alternative E to adversely affect surface water quality would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would avoid or minimize the potential degradation of surface water quality from construction activities such that no additional mitigation measures are needed or feasible to implement.

Impact 3.10-2: Potential for degradation of surface water quality due to operational activities

TRPA, Lahontan RWQCB, and NDEP regulations require the installation and maintenance of water quality BMPs, which would minimize the potential water quality effects of the transportation improvements. Also, TRPA Code provisions would require fertilizer management and snow storage BMPs to prevent potential adverse effect from these activities. In addition, Alternative B, C, and D include several water quality improvements that would resolve preexisting detrimental conditions within the project site and add supplemental capacity to water quality treatment basins above required volumes. Alternative E would minimize the potential effects to water quality by implementing required stormwater infrastructure. Alternative A is the no build alternative and would have no impact relative to these resources.

NEPA Environmental Consequences: The design features of Alternatives B, C, D, and E would avoid or minimize the degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Beneficial for Alternatives B, C, and D; Less Than Significant for Alternative E; No Impact for Alternative A

Alternative A: No Build (No Project)

Alternative A is the no build alternative; it would be a continuation of existing conditions and would not result in a change in land use or modification of roadway systems that could result in changes to water quality. For this reason, Alternative A would have **no impact** for the purposes of NEPA, CEQA, and TRPA. Importantly, taking no action, as with Alternative A, would not result in implementation of the beneficial water quality improvements associated with Alternatives B, C, and D.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Alternative B transportation improvements would result in a net increase of between 5.47 acres (with roundabout at US 50/Lake Parkway) and 7.62 acres (with signal at US 50/Lake Parkway) in land coverage within the project site (see Impact 3.11-1 in Section 3.11, “Geology, Soils, Land Capability, and Coverage”). The runoff generated by the roadway portions of the project could contain sediment, crushed road abrasives,

nutrients, organic compounds, trash and debris, oxygen-demanding substances, oil and grease, fluids from accidents and spills, landscape care products, and metals. In addition, the roadway abrasives used during winter are ground down by the vehicle traffic and become suspended in stormwater runoff. For these reasons, paved roadways are the primary source of the fine sediment particles that are impairing the clarity of Lake Tahoe (Lahontan RWQCB and NDEP 2010). The NPDES permits required for the project state that BMPs must be implemented to reduce the potential discharge of these pollutants to the maximum extent practicable. Both the effluent and the receiving water must be monitored to ensure that the BMPs are effective and that the discharge is not causing or contributing to an exceedance of a Water Quality Standard. The results of monitoring efforts must be used to make adjustments or revisions to the BMPs as appropriate (SWRCB 2013, NDOT 2013).

Alternative B would include landscaping of roundabout centers and roadway medians, and revegetation of disturbed areas. Fertilizers or organic amendments used in landscaping and restoration projects can move into surface and groundwaters and degrade water quality. These impacts can be avoided or minimized through proper handling and application of fertilizers and amendments and the selection of plant species that are appropriate for the site. All projects that include landscaping or revegetation must develop a fertilizer management program as described in TRPA Code Section 60.1.8.A. Additionally, projects requiring revegetation must submit a revegetation plan that specifies the use of approved plant species and a schedule of the amount and method of application of any necessary fertilizers in accordance with TRPA Code Section 61.4.5. TRPA Code of Ordinances section 36.7 and the TRPA Handbook of Best Management Practices (TRPA 2011) require that landscaped areas use native or adapted plant species that require little water and fertilizer and are appropriate for the site conditions. Because Alternative B would be required to comply with these provisions as a condition of permit approval, the risk to water quality from the migration of fertilizers or organic amendments would be minimized.

Melt water from snow storage areas carries concentrated amounts of nutrients, fine sediments, salt, sand pollutants from vehicles such as petroleum hydrocarbons, oil, or heavy metals and materials from road and tire wear. Snow storage areas along the existing US 50 alignment are limited due to right-of-way constraints. Provision of adequate snow storage is required by Douglas County, City of South Lake Tahoe, and TRPA regulations. The proposed US 50 alignment would provide potential for snow storage within some parcels acquired for right-of-way purposes. All potential snow storage locations would be designed to drain to BMP facilities capable of treating large sediment loads. In accordance with TRPA Code Section 60.1.4, all snow storage areas would meet the site criteria and management standards in the TRPA Handbook of Best Management Practices (TRPA 2014). In addition, snow storage areas may not be located within SEZs. The location of snow storage areas within the City of South Lake Tahoe would be shown on all site plans or a snow removal plan would be included with the improvement plan submittal.

In addition to the water quality protections in the required NPDES permits, TRPA has established numeric water quality standards for discharges to surface and ground waters. Section 61.1 of the TRPA Code specifies that water discharged to surface waters or infiltrated into soils should not contain excessive amounts of nutrients, sediment, or oil and grease. The TRPA numeric discharge limits are shown in Table 3.10-2 above. Where there is a direct hydrologic connection between ground and surface waters, discharge to groundwater must meet surface water discharge standards. The existence of a direct hydrologic connection is assumed to exist when, due to proximity to surface water, slope, or soil characteristics, the discharged water does not remain in the soil long enough to remove pollutants.

Water Quality Enhancement

Through coordination with stakeholders and a review of the strengths and weaknesses of the existing stormwater management systems within the project area, the project design team identified several measures that would enhance the ability of existing systems to protect water quality, and would create water quality benefits through the capture of currently untreated stormwater runoff. These enhancements are included as part of Alternative B and are described below:

- US 50 /SR 207 Stormwater Improvements:** The portion of US 50 from the intersection of Lake Parkway to State Route 207 currently discharges directly into Edgewood Creek without treatment. The proposed water quality improvements include a treatment train that consists of sediment traps, an underground storm drain system to convey flows, and an stormwater basin located to the southwest of the US 50/Lake Parkway intersection (B-11 on Exhibit 3.10-3) The basin site has sufficient room to provide the required capacity for the water quality volume. The required regulatory water quality volume (20-year/1-hour storm) is approximately 27,000 cubic feet and the potential basin volume is 91,000 cubic feet.
- Stateline Avenue Stormwater Improvements:** Currently, the north side of Stateline Avenue contains no water quality treatment features. Alternative B would improve water quality by installing curb and gutter and stabilizing previously bare shoulders. The existing area drain at the intersection of Stateline Avenue and Lake Parkway is surrounded by unstable soils and frequently clogs, allowing stormwater to be directly discharged to Lake Tahoe via the overflow pipe (Burke, Pers. Com. 2016). Alternative B would improve the functionality of this system and would direct runoff from the intersection area and Stateline Avenue to a new stormwater basin located northeast of the Lake Parkway/Pine Boulevard and Stateline Avenue intersection (displayed as B-13 on Exhibit 3.10-3). The basin would be located downstream of the improvements along Stateline Avenue and would be designed to accommodate the existing trees in the area. The required water quality volume is approximately 7,200 cubic feet and the potential basin volume is 27,000 cubic feet. A second option to treat runoff from Stateline Avenue would be to modify the existing Stateline Stormwater Association (SSWA) treatment system. There is an existing basin along Lake Parkway within the Harvey's Lake Tahoe property. This basin serves the existing SSWA treatment system. Runoff from Stateline Avenue can be routed to this basin and modifications can be made to the facility to accommodate the increase in flow.
- Azure Avenue Stormwater Improvements:** Currently, stormwater runoff from the residential block of Azure Avenue between Pine Boulevard and Stateline Avenue is discharged directly to Lake Tahoe without treatment (Burke, pers. comm., 2016). The project would assess the potential for capturing this runoff and diverting it to proposed basin B-13 via an underground storm drain system. The City of South Lake Tahoe has identified this as a need, but cannot confirm the location or depth of the Azure Avenue storm drain pipe. During the project design phase, a survey would be completed to verify that the Azure Avenue storm drain pipe is at a shallow enough depth to connect to proposed basin B-13. If this connection is feasible, the basin would be sized to accommodate both the uncaptured runoff from Stateline Avenue and the untreated runoff from a portion of the residential neighborhood south of Azure Avenue. This improvement could provide treatment for approximately one-third of the stormwater from the residential neighborhood and could trap up to 1,300 pounds of fine sediment annually (City of South Lake Tahoe 2016). As needed, facilities to collect runoff on Azure Avenue and divert it to the basin would be constructed by the City of South Lake Tahoe as part of a separate project.
- Sediment Traps:** All existing drainage inlets within the project site would be modified to include a sediment trap to remove sediment and applied roadway abrasives (i.e., traction sand). These sediment traps would provide a "Treatment Train" by removing heavy sediments prior to storm water discharges. Approximately 85 new sediment traps would be included with the proposed transportation improvements.
- Existing US 50 Stormwater Infrastructure Improvements:** The portion of the existing US 50 alignment between Stateline Avenue and Park Avenue currently has very few drainage inlets. Although subsurface storm drains exist along Friday Avenue, no inlets have been constructed. This requires stormwater to travel over-ground along the unimproved road shoulder to drainage inlets near the intersection of Manzanita Avenue and Friday Avenue. The conversion of existing US 50 to a local street and planned pedestrian improvements would include the addition of storm drain infrastructure including curb and gutter, drainage inlets spaced approximately 250 feet apart, and subsurface storm drain pipe along existing US 50. This system would connect to the Friday Avenue storm drain system via drainage inlets near the junction of existing US 50 and Friday Avenue and would prevent stormwater runoff from running

down Friday Avenue in an open system. Although these enhancements would not create a reduction in stormwater runoff. Rather, they would direct stormwater to stormwater basins through an efficient system that reduces stormwater contact with unstabilized road shoulders.

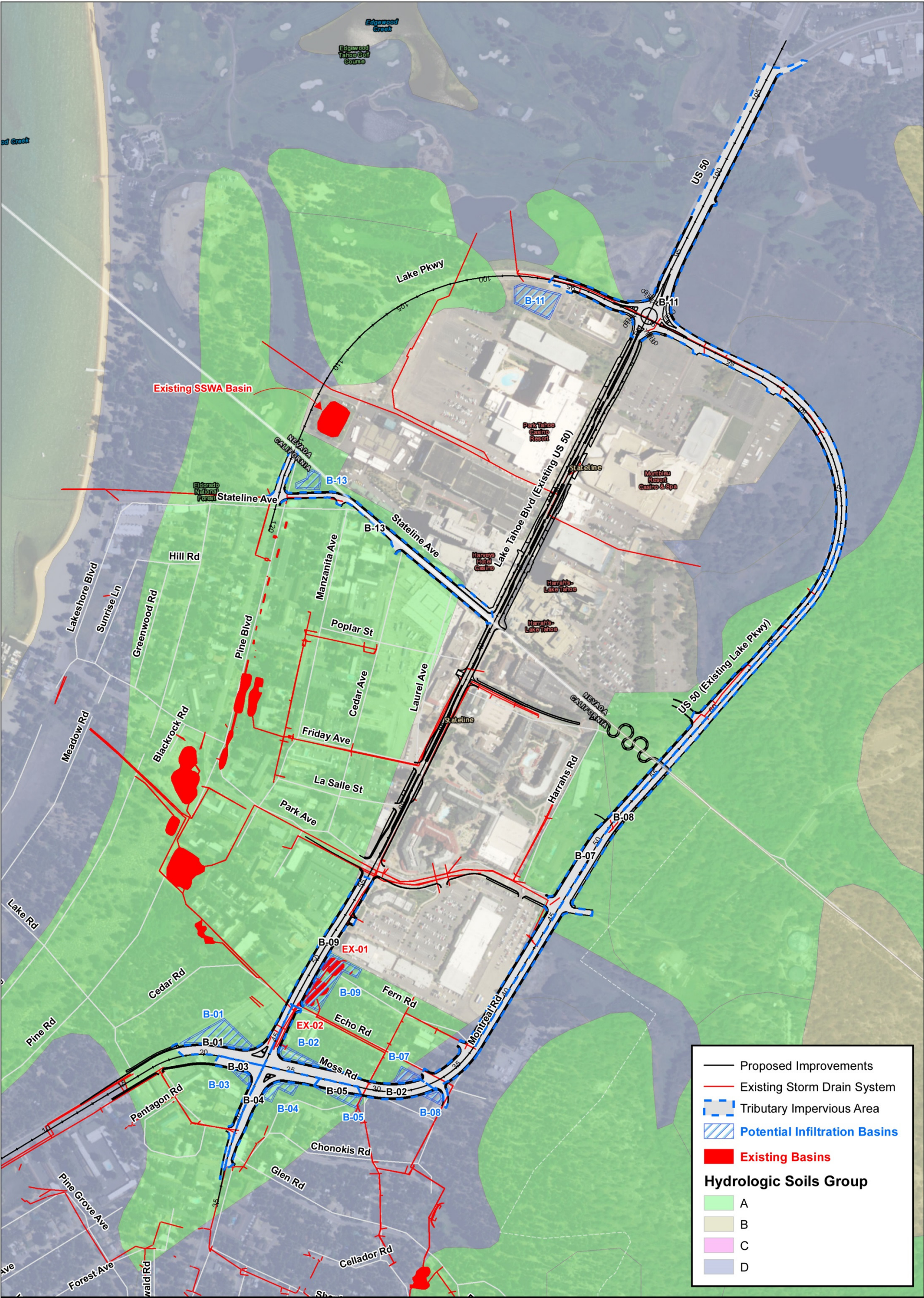
- ▲ Fern Basin Enhancements:** Drainage from the Fern Road, Echo Road, and Moss Road area is collected via storm drains and enters two drainage basins at the intersection of Fern Road and Pioneer Trail. These basins are currently undersized and only capture 77 percent of the 20-year, 1-hour stormwater runoff volume (City of South Lake Tahoe 2016). The proposed roadway alignment may require reconstruction or relocation of these basins. Both the existing basins (EX-01 and -02) and the proposed basin configuration (B-09) are shown on Exhibit 3.10-3. Alternative B would redirect approximately 100,200 cubic feet/year of stormwater runoff generated by the realigned US 50 from the Fern Basins to proposed basins B-02, B-04, B-05, B-07, and B-08. However, even with this volume reduction, preliminary calculations indicate that the Fern Basins would still be undersized (Wood Rodgers 2016). For this reason, Alternative B would reconstruct (enlarge and deepen) the Fern Basins in their current location so that they are able to fully accommodate the stormwater runoff generated by their tributary area during the 20-year/1-hour storm. The capacity of the existing basins combined is approximately 48,000 cubic feet. The potential capacity of the proposed reconstructed basins is approximately 80,000 cubic feet (Wood Rodgers 2016). If further studies indicate against the reconstruction of the basins on site, the project would also consider the possibility of relocating the Fern Basins or adding an additional basin to the system.
- ▲ Oversized Stormwater basins:** The project would generate excess right-of-way, which can be utilized for features such as linear parkways and stormwater basins. The area available for stormwater basins surpasses the amount of area necessary to contain the required water quality volume. The depth of all basins proposed for the project was assumed to be three feet and all stormwater basins would have a preliminary side slope of 3:1. TRPA requires all projects to infiltrate or retain the volume of stormwater runoff generated by a 20-year, 1-hour storm on the project site. The preliminary design of the project's stormwater basins indicates that, on average, they can accommodate five times the regulatory requirement (Wood Rodgers 2016) and are therefore able to accept flows from a much larger storm.

For these reasons, implementation of Alternative B transportation improvements would result in a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative B would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The mixed-use development, including replacement housing, would include landscaping and snow removal, which could result in the migration of urban pollutants into surface and groundwater. The TRPA Code provisions cited above in regard to the transportation-related components of the project would also apply to the mixed-use development sites. Because all landscaping and snow storage areas would be required to comply with these water quality protections, the operation of the mixed-use development site would not have an adverse effect on water quality.



Source: Wood Rodgers 2016

X11010010 02 076

Exhibit 3.10-3

Alternative B - Potential Stormwater Basin Locations

TRPA, Lahontan RWQCB, and NDEP regulations require the installation and maintenance of water quality BMPs, which would minimize the potential water quality effects of the transportation improvements. Also, TRPA Code provisions would require fertilizer management and snow storage BMPs to prevent potential adverse effects from these activities. In addition, Alternative B includes several water quality improvements that would resolve preexisting detrimental conditions within the project site and add supplemental capacity to stormwater treatment basins above required volumes. Therefore, the implementation of Alternative B mixed-use development, including replacement housing, would result in a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative B would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from operations as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **beneficial** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative B would minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

Alternative C transportation improvements would result in a net increase of 1.06 acres (with signal at US 50/Lake Parkway) in land coverage within the project site (see Impact 3.11-1 in Section 3.11, “Geology, Soils, Land Capability, and Coverage”). Alternative C would be subject to the same permitting requirements, including completion of a SWPPP, installation of permanent and temporary BMPs, and TRPA fertilizer use restrictions as with Alternative B. In addition, Alternative C would include similar water quality improvements as those described for Alternative B (shown on Exhibit 3.10-4).

The potential water quality effects of Alternative C would be the same as those for the transportation improvement portion of Alternative B, described above. For these reasons, implementation of Alternative C transportation improvements would result in a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative C would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any

residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The water quality effects of the mixed-use development, including replacement housing, considered under Alternative C would be the same as those evaluated for Alternative B, above.

For the same reasons described above in regard to Alternative B, the implementation of Alternative C mixed-use, including replacement housing, would have a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative C would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from operations as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **beneficial** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative C would minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

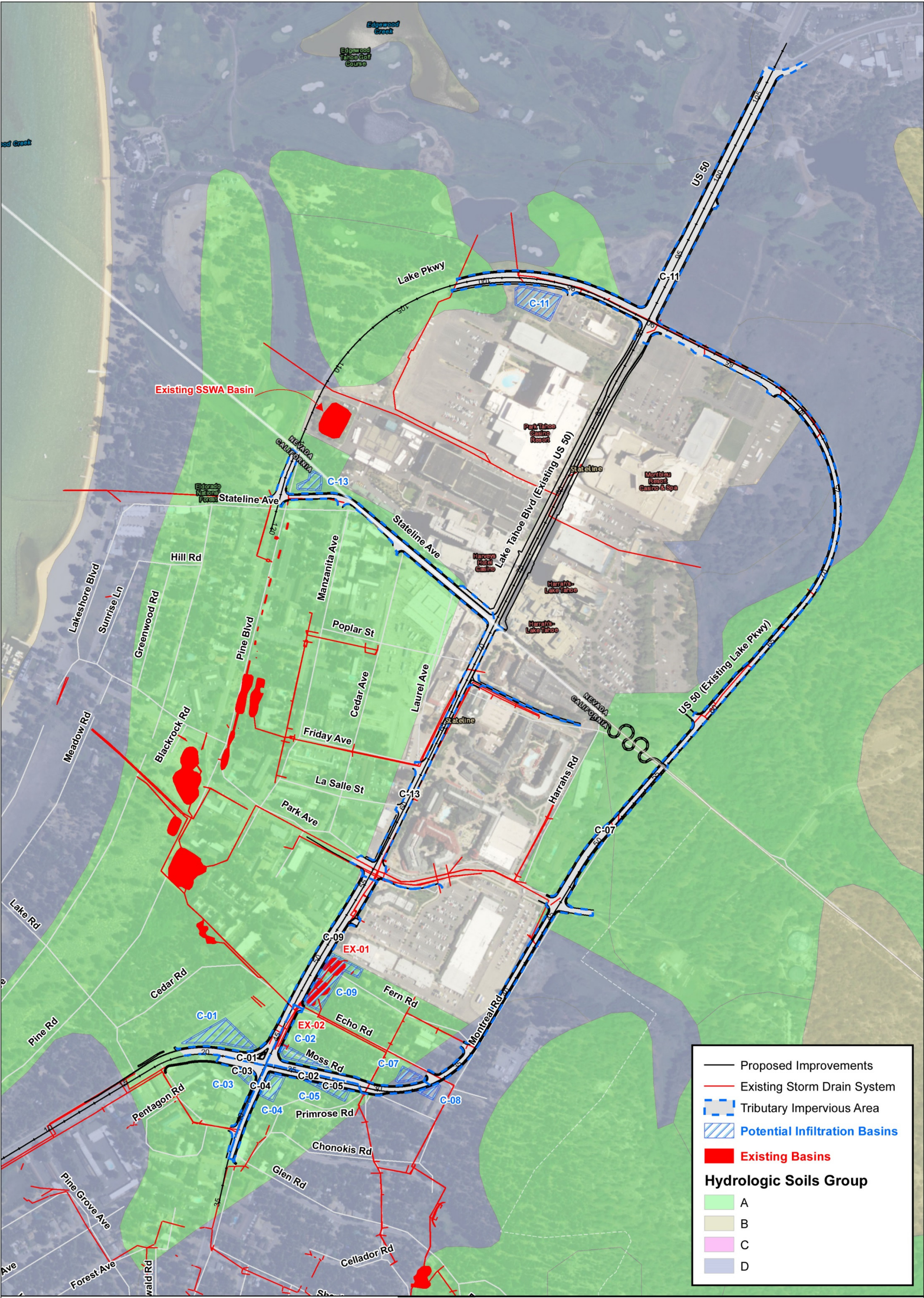
Alternative D: Project Study Report Alternative 2

Transportation Improvements

Alternative D transportation improvements would result in a net increase of 5.76 acres (with roundabout at US 50/Lake Parkway) and 7.91 acres (with signal at US 50/Lake Parkway) in land coverage within the project site (see Impact 3.11-1 in Section 3.11, “Geology, Soils, Land Capability, and Coverage”). Alternative D would be subject to the same permitting requirements, including completion of a SWPPP, installation of permanent and temporary BMPs, and TRPA fertilizer use restrictions as with Alternative B. In addition, Alternative D would include similar water quality improvements as those described for Alternative B (shown on Exhibit 3.10-5).

The potential water quality effects of Alternative D would be the same as those for the roadway portion of Alternative B, described above. For these reasons, implementation of Alternative D transportation improvements would result in a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

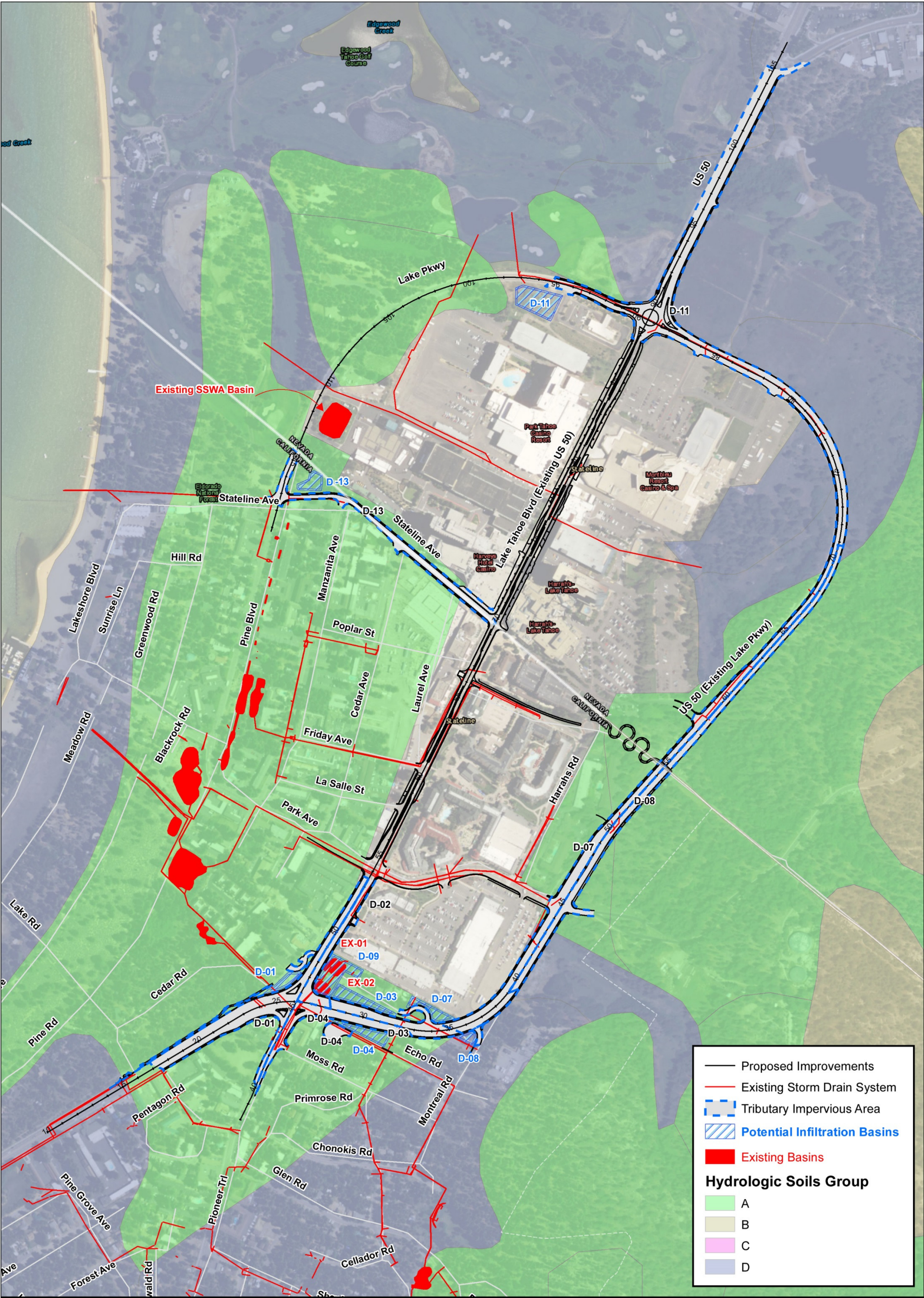


Source: Wood Rodgers 2016

X11010010 02 077

Exhibit 3.10-4

Alternative C - Potential Stormwater Basin Locations



Source: Wood Rodgers 2016

X11010010 02 078

Exhibit 3.10-5

Alternative D – Potential Stormwater Basin Locations

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative D would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The water quality effects of the conceptual mixed-use development considered under Alternative D would be the same as those evaluated for Alternative B, above.

For the same reasons described above in regard to Alternative B, the implementation of Alternative D mixed-use development, including replacement housing, would have a **beneficial** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative D would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential degradation of surface water quality from operations as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential water quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **beneficial** impact on water quality.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative D would minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

The operational water quality effects of Alternative E would be minimal. Stormwater runoff from the pedestrian deck would not contain the roadway pollutants described for Alternative B and landscaping would be limited to container plantings. Additionally, all stormwater generated by the pedestrian deck would be treated by the existing SSWA system. Therefore, the operation of Alternative E would have a **less-than-significant** impact on water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would avoid or minimize the potential degradation of surface water quality from operations such that no additional mitigation measures are needed or feasible to implement.

Impact 3.10-3: Stormwater runoff

Alternatives B, C, and D would create an increase in impervious surfaces: 5.47 to 7.62 acres for Alternative B; 1.06 acres for Alternative C; and 5.76 to 7.91 acres for Alternative D. The project would be required to comply with stringent SWRCB, Lahontan RWQCB, NDEP, and TRPA post-construction stormwater controls. Storage, infiltration, and treatment measures are required to minimize runoff flows and volumes and any stormwater discharge would be required to comply with Lahontan RWQCB, NDEP, and TRPA water quality standards and the Lake Tahoe TMDL. Because the implementation of these alternatives could require use of existing stormwater management infrastructure (Rocky Point stormwater easement parcels and Fern Road stormwater basins) for transportation improvements and/or mixed-use development, an impact on stormwater runoff management is recognized at this time, which would be mitigated by replacing affected facilities with equivalently or more effective stormwater infrastructure, as defined during detailed project design. Alternatives A and E would not result in changes to runoff volumes or stormwater infrastructure and would therefore have no impact relative to these resources.

NEPA Environmental Consequences:	Mitigation Measure 3.10-3 have been incorporated into Alternatives B, C, and D to further reduce to the extent feasible the environmental consequences related to stormwater runoff; No Impact for Alternatives A and E
CEQA/TRPA Impact Determinations:	Less Than Significant for Alternatives B, C, and D after implementation of Mitigation Measure 3.10-3; No Impact for Alternatives A and E

The amount of stormwater runoff generated from an area is affected by development through conversion of vegetated or pervious surfaces to impervious surfaces and by the development of drainage systems that connect these impervious surfaces to streams or other water bodies. In this way, development can increase the rate of runoff and eliminate storage and infiltration that would naturally occur along drainage paths. As water runs off the land surface, it collects and carries materials and sediment, which can be potentially harmful to downstream receiving waters. Additionally, stormwater runoff that becomes concentrated can cause erosion and increased sediment transport.

Alternatives B, C, and D would include realignment of US 50, widening of existing roadways, construction of a pedestrian path, modifications to the existing US 50 to become a local street, and realignment of neighborhood streets to connect with the highway. Table 3.10-7 (below) provides the estimated increase in impervious area by alternative.

As shown in Table 3.10-7, Alternatives B, C, and D would result in an increase in impervious surfaces within the project site and a corresponding increase in runoff volume. These alternatives would also relocate or change the configuration of the existing storm drain systems (refer to Exhibit 3.10-2). Where the existing storm drain systems affected by each action alternative are undersized or under-designed, they would be improved. Inlets and pipes would be relocated to accommodate the different roadway configurations and sized per regulatory and code requirements.

Alternative A: No Build (No Project)

Alternative A is the no build alternative and would not create increased impervious coverage or alter existing stormwater infrastructure. For this reason, Alternative A would have **no impact** on stormwater runoff for purposes of NEPA, CEQA, and TRPA.

Table 3.10-7 Increase in Impervious Surfaces by Alternative

Alternative	New Impervious Surface	Affected Storm Drain Systems
Alternative A: No Build (No Project)	NA	NA
Alternative B: Triangle	5.47 to 7.62 acres	CSLT Fern Road Stormwater Basins (2) CTC Rocky Point Stormwater Treatment Parcels: 029-331-12, 029-331-11, and 029-332-01 CTC Rocky Point Stormwater Easements: 029-170-05, 029-170-04, 029-351-22, 029-341-04, and 029-363-07 Existing Storm Drains: 2.5 miles
Alternative C: Triangle One-Way	1.06 acres	CSLT Fern Road Stormwater Basins (2) CTC Rocky Point Stormwater Treatment Parcels: 029-331-12, 029-331-11, and 029-332-01 CTC Rocky Point Stormwater Easements: 029-170-05, 029-170-04, 029-351-22, 029-341-04, and 029-363-07 Existing Storm Drains: 2.1 miles
Alternative D: PSR Alternative 2	5.76 to 7.91 acres	CSLT Fern Road Stormwater Basins (2) CTC Rocky Point Stormwater Treatment Parcels: 029-331-12, 029-331-11, and 029-332-01 CTC Rocky Point Stormwater Easements: 029-170-05, 029-170-04, 029-343-17, and 029-341-04 Existing Storm Drains: 2.4 miles
Alternative E: Skywalk	NA	NA
CTC = California Tahoe Conservancy; CSLT = City of South Lake Tahoe; NA = not applicable		
Source: Wood Rodgers 2015; adapted by Ascent Environmental in 2016		

Alternative B: Triangle (Locally Preferred Action)**Transportation Improvements**

Alternative B transportation improvements would create an increase in impervious surfaces of 5.47 acres with the proposed roundabout at the existing US 50/Lake Parkway intersection or 7.62 acres if that intersection were signalized. This would result in a corresponding increase in runoff volume and pollutant loading. The additional runoff generated by the project would be conveyed to the existing storm drain systems, as well as new storm drain systems that would be developed as components of the project.

A Stormwater Data Report would be prepared for the project and would evaluate all required BMPs for implementation. All runoff from Alternative B would be conveyed through permanent BMPs and Low Impact Development (LID) features to properly manage and treat the increased runoff velocity and volume. The types of BMPs that would be included in the project design are pollution prevention, runoff treatment, and temporary construction site BMPs. Specific treatment BMPs under consideration for this project include sand traps, biofiltration swales, and stormwater basins. Exhibit 3.10-3 shows the potential locations of stormwater basins installed to capture stormwater runoff from the Alternative B roadways. These basins would be located in the available right-of-way. The area available for water quality basins surpasses the amount of area necessary to contain the required water quality volume. Given the available area for stormwater basin and an assumed basin depth of three feet, the potential volume of stormwater that could be captured by the basin far exceeds the regulatory requirements. As required by Section 60.4.6 of the TRPA Code, the project would be designed to meet the infiltration requirements of a 20-year, 1-hour design storm event. The Lahontan RWQCB has estimated that facilities designed to treat or infiltrate this size of storm event effectively capture approximately 85 percent of the average annual runoff volume (SWRCB 2013). The combined volumes of the stormwater basins would exceed the regulatory requirements by an average of 500 percent and would be able to accept flows from a much larger storm (Wood Rodgers 2016).

The proposed alignment of Alternative B would affect the existing stormwater infrastructure systems described in Table 3.10-7. Approximately 2.5 miles of storm drain would be intersected by Alternative B, including components of the SSWA and City of South Lake Tahoe storm drain systems. These systems would

be reconstructed or improved as required to meet the increase in runoff volume generated by the project. The Fern Road Basins (owned by the City of South Lake Tahoe) would require reconstruction due to the disturbance caused by the widening of the adjacent roadway. These basins could potentially be expanded into the Rocky Point Stormwater Treatment parcels 029-331-11 and 029-331-12, similar to parcel 029-332-01, which is currently the site of the southernmost Fern Road Stormwater Basin. Portions of the Rocky Point Stormwater Easement parcels (see Table 3.10-7) would be permanently modified by the roadway realignment. Modifications could include the alteration of drainage paths or stormwater conveyance structures, or the reduction of natural areas currently used for infiltration of runoff. The Rocky Point Stormwater Project parcels, which were purchased by the Conservancy, currently provide a water quality benefit through infiltration or conveyance of stormwater runoff. The project-related modifications to these parcels could reduce their ability to meet the water quality goals for which they were purchased.

In summary, Alternative B transportation improvements would result in an increase in impervious surfaces, its implementation would require compliance with stringent SWRCB, Lahontan RWQCB, NDEP, and TRPA post-construction stormwater controls. Storage, infiltration, and treatment measures would be required to minimize runoff flows and volumes and prevent erosion and flooding downstream of the project site. Additionally, stormwater discharges would be required to comply with Lahontan RWQCB, NDEP, and TRPA water quality standards and the Lake Tahoe TMDL. However, the implementation of this alternative could reduce the capacity or effectiveness of existing stormwater basins and the infiltration capability of the previously described Rocky Point stormwater parcels. Because Alternative B transportation improvements would adversely affect existing stormwater management infrastructure, this would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative B to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative B would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements.

Alternative B mixed-use development, including replacement housing, would include the potential for construction of up to 227 new residential units on Sites 1, 2, and 3, and would add 5.76 acres of new impervious surfaces for the roundabout option or 7.62 acres for the signalized option, before reductions are made for transfer of excess allowable land coverage. All new construction would be required to meet TRPA stormwater management standards, including the mandate to fully infiltrate the runoff generated by the 20-year, 1-hour design storm or, if site constraints prevent this, to convey it to an off-site shared stormwater system approved by TRPA. The portions of the mixed-use sites that are within the Town Center designated in the Tourist Core Area Plan would be permitted a larger area of impervious coverage for high capability lands; however, any coverage exceeding the base allowable would be purchased and transferred from outside areas. This pattern of development reflects the goals of the Lake Tahoe Regional Plan (TRPA 2012b:2-10 to 2-14). Because the conceptual development would be required to infiltrate stormwater runoff from the design storm and would be accompanied by the transfer and restoration of land coverage from areas outside of the Town Center, the mixed-use development concept, including replacement housing, would result in a water quality benefit.

One of the potential sites for mixed-use development would encroach on the Fern Road Basins (owned by the City of South Lake Tahoe). These basins could potentially be expanded into the Rocky Point Treatment Parcels 029-331-11 and 029-331-12 (parcel 029-332-01 is currently the site of the southernmost Fern Road basin). It should be noted that the capacity of the existing basins combined is approximately 48,000 cubic feet. The potential capacity of the reconstructed basins at the proposed location could exceed 80,000 cubic feet (Wood Rodgers 2016).

Although Alternative B mixed-use development, including replacement housing, would result in an increase in impervious surfaces, its implementation would require compliance with stringent SWRCB, Lahontan RWQCB, NDEP, and TRPA post-construction stormwater controls, as described above, as well as Lahontan RWQCB, NDEP, and TRPA water quality standards and the Lake Tahoe TMDL. However, the implementation of this alternative could reduce the capacity or effectiveness of existing stormwater basins and the infiltration capability of the Rocky Point stormwater parcels. Because Alternative B would require use of existing stormwater management infrastructure for mixed-use development, there would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the mixed-use development, including replacement housing, as part of Alternative B to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for stormwater runoff environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential impacts related to stormwater runoff would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, at one or more of the mixed-use development sites would result in a **significant** impact from the potential for stormwater runoff environmental consequences.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative B transportation improvements and mixed-use development, including replacement housing, to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Alternative C: Triangle One-Way

Transportation Improvements

The effects of Alternative C transportation improvements on stormwater runoff would be similar to those described for Alternative B above. Alternative C would result in 1.06 acre of increase in impervious surfaces, which is 4.41 to 6.56 acres less than Alternative B. Despite this decrease in coverage relative to Alternative B, Alternative C would affect much of the same existing stormwater infrastructure, as shown in Table 3.10-7.

For the same reasons described above, Alternative C transportation improvements would be required to minimize runoff flows and volumes and all stormwater discharge would meet Lahontan RWQCB, NDEP, and TRPA water quality standards. As with Alternative B, stormwater runoff would be captured in stormwater basins (see Exhibit 3.10-4) with a storage capacity well in excess of the regulatory requirements. However, because Alternative C would adversely affect existing stormwater management infrastructure, including the Rocky Point stormwater parcels, this would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative C to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative C would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements.

Alternative C mixed-use development, including replacement housing, would include the potential for construction of up to 227 new residential units on Sites 1, 2, and 3 and would add 1.06 acres of new impervious surfaces, before reductions are made for transfer of excess allowable land coverage. The stormwater runoff impacts of Alternative C mixed-use development, including replacement housing, would be the same as those discussed for Alternative B above.

For the same reasons described above, Alternative C would be required to minimize runoff flows and volumes and all stormwater discharge would meet Lahontan RWQCB, NDEP, and TRPA water quality standards. However, because Alternative C would require use of existing stormwater management infrastructure for mixed-use development, there would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the mixed-use development, including replacement housing, as part of Alternative C to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for stormwater runoff environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential impacts related to stormwater runoff would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, at one or more of the mixed-use development sites would result in a **significant** impact from the stormwater runoff environmental consequences.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative C transportation improvements and mixed-use development, including replacement housing, to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

The effects of Alternative D transportation improvements on stormwater runoff would be similar to those described for Alternative B above. Alternative D would result in 5.76 to 7.91 acres of increase in impervious surfaces, which is an increase of 0.29 acre compared to Alternative B. Alternative D would affect much of the same existing stormwater infrastructure, as shown in Table 3.10-7, but would intersect one less parcel of the Rocky Point stormwater system.

As with Alternative B, stormwater runoff would be captured in stormwater basins (see Exhibit 3.10-5) with a storage capacity well in excess of the regulatory requirements. For the same reasons described above, Alternative D would be required to minimize runoff flows and volumes and all stormwater discharge would meet Lahontan RWQCB, NDEP, and TRPA water quality standards. However, because Alternative D transportation improvements would adversely affect existing stormwater management infrastructure, including the Rocky Point stormwater parcels, this would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative D to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative D would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements.

Alternative D mixed-use development, including replacement housing, would include the potential for construction of up to 224 new residential units on Sites 1, 2, and 3 and would add 5.76 to 7.91 acres of new impervious surfaces, before reductions are made for transfer of excess allowable land coverage. The stormwater runoff impacts of Alternative D mixed-use development, including replacement housing, would be the same as those discussed for Alternative B above.

For the same reasons described above, Alternative D would be required to minimize runoff flows and volumes and all stormwater discharge would meet Lahontan RWQCB, NDEP, and TRPA water quality standards. However, because would require use of existing stormwater management infrastructure for mixed-use development, there would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the mixed-use development, including replacement housing, as part of Alternative D to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for stormwater runoff environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential impacts related to stormwater runoff would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, at one or more of the mixed-use development sites would result in a **significant** impact from the stormwater runoff environmental consequences.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative D transportation improvements and mixed-use development, including replacement housing, to further reduce to the extent feasible the environmental consequences related to stormwater runoff.

Alternative E: Skywalk

Alternative E would create an impervious deck over an existing impervious surface and would therefore not create additional runoff volumes. Stormwater would be directed from the deck to existing drop-inlets along US 50; however, Alternative E would not modify or adversely affect existing stormwater infrastructure. Therefore, this alternative would have **no impact** relative to stormwater runoff for purposes of NEPA, CEQA, and TRPA.

Impact 3.10-4: Potential to affect groundwater through infiltration of polluted water or during excavation activities

Alternatives B, C, and D have the potential to affect groundwater through infiltration of polluted stormwater runoff in areas of shallow groundwater; however, this potential would be minimized through compliance with TRPA discharge limits and installation of water quality BMPs. Although Alternatives B, C, and D could involve excavation or construction activities that intercept groundwater, these activities would occur in accordance with TRPA Code requirements and would not alter the flow or direction of groundwater. Finally, although the project site is located near several drinking water wells, the land uses and activities proposed by the project present a minimal threat to these resources. Alternative E also has the potential to intercept groundwater during excavation activities; however, all excavation would occur in accordance with TRPA regulations and would not alter the flow or direction of groundwater. Alternative A is the no build alternative and would have no impact on groundwater resources.

NEPA Environmental Consequences: The design features of Alternatives B, C, D, and E would avoid or minimize the effects on groundwater such that no additional mitigation measures are needed or feasible to implement; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, D, and E; No Impact for Alternative A

Alternative A: No Build (No Project)

Alternative A is the no build alternative and would not intercept groundwater or alter the existing level of urban contaminants that occur in runoff infiltrated into the soil. For this reason, Alternative A would have **no impact** on groundwater resources for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)**Transportation Improvements**

The project site contains some areas of shallow groundwater (such as wetland and SEZ habitats) and areas where the seasonal groundwater table might be intercepted by deep excavation. In general, the soil environment provides biological and physical filtering for water as it infiltrates; however, in areas where groundwater tables are shallow, contaminants can migrate directly into groundwater aquifers and adversely affect groundwater quality.

Groundwater interception or interference is prohibited under TRPA Code Section 33.3.6. Exceptions are permitted on a case-by-case basis for situations where there are no viable alternatives and measures would be taken to avoid adverse impacts. Whenever excavations would be greater than 5 feet, a soils hydrologic report must be prepared to demonstrate that no interference would occur or that measures are incorporated to maintain groundwater flows, avoid impacts on SEZ vegetation, and prevent any groundwater from leaving the project site as subsurface flow. While the potential exists for project-related excavation to intercept groundwater, none of the project components would interfere with or redirect the flow of groundwater or alter the elevation of groundwater. Dewatering (in compliance with the NPDES permits discussed above) would be required in areas of high groundwater; however, this activity would be temporary and isolated and would not affect the availability of groundwater for public use. Additionally, all build alternatives would follow

TRPA's grading ordinances requiring prior investigation and reporting of any potential interruption or redirection of groundwater flow for review and approval.

Alternative B transportation improvements would generate common urban pollutants (described under Impact 3.10-1) that would be carried with runoff and could infiltrate into the soil. Section 61.1 of the TRPA Code specifies that water infiltrated into soils should not contain excessive amount of nutrients, sediment, or oil and grease. Where a direct hydrologic connection exists between groundwater and surface waters (such as in riparian areas), discharge to groundwater must meet surface water discharge standards. The existence of a direct hydrologic connection is assumed to exist when, because of proximity to surface water, slope, or soil characteristics, the discharged water does not remain in the soil long enough to remove pollutants. The TRPA numeric discharge limits for surface water and groundwater are shown in Table 3.10-2.

The project site is within the 600-foot buffer zone of 15 active privately-owned wells and two inactive public wells (TRPA 2004). Because the project would not add any industrial land uses that could release contaminants into deep groundwater aquifers, the potential threat to these wells is minimal. The common urban pollutants generated by roadways, landscaped areas, and residential or mixed-use development are managed through the required installation and maintenance of permanent BMPs and through the TRPA standards for discharge to groundwater. For these reasons, the potential for Alternative B transportation improvements to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative B would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The mixed-use development, including replacement housing, would be required to comply with the same TRPA requirements for protection of groundwater discussed above.

Alternative B mixed-use development, including replacement housing, has the potential to affect groundwater through infiltration of polluted stormwater runoff in areas of shallow groundwater; however, this potential would be minimized through compliance with TRPA discharge limits and through the installation of water quality BMPs as discussed above. Although Alternative B could involve excavation or construction activities that intercept groundwater, these activities would occur in accordance with TRPA Code requirements. Finally, although Alternative B is located near several drinking water wells, the land uses and activities proposed by the project present a minimal threat to these resources. For these reasons, the potential for Alternative B mixed-use development, including replacement housing, to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative B would avoid or minimize the impacts on groundwater such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for groundwater environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis

of the potential groundwater impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on groundwater.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative B would minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

The effects of Alternative C transportation improvements on groundwater resources would be the same as described for Alternative B. The project would be required to comply with TRPA discharge limits and install water quality BMPs as discussed above. For these reasons, the potential for Alternative C transportation improvements to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would avoid or minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative C would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements.

The effects of Alternative C mixed-use development, including replacement housing, on groundwater resources are the same as those described for Alternative B. Alternative C would be required to comply with TRPA discharge limits, water quality BMPs requiring separation of runoff and groundwater, and completion of a soils/hydrology study for deep excavations and would not include industrial land uses. For these reasons, the potential for Alternative C mixed-use development, including replacement housing, to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative C would avoid or minimize the impacts on groundwater such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for groundwater environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential groundwater impacts would be speculative at this time. Full, project-level environmental

review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on groundwater.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative C would minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

The effects of Alternative D transportation improvements on groundwater resources would be the same as those described for Alternative B. The project would be required to comply with TRPA discharge limits and install water quality BMPs as discussed above. For these reasons, the potential for Alternative D transportation improvements to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would avoid or minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative D would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements.

The effects of Alternative D mixed-use development, including replacement housing, on groundwater resources would be the same as those described for Alternative B. Alternative D would be required to comply with TRPA discharge limits, water quality BMPs requiring separation of runoff and groundwater, and completion of a soils/hydrology study for deep excavations and would not include industrial land uses. For these reasons, the potential for Alternative D mixed-use development, including replacement housing, to adversely affect groundwater resources would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative D would avoid or minimize the impacts on groundwater such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for groundwater environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential groundwater impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on groundwater.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative D would minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

Alternative E would affect groundwater only through the potential interception of groundwater during excavation for the construction of the skywalk piers. As required by TRPA and as described above for Alternative B, the project would be required to prepare a soils/hydrologic report to demonstrate that no interference would occur or that measures are incorporated to maintain groundwater flows, avoid impacts on SEZ vegetation, and prevent any groundwater from leaving the project site as subsurface flow. Therefore, the potential for Alternative E to affect the flow or direction of groundwater would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would avoid or minimize the groundwater environmental consequences such that no additional mitigation measures are needed or feasible to implement.

3.10.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure 3.10-3: Protect functionality of Rocky Point Stormwater Improvements

This mitigation measure applies to Alternatives B, C, and D transportation improvements and mixed-use development, including replacement housing, for the purposes of NEPA, CEQA, and TRPA.

The project proponent shall demonstrate that all Rocky Point Stormwater Improvements continue to meet the goals for which they were established, including meeting or exceeding 6.4 pounds of sediment reduction per State of California dollar spent on site improvements. If the functionality of the Rocky Point property and facilities cannot be maintained, the project design would be modified to replace these facilities with land and infrastructure that is at least as effective as the current facilities, or more effective. In the event that any portion of the project encroaches on the existing City of South Lake Tahoe stormwater basins at Fern Road, these basins would be reconstructed in place or replaced in-kind within available right-of-way. The net result would be the maintenance of existing stormwater facilities or the replacement of affected facilities with equivalently or more effective stormwater management land and infrastructure. The specific location and design of the replacement infrastructure would be defined during detailed design development.

Significance after Mitigation

The implementation of Mitigation Measure 3.10-3 would avoid or compensate for the potential of the project to adversely affect the functionality of existing stormwater infrastructure systems. This mitigation measure would reduce the potential impacts on existing stormwater infrastructure to a **less-than-significant** level for Alternatives B, C, and D for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the environmental consequences of implementing Alternatives B, C, and D with Mitigation Measure 3.10-3 **would not be adverse**.

3.11 GEOLOGY, SOILS, LAND CAPABILITY, AND COVERAGE

This section contains an evaluation of the potential impacts on geology, soils, land capability, and coverage associated with the implementation of the US 50/South Shore Community Revitalization Project alternatives. The analysis includes a description of existing conditions and an evaluation of changes to geologic conditions, relevant soil properties, and associated elements of land capability and coverage. Regulations and guidelines established by the Tahoe Regional Planning Agency (TRPA) and local jurisdictions, along with the California Environmental Quality Act (CEQA) statute and guidelines, provide the regulatory background that guides the assessment of potential environmental effects on these resources. This section is also based on information provided in the Preliminary Geotechnical Report prepared for the project by Parikh Consultants in 2011 for Wood Rodgers (Parikh Consultants 2011).

Potential environmental effects related to water quality resulting from soil erosion and other stormwater issues are addressed in Section 3.10, “Water Quality and Stormwater Runoff.” Section 3.10 also includes a discussion of excavation in excess of 5 feet as it relates to groundwater interception. Cumulative impacts on geology, soils, land capability and coverage are addressed in Section 3.19, “Cumulative Impacts.”

Comments received on the Notice of Preparation/Notice of Intent related to geology, soils, land capability, and coverage include requests for discussion of land coverage increases and transfers. These topics are discussed in the analysis below.

The project site does not contain expansive soils or slopes that could become unstable or generate landslides or avalanche. Additionally, TRPA regulations prohibit mining and the construction of septic tanks or wastewater disposal systems within the Lake Tahoe Basin. These topics are not discussed further in this document.

3.11.1 Regulatory Setting

Regulations protecting the soil resources in the study area are enforced by TRPA, the Lahontan Regional Water Quality Control Board (RWQCB) (through water quality regulations), the Nevada Department of Environmental Protection, the City of South Lake Tahoe, and Douglas County in Nevada. Other regulations aid in the establishment of safe structures to ensure minimal, if any, impact on earth resources. The following discussion provides the background for applicable earth resource requirements in the Tahoe Region.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The Department’s Office of Earthquake Engineering is responsible for assessing the seismic hazard for Department projects. Structures are designed using the Department’s Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge’s category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the Department’s *Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria*.

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For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects “outstanding examples of major geological features.” Topographic and geologic features are also protected under the CEQA.

National Earthquake Hazards Reduction Act

The National Earthquake Hazards Reduction Act was passed to reduce the risks to life and property resulting from earthquakes. To accomplish this, the act established the National Earthquake Hazards Reduction Program (NEHRP). The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. NEHRP designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRP agencies include the National Institute of Standards and Technology, National Science Foundation, and the U.S. Geological Survey (USGS).

National Pollutant Discharge Elimination System

The U.S. Environmental Protection Agency (EPA) regulates water quality in stormwater runoff through implementation of the National Pollutant Discharge Elimination System (NPDES) (55 Code of Federal Regulations [CFR] 47990). NPDES permits are intended to address land uses and activities that could create erosion or sediment transportation and potentially degrade water quality. Compliance with these permits requires implementation of erosion control best management practices (BMPs) and preparation of a Storm Water Pollution Prevention Plan (SWPPP) to minimize erosion and sediment transport adjacent to water bodies. In California, EPA has delegated implementation of the NPDES to the State Water Resources Control Board and its nine regional boards. Refer to Section 3.10, “Water Quality and Stormwater Runoff,” for a more detailed discussion.

TAHOE REGIONAL PLANNING AGENCY

Environmental Threshold Carrying Capacities

TRPA has established threshold carrying capacity standards and indicators for soil conservation. TRPA threshold standards are minimum standards of environmental quality to be achieved in the Tahoe Region. Every 5 years, TRPA evaluates the attainment status of all TRPA threshold standards. The 2015 Threshold Evaluation was completed in December 2016 (TRPA 2016).

TRPA has two soil conservation threshold standard indicator reporting categories:

- Land Coverage (impervious cover) Threshold Standard to comply with allowable land coverage limitations established in the Land Capability Classification of the Lake Tahoe Basin. This threshold standard indicator reporting category consists of nine different standards for the nine separate land capability districts (LCDs). All soils within the Tahoe Region have been assigned an LCD based on their ability to tolerate disturbance and development while retaining their natural function. LCDs 1a to 3 are considered sensitive to and LCD 7 is considered the most tolerant of development.
- Stream Environment Zone (SEZ) Threshold Standard to restore 25 percent of the SEZ lands that have been identified as disturbed, developed or subdivided to attain a 5 percent increase in the area of naturally functioning SEZ lands. LCD 1b comprises SEZ lands.

The 2015 status of the Tahoe Region’s soil conservation threshold standards is considerably better than the target for LCDs 1a and 3 through 6; somewhat better than the target for LCDs 1c and 7; and considerably worse than the target for LCD 1b. The 2015 status of the SEZ restoration threshold is considerably worse than the target.

Lake Tahoe Regional Plan

Several components of the Lake Tahoe Regional Plan address policies and regulations pertaining to geology, soils, land capability, and coverage: Goals and Policies, Code of Ordinances, and Water Quality Management Plan (TRPA 2012).

Goals and Policies

Goals and policies applicable to geology, soils, land capability, and coverage are included in several elements and subelements of the Goals and Policies document of the Regional Plan. The Natural Hazards Subelement of the Land Use Element addresses risks from natural hazards (e.g., flood, fire, avalanche, and earthquake). Specifically, Goal 1, Policy LU-2 prohibits new construction on, or disturbance of land within the 100-year floodplain and in the area of wave run-up except as necessary to implement the goals and policies of the Plan; and requires all public utilities, transportation facilities, and other necessary public uses located in the 100-year floodplain and area of wave run-up to be constructed or maintained to prevent damage from flooding and to not cause flooding. The Water Quality Subelement of the Land Use Element includes goals to reduce loads of sediment and algal nutrients to Lake Tahoe (Goal WQ-3); meet sediment and nutrient objectives for tributary streams, surface runoff, and subsurface runoff (Policy WQ-3.1); restore 80 percent of the disturbed lands relative to the 1983 baseline (Policy WQ-3.2); and specifies that the implementation of BMPs shall be required as a condition of approval for all projects (Policy WQ-3.12). The Soils Subelement of the Conservation Element addresses soil erosion and loss of soil productivity through policies pertaining to coverage, including allowable coverage for categories of land uses in specific LCDs (Policies S-1.1 and S-1.2). This subelement also addresses special regulations regarding construction and soil-disturbing activities occurring between October 15 and May 1 (Policy S-1.6) and restoration of disturbed areas in SEZs (Policy S-1.7). The full text of these goals and policies, along with a discussion of the project's consistency with the goals and policies, is included in Appendix E, "Goals and Policies Consistency Analysis."

Code of Ordinances

The TRPA Code of Ordinances implements the Regional Plan Goals and Policies. The following TRPA Code provisions are most relevant to the geology, soils, land capability, and coverage aspects of the US 50/South Shore Community Revitalization Project.

Chapter 30 – Land Coverage Standards

Since the late 1970s, TRPA has used the land capability classification system known as the Bailey System (Bailey 1974) to guide land use planning, policy formulation related to the impacts of development on soil erosion, and permitting of development. The Bailey System was developed as a threat assessment and planning tool to identify and mitigate adverse impacts on water quality and stream systems that occur from surface runoff and erosion related to development. The Bailey System is the basis of the land coverage standards and limitations set forth in Chapter 30 of the TRPA Code.

Coverage is defined by TRPA as a human-built structure or other impervious surface that prevents normal precipitation from directly reaching the surface of the land underlying the structure, therefore precluding or slowing the natural infiltration of water into the soil (Code Chapter 90). TRPA further defines coverage as impervious surface (hard coverage) or compacted soil (soft coverage). Research has established the connection between impervious surfaces and water quality. Specifically, coverage may affect water quality as it reduces the amount of soil available to infiltrate water and has the potential to result in surface runoff, erosion, and delivery of pollutants to receiving waters.

The Bailey System assigns LCDs based primarily on soil characteristics and slope. The LCDs reflect the amount of development that a given site can support without experiencing soil or water quality degradation. The LCDs range from 1 to 7, with 1 being the most environmentally sensitive and 7 being most suitable for supporting development (Table 3.11-1). 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.

For parcels of up to 20 acres, parcel size is used to determine the amount of allowable coverage for a project site. As described in Code Section 30.4.1.C.3.b.i, however, highways, streets, roads, and the easements or rights-of-way allowing potential land coverage for linear public facilities, highways streets, and roads are not included within a project site.

Table 3.11-1 Land Capability Districts for Lake Tahoe Region

Capability Levels	Tolerance for Use	Slope Percent	Relative Erosion Potential	Runoff Potential	Disturbance Hazards	
7	Most	0-5	Slight	Low to moderately low	Low hazard	
6		0-16				
5		0-16		Moderately high to high		
4		9-30	Moderate	Low to moderately low	Moderate hazard lands	
3		9-30		Moderately high to high		
2			30-50	High	Low to moderately low	High hazard lands
1a	Least	30+	Moderately high to high			
1b	(Poor Natural Drainage)					
1c	(Fragile Flora and Fauna)					

Source: Bailey 1974

Exemption from Land Coverage Calculations for Non-Motorized Trails

Section 30.4.6.D.3 of the TRPA Code provides an exemption from land coverage calculations for non-motorized public trails. To qualify for this exemption, the non-motorized trail must be a component of the trail network identified in the Lake Tahoe Region Bike Trail and Pedestrian Plan; open to the public in perpetuity, at no cost; be routed to minimize disturbance of sensitive land and removal of large trees and riparian vegetation; meet industry standard engineering criteria; provide elevated stream crossings; incorporate appropriate BMPs; and minimize disturbance to sensitive wildlife habitat.

Exceptions to Prohibition in Land Capability District 1b (Stream Environment Zone)

Section 30.5 of the TRPA Code prohibits additional land coverage in low capability LCDs unless the project meets certain exceptions. The following exception applies to the prohibition of land coverage and disturbance in LCD 1b (Stream Environment Zone):

C. Public Service Facilities

Land coverage and disturbance for public service facilities may be permitted in LCD 1b (Stream Environment Zone) if TRPA finds that:

1. The project is necessary for public health, safety, or environmental protection;
2. There is no reasonable alternative, including a bridge span or relocation, that avoids or reduces the extent of encroachment in the stream environment zone; and
3. The impacts of the land coverage and disturbance are fully mitigated through application of BMPs and restoration in accordance with Section 30.5.3 in the amount of 1.5 times the area of SEZ land covered or disturbed by the project.

Linear Public Facilities (LPFs) are a sub-category of the TRPA-defined Public Service Facilities. The allowable land coverage permitted for an LPF is limited to the minimum amount needed to achieve its public purpose (TRPA Code Section 30.4.2.D). If an LPF requires more land coverage than allowed by Table 4.5-2 [in Section 30.5 of the TRPA Code], the additional coverage may be purchased from a land coverage bank, or transferred from another parcel. In order to qualify for this special consideration, the LPF must be necessary (per TRPA Code Section 50.8.1), minimize the amount of new coverage, and be operated by a public agency, and must demonstrate that there are no feasible alternatives.

Chapter 60 – Water Quality

Chapter 60 of the TRPA Code sets forth requirements for installation of BMPs for the protection or restoration of water quality and attainment of minimum discharge standards. Projects shall comply with temporary and permanent BMP programs as a condition of project approval.

Chapter 33 – Grading and Construction

Chapter 33 of the TRPA Code describes the various standards and regulations that protect the environment against significant adverse effects from excavation, filling, and clearing, resulting from such conditions as exposed soils, unstable earthworks, or groundwater interference.

Tourist Core Area Plan

The City of South Lake Tahoe, in conjunction with and approval from TRPA, adopted the Tourist Core Area Plan (TCAP) on October 15, 2013, which largely replaced the Stateline/Ski Run Community Plan of 1994. The tourist core stretches approximately 2 miles along US 50 from Fairway Drive to the California/Nevada state line and along Ski Run Boulevard from Lake Tahoe to Pioneer Trail. This area functions as the primary visitor and tourist district in South Lake Tahoe and provides direct access to recreation opportunities such as Heavenly Ski Resort, Edgewood Golf Course, Ski Run Marina, Lakeside Marina, and Van Sickle Bi-State Park.

TCAP goals and policies for soil and geologic resources that are applicable to the project are found in the Natural and Cultural Resources section. Water quality policies include a requirement for installation of BMPs on all projects identified in the MOU between TRPA and the City of South Lake Tahoe (Policy NCR-3.1). Land coverage policies address reduction of onsite land coverage through environmental redevelopment (Policy NCR-4.1); opportunities for coverage reduction (Policy NCR-4.2); landscaping features in all private and public redevelopment projects (Policy NCR-4.3); and transferring hard coverage from SEZs and other sensitive lands to high capability lands (Policy NCR-4.4). The full text of these goals and policies, along with a discussion of the project's consistency with the goals and policies, is included in Appendix E, "Goals and Policies Consistency Analysis."

South Shore Area Plan

Douglas County, in conjunction with and with approval from TRPA, prepared and approved the South Shore Area Plan (SSAP) on November 21, 2013. The SSAP replaced the Stateline Community Plan; Kingsbury Community Plan; a portion of Plan Area Statement 070A (Edgewood), including Special Area #1 (C-070A SA1); and a portion of Plan Area Statement 080 (Kingsbury Drainage), including Special Area #2 (R-080 SA2). The SSAP has been developed to build upon the concepts in the South Shore Vision Plan, as well as be consistent with the goals and policies in the 2012 TRPA Regional Plan. The SSAP includes four separate components that are integrated into Douglas County planning documents: the Douglas County Master Plan, Zoning Map, Development Code, and Design Criteria and Improvement Standards.

STATE**California****National Pollutant Discharge Elimination System Permits and Stormwater Pollution Prevention Plans**

In California, the State Water Resources Control Board (SWRCB) administers the federal NPDES for EPA. In turn, the SWRCB's jurisdiction is administered through nine regional water quality control boards, which provide region-specific water quality standards and control measures to implement the federal Clean Water Act (see discussion in Section 3.10, "Water Quality and Stormwater Runoff"). The Lahontan RWQCB is responsible for regulating surface water and groundwater quality within the Tahoe Basin, including the project site. The Water Quality Control Plan for the Lahontan Region (Lahontan RWQCB 2015) establishes water quality objectives enforced through federal NPDES permits.

Under these federal regulations, an operator must obtain a General Permit through the NPDES Stormwater Program for all construction activities with ground disturbance of 1 acre or more. The General Permit requires the implementation of BMPs to control erosion and reduce sedimentation into surface waters. One element of compliance with the NPDES permit is preparation of a SWPPP that addresses prevention and control of water pollution, including sediment, in runoff during construction. (See Section 3.10, “Water Quality and Stormwater Runoff,” for more information about the NPDES permit process and SWPPPs.)

Lake Tahoe Water Quality Management Plan (208 Plan)

The Lake Tahoe Water Quality Management Plan (also known as the 208 Plan, in reference to the pertinent section of the Clean Water Act) is a framework that sets forth the components of the water quality management system in the Lake Tahoe Region, the desired water quality outcomes for the Tahoe Basin, and the mechanisms adopted by the relevant entities to achieve and maintain those outcomes. The agencies with primary responsibility for regulatory oversight of water quality in the Basin is the Lahontan Regional Water Quality Control Board and the Nevada Division of Environmental Protection; other entities with regulatory responsibility for aspects of water quality are TRPA and the U.S. Army Corps of Engineers. The *Best Management Practices Handbook* (TRPA 2014a) provides technical guidance and assistance to engineers, architects, consultants, builders, homeowners, and other agencies proposing a project in the Tahoe Basin that may affect water quality. It identifies and recommends BMPs for various situations. Elements of the 208 Plan relevant to geology, soils, land capability, and coverage are as follows:

- ▲ **Best management practices:** Use of BMPs is mandatory for all new development; BMPs must be retrofitted for existing development and are required for resource management uses (e.g., timber harvest, livestock grazing).
- ▲ **Land coverage restrictions:** The land capability system limits the amount of allowable impervious surface coverage, especially on lands with high erosion hazard and in SEZs. Limited exceptions for public projects, coverage transfer, and coverage relocation are provided in Code of Ordinances Chapter 30.
- ▲ **Roads and rights-of-way:** The Lahontan RWQCB requires controls for potential erosion from new and existing roads, road maintenance activities, and snow and ice control.

California Tahoe Conservancy

The mission of the California Tahoe Conservancy (Conservancy) is to preserve, protect, restore, enhance, and sustain the unique and significant natural resources and recreational opportunities of the Lake Tahoe Region (7.42 California Government Code, Sections 66905–66908.3). The Conservancy’s jurisdiction extends throughout the California side of the Tahoe Region, as defined in California Government Code Section 66905.5. In 1987, the Conservancy authorized staff to develop and implement a land coverage (land bank) program. Through this program, the Conservancy acquires properties eligible for purchase from willing sellers. The development potential on these properties is then retired. All rights and credits acquired by the Conservancy are stored in a land bank. Through a Memorandum of Understanding (MOU) with TRPA, the Conservancy is authorized to receive disbursements of TRPA excess coverage mitigation fees to perform coverage reduction through its land bank (TRPA and Conservancy 1988). The MOU also authorizes the Conservancy to sell coverage rights on the open market and conduct SEZ restoration or mitigation for private or public service projects through the land bank.

The benefits of the Conservancy’s land coverage program include acquisition and restoration of developed areas that have become degraded and that contribute, or have the potential to contribute, to water quality problems; protection of undeveloped land before development activities generate the need for mitigation; ongoing management to ensure that resource benefits are sustained; assistance to property owners in complying with regional land coverage policies so they may construct or rehabilitate homes and businesses; and actions to simplify and expedite public and private projects.

In the study area, the Conservancy owns and manages the California portion of the Van Sickle Bi-State Park. In accordance with an MOU with Nevada Division of State Parks, the Conservancy manages the property for its recreational, cultural, and natural resource values, including soil conservation.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (Public Resources Code Sections 2621–2630) was passed in 1972 to mitigate the hazard of surface faulting to structures designed for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace (the intersection of a fault with the ground surface) of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as Earthquake Fault Zones around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (Public Resources Code Sections 2690–2699.6) addresses earthquake hazards from nonsurface fault rupture, including liquefaction and seismically induced landslides. The act established a mapping program for areas that have the potential for liquefaction, landslide, strong ground shaking, or other earthquake and geologic hazards. The act also specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

California Building Standards Code

The State of California provides minimum standards for building design through the California Building Standards Code (California Code of Regulations, Title 24). The California Building Code (CBC) applies to building design and construction in the state and is based on the International Building Code used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). In the CBC, the International Building Code has been modified for California conditions with more detailed and/or more stringent regulations.

The state earthquake protection law (California Health and Safety Code Section 19100 et seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design.

Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, and Chapter 33 regulates grading activities, including drainage and erosion control and construction on unstable soils, such as expansive soils and areas subject to liquefaction.

Nevada**Nevada Division of Environmental Protection**

The Nevada Division of Environmental Protection (NDEP), Bureau of Water Quality Planning administers the NPDES program authorized by the federal Clean Water Act within the state of Nevada. All projects disturbing more than 1 acre of land must obtain a NPDES General Permit for stormwater discharge associated with construction activity. As described above, NPDES permits are intended to address land uses and activities that could create erosion or sediment transportation and potentially degrade water quality. Refer to Section 3.10, “Water Quality and Stormwater Runoff,” for a more detailed discussion.

Nevada Division of State Lands

The Nevada Division of State Lands (NDSL) leads the state’s programs to protect Lake Tahoe. NDSL administers the excess coverage mitigation program for the Nevada portion of the Lake Tahoe Region, which is funded by excess coverage mitigation fees disbursed from TRPA. The objective of this program is to improve the water quality of Lake Tahoe through the retirement of land coverage and restoration of disturbed lands. This program acquires land and land coverage. Acquired lands are protected and are not

available for development or disposal. Management goals include clean water, healthy forests, the reduction of excess fire fuels and hazardous forest conditions, good wildlife habitat, and reasonable public access.

LOCAL

Area Plans

The Tourist Core Area Plan and the South Shore Area Plan are joint planning documents prepared by the local jurisdictions, City of South Lake Tahoe and Douglas County, and TRPA. The goals and policies of these plans are discussed above under “Tahoe Regional Planning Agency.”

City of South Lake Tahoe General Plan

The City of South Lake Tahoe adopted the 2030 General Plan on May 17, 2011. The 2030 General Plan is the City’s policy document containing elements that guide land use, transportation, public facilities and services, recreation, natural resources, and other decisions in compliance with the TRPA Regional Plan. The Health and Safety Element of the General Plan contains goals and policies applicable to the build alternatives, including a requirement buildings and structures in the City are constructed to withstand seismically-induced ground shaking and related geologic hazards (Policy HS-3.1). The full text of these goals and policies, along with a discussion of the project’s consistency with the goals and policies, is included in Appendix E, “Goals and Policies Consistency Analysis.”

South Lake Tahoe City Code

The South Lake Tahoe City Code requires the submission of engineered plans for all large projects (Section 7.20.280). The required components of engineered plans are described in Section 7.20.290 and include a detailed erosion and sediment control plan showing the specific locations, construction details, and supporting calculations for temporary and permanent structural BMPs and facilities; a revegetation plan describing temporary and permanent erosion control plantings, groundcovers, and irrigation facilities; a drainage study; and a geotechnical investigation report providing recommendations addressing the proposed work. Geotechnical investigations are required when the proposed grading exceeds 10 feet in depth at any point, when highly expansive soils are present, and in areas of known or suspected geological hazards. All projects must meet the minimum standards provided in the City of South Lake Tahoe Public Improvement and Engineering Standards.

Douglas County Master Plan

The 15-year update of the Douglas County Master Plan was adopted on March 1, 2012. This updated included the adoption of the SSAP, which incorporated the relevant updates from the 2012 TRPA Regional Plan into the Douglas County Code and Douglas County Master Plan. The Douglas County Master Plan contains several elements that detail goals, policies, and actions for future development within Douglas County, Nevada. The Environmental Resources and Conservation Element of the Master Plan describes the concerns related to the natural environment in Douglas County and measures needed to protect these resources as well as to protect public health and safety. The County has established goals to minimize danger and damage to county residents from geologic hazards (ERC Goal 1) and to protect future residents from safety hazards (ERC Goal 2). The full text of these goals, along with a discussion of the project’s consistency with them, is included in Appendix E, “Goals and Policies Consistency Analysis.”

Douglas County Building and Development Ordinances

Douglas County Consolidated Development Code Title 20, Chapter 20.690, “Property Development Standards,” contains provisions related to grading activities in hillside areas with slopes of 15 percent or greater and having a minimum vertical rise of at least 30 feet. Chapter 20.690, Section K(4) requires that a slope analysis and a grading plan, prepared by a Nevada registered professional engineer, be submitted to the Community Development Department for review and approval. The grading plan must include data on proposed slopes, drainage patterns, storm water detention, and cross-section exhibits showing preliminary cut-and-fill areas. An applicant must also submit an erosion control and re-vegetation plan prepared by a

Nevada licensed landscape architect, registered forester, or civil engineer. Chapter 20.690, Section K(6) sets forth Douglas County grading standards that apply in hillside areas.

3.11.2 Affected Environment

GEOLOGY AND TOPOGRAPHY

Regional Geology

The study area is located in the Sierra Nevada geomorphic province. The Sierra Nevada mountain range is a tilted fault block with a gentle western slope and a steep, rugged eastern escarpment. It runs through eastern California and a small portion of western Nevada, from the Mojave Desert in the south to the Cascade Range and Modoc Plateau on the north, for more than 400 miles and averages 50 to 80 miles wide. The Sierra Nevada geomorphic province is primarily composed of massive granitic bedrock, remnants of metavolcanic and metasedimentary rocks (volcanic and sedimentary rocks subsequently subjected to substantial heat and pressure), and more recent volcanic and sedimentary rocks. It is bounded on the west by sedimentary rocks of the Great Valley geomorphic province and on the north by volcanic sheets extending south from the Cascade Range (California Department of Conservation, California Geological Survey [CGS] 2002).

The Lake Tahoe Basin is located in the northern Sierra Nevada, between the Sierra crest to the west and the Carson Range to the east, and is one of the most prominent mountain ranges in California. Faulting and volcanism created the Lake Tahoe Basin over 2 million years ago, and as a result, the Basin contains granitic, metamorphic, and volcanic rock (Saucedo 2005). The bedrock in the Tahoe Basin is predominantly Cretaceous granodiorite of the Sierra Nevada batholith. Cretaceous rock formed during the later period of the Mesozoic Era, characterized by the development of flowering plants and ending with the sudden extinction of the dinosaurs and many other forms of life. Pre-Cretaceous metamorphic rocks are found in localized areas.

Over the past 1.5 million years, the Lake Tahoe Region has been altered by glacial activity, and most of the landforms surrounding the Lake are a result of glaciation. During glacial activities, valley glaciers dammed the Truckee River Canyon, raising the water level of Lake Tahoe. Lacustrine sediments (those formed at the bottom of lakes) were deposited in the bays and canyons around the Lake as a result of rising water levels. The faulting, folding, and (in some cases) overturning of rock formations that has taken place during various periods of geologic activity, in combination with erosion, deposition, and subsequent cementation of rock materials that occurred during relatively quiet periods, have left a complex arrangement of geologic rock types and structures in the area. The extraordinary clarity of Lake Tahoe is related to the prevalence of resistant granitic bedrock in the Lake Tahoe Basin and the unusually small drainage basin relative to the size of Lake Tahoe.

A review of the Geologic Map of the Lake Tahoe Basin (Saucedo 2005) indicates that there is a strong geologic split between the east and west sides of the project site. The eastern side of the project site is located on Cretaceous-era (145–65 million years ago) granodiorite rock, specifically the East Peak (Keg) and Bryan Meadows (Kbm) granodiorite. Near the resort-casinos the geology shifts to Pleistocene-era (1.8 million–10,000 years ago) Lacustrine terrace deposits (Qlt), which continue westward until reaching more recent beach deposits along the shore of Lake Tahoe.

Site Topography

Slope of the land is an important consideration in development planning. Slopes, in conjunction with soil types, geological and seismic hazards, and scenic vistas, are potential limitations to development. Typically, challenges associated with development on slight slopes are minimal. Development on steep slopes, hillsides, and ridgelines has greater potential for erosion problems, has lower rates of revegetation, can degrade the aesthetic value of the natural environment, and can represent hazards to the land itself.

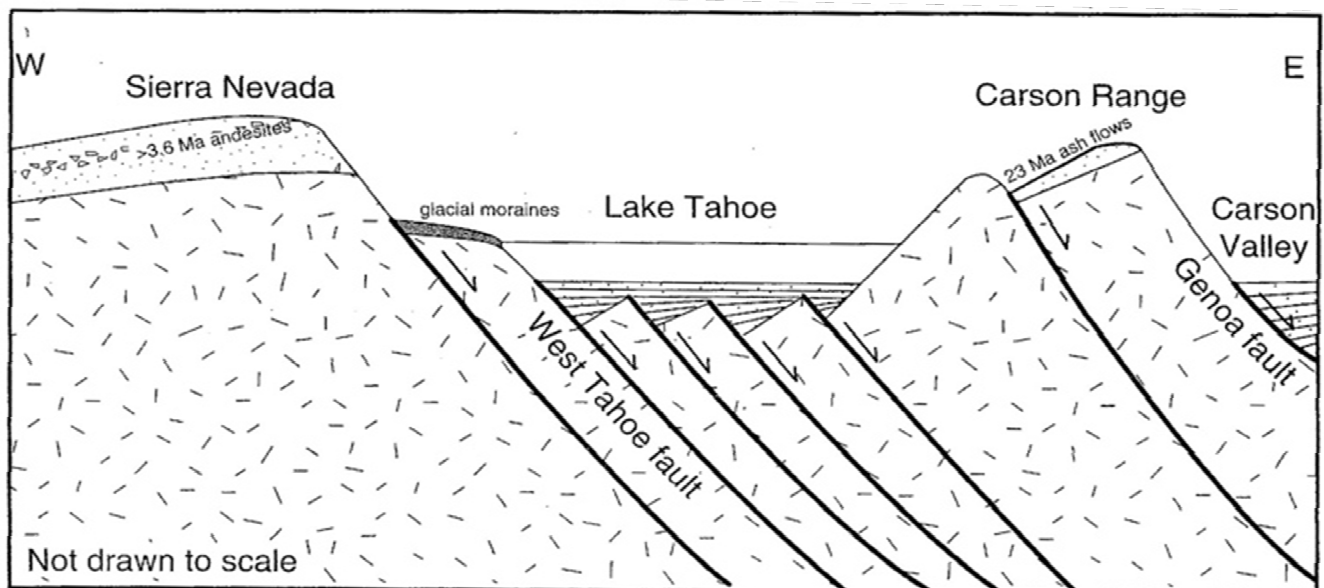
The project site is located on the South Lake Tahoe 7.5-minute USGS quadrangle map. The project site is located on gently sloping terrain between the foot of East Peak and the shore of Lake Tahoe. Elevations range from 6,400 feet in the areas around Van Sickle Bi-State Park to 6,240 feet west of the tourist core.

Seismicity

An earthquake is classified by the amount of energy released, which traditionally has been quantified using the Richter scale. Recently, seismologists have begun using a moment magnitude (M) scale because it provides a more accurate measurement of the size of large earthquakes. For earthquakes of less than M 7.0, the moment and Richter magnitude scales are nearly identical. For earthquakes greater than M 7.0, readings on the moment magnitude scale are slightly higher than the corresponding Richter magnitude.

The intensity of seismic shaking, or strong ground motion, during an earthquake is dependent on the distance and direction from the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions of the surrounding area. Ground shaking may result in damage to or collapse of buildings and other structures. Most earthquakes occur along faults, which are fractures or geological areas of weakness, with rocks on one side being displaced with respect to those on the other side. Most faults are the result of repeated displacement that may have taken place suddenly and/or by slow creep (Bryant and Hart 2007:3).

Faulting was a key element in the formation of Lake Tahoe. The Lake Tahoe Basin lies in a graben (a trench between two faults) between the Sierra Nevada and the Carson Range (as shown in Exhibit 3.11-1). The outlet of the Basin was repeatedly dammed by volcanic eruptions and glacial ice dams (Schweickert et al. 2000). The nature of the seismic hazard in the Lake Tahoe Region was not appreciated for many years because the active faults within the Lake Tahoe Basin are covered by the lake itself. The portions of the Basin faults that show the greatest activity and strain are underwater, with activity diminishing as they move on-shore (Seitz and Kent 2004). Additionally, recent work analyzing sediment cores from the bottom of Lake Tahoe show that local earthquakes trigger landslides in the Lake (Seitz 2013). It is likely that many of the landslides evident with the Lake Tahoe Basin (including the ancient, catastrophic, five-mile wide landslide that formed McKinney Bay) were triggered by earthquakes (Dingler 2007).



Source: Schweickert et al. 2000

Exhibit 3.11-1

Model of Lake Tahoe Basin Half-Graben

The California State Mining and Geology Board defines an active fault as one that has had surface displacement within the last 11,000 years (CGS 2008) (Table 3.11-2). Three active faults occur within the Basin (Table 3.11-2): The West Tahoe–Dollar Point Fault (the longest, at 45 kilometers), the Stateline–North Tahoe Fault, and the Incline Village Fault (Brothers et al. 2009). Recent studies indicate that all three of these faults have experienced large rupture events within recent geologic time (Dingler 2007, Seitz and Kent 2004). Of the three faults, the West Tahoe–Dollar Point Fault has the fastest slip rate (the rate at which two faults pass each other or build tension), and its most recent confirmed rupture event was approximately 4,000 years ago (Brothers et al. 2009). The high slip rate, the height of scarps (earthquake-generated breaks in ground surface), and the length of time since the last event indicate that the West Tahoe–Dollar Point Fault could generate an earthquake with a magnitude greater than seven (Brothers et al. 2009). The height of scarps along the Incline Village Fault show that this fault has experienced several M 7.0 events and that it last ruptured approximately 575 years ago (Schweickert et al. 2000, Seitz et al. 2005). The short length of the Incline Village Fault in comparison to its large scarps indicates that it may rupture in coordination with other faults, potentially the Stateline–North Tahoe Fault to the west. In addition, the dates of the most recent event on both the Incline Village Fault and the Genoa Fault (just outside of the Basin in the Carson Valley) are the same or nearly identical (Seitz et al. 2005).

East of the Region, the Carson Range fault system, one of the Region’s largest, runs for 60 miles along the east face of the Carson Range from Reno to Markleeville. The probability of at least one event at or greater than M 6.0 occurring in the Reno–Carson City urban corridor over a 50-year period is estimated to be 34–98 percent, the probability of an event at or greater than M 6.6 is estimated to be 9–64 percent, and the probability of an event at or greater than M 7.0 is estimated to be 4–50 percent. These probabilities are relatively high and are commensurate with estimates in many parts of California (dePolo et al. 1997:3).

The nearest mapped Alquist-Priolo Earthquake Fault Zone is located in the Minden-Gardnerville area of Nevada, approximately 7 miles southeast of the project site (CGS 2010).

Table 3.11-2 Earthquake Faults and Fault Zones Near the Project Site

Fault/Fault Zone	Location and Distance from Project Site	Type and Hazard
Tahoe Valley Fault Zone	Less than 1 mile southwest of the project site	Potentially active
Genoa Fault	Approximately 7 miles east/southeast of the site	Active—east-dipping, normal fault capable of producing a magnitude greater than 7.0
Tahoe-Sierra Frontal Fault Zone	Approximately 8 miles west of the project site	Active—may produce earthquakes of magnitudes between 6.3 and 6.9
West Tahoe–Dollar Point Fault	The southernmost extension of the fault passes approximately 10 miles west of the project site	Active—included in the Western Nevada Zone; comparable to the Genoa Fault, capable of producing earthquakes with a magnitude greater than 7.0
Incline Village Fault	Approximately 15 miles north of the project site	Active—capable of producing earthquakes of magnitude 6.9; may rupture in tandem with the North Tahoe fault
North Tahoe Fault	Approximately 15 miles north of the project site	Active
Agate Bay Fault	Approximately 15 miles northwest of the project site	Potentially active
Antelope Valley Fault Zone	Near Topaz Lake, approximately 30 miles southeast of the project site	Active

Source: CGS 2015

Ground Failure and Liquefaction

Soil liquefaction occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and take on the characteristics of a fluid. Factors determining liquefaction potential are soil type, level and duration of seismic ground motion, type and consistency of soils, and depth to groundwater. Loose sands and peat deposits are susceptible to liquefaction, while clayey silts, silty clays,

and clays deposited in freshwater environments are generally stable under the influence of seismic ground shaking (CGS 2008:35 - 37).

Liquefaction poses a hazard to engineered structures. The loss of soil strength can result in bearing capacity insufficient to support foundation loads, increased lateral pressure on retaining or basement walls, and slope instability. Sites underlain by relatively loose, sandy soils and saturated deposits of fill combined with a shallow groundwater table, which typically are located in alluvial river valleys/basins and floodplains, are susceptible to liquefaction.

The project site is situated on silts, sands, and gravels that could be at risk of liquefaction, if they were saturated with water; however, monitoring wells within the tourist core area indicate that the depth to groundwater is typically between 20 and 34 feet (Parikh Consultants 2011). Because of this, liquefaction potential in the shallow depths of the project site is low.

Tsunami and Seiche

A tsunami is a wave or series of waves that may result from a major seismic event that involved the displacement of a large volume of water (such as rupture of a major fault), and may occur in any large body of water. A seiche is a periodic oscillation of an enclosed or restricted water body, typically a lake or reservoir, produced by seismic shaking. The action of a seiche is similar to the sloshing of a bathtub, with waves bouncing back and forth across the water body. Seiche waves can continue for hours following a tsunami inducing earthquake, causing extensive damage. Modeling of potential earthquakes occurring beneath Lake Tahoe indicate that a fault rupturing seismic event of magnitude 7.0 could trigger a tsunami, followed by seiche with waves of up to 30 feet high along the shoreline of Lake Tahoe (Ichinose et al. 2000). Exhibit 3.11-2 shows the land area within 30 vertical feet of the Lake Tahoe high water elevation.

Soils

The soil of the project site can be categorized into three broad groups: soils of mountain toe-slopes (Cassenai gravelly loamy coarse sand); soils formed in ancient beach terraces (Christopher–Gefo complex, Jabu coarse sandy loam, Marla loamy coarse sand, and Oneidas coarse sandy loam); and soils found in the floodplains of streams (Tahoe complex). Exhibit 3.11-3 shows the extent of each soil map unit within the project site limits; general soil characteristics are described below (Natural Resources Conservation Service [NRCS] 2007).

Cassenai gravelly loamy coarse sand, 5 to 15 percent slopes, very stony: The Cassenai gravelly loamy coarse sand makes up approximately 16 acres or 13 percent of the project site. These soils formed in granitic colluvium (material moved downhill by gravity) and are found on mountain slopes. Typical vegetation consists of Jeffrey pine and white fir forest with scattered openings of greenleaf manzanita and mountain whitethorn. These soils are somewhat excessively drained with moderately rapid permeability, and the surface runoff class is “low.”

Christopher–Gefo complex, 0 to 5 percent slopes: The Christopher–Gefo complex makes up 48 acres of the project site, or approximately 37 percent. This map unit is composed of two very similar soils that formed in sandy granitic outwash deposited by streams near Lake Tahoe. The soil profile is essentially a loamy sand that has been altered and stabilized by vegetation growth over time. Vegetation consists of Jeffrey pine and white fir forest with an understory of greenleaf manzanita, mahala mat, and mountain whitethorn. These soils are somewhat excessively drained with rapid permeability and a surface runoff class of “very low.”

Jabu coarse sandy loam, 0 to 9 percent slopes: The Jabu coarse sandy loam makes up 6.5 acres (5 percent) of the project site. The Jabu soil is similar to the Christopher and Gefo soils, except that it is more shallow, containing a restrictive layer between 39 and 79 inches and bedrock between 59 and 79 inches. Vegetation consists of Jeffrey pine and white fir forest with an understory of greenleaf manzanita, mahala mat, and mountain whitethorn. The Jabu soil is well drained but has very slow permeability in the restrictive layer. The surface runoff class is “low.”

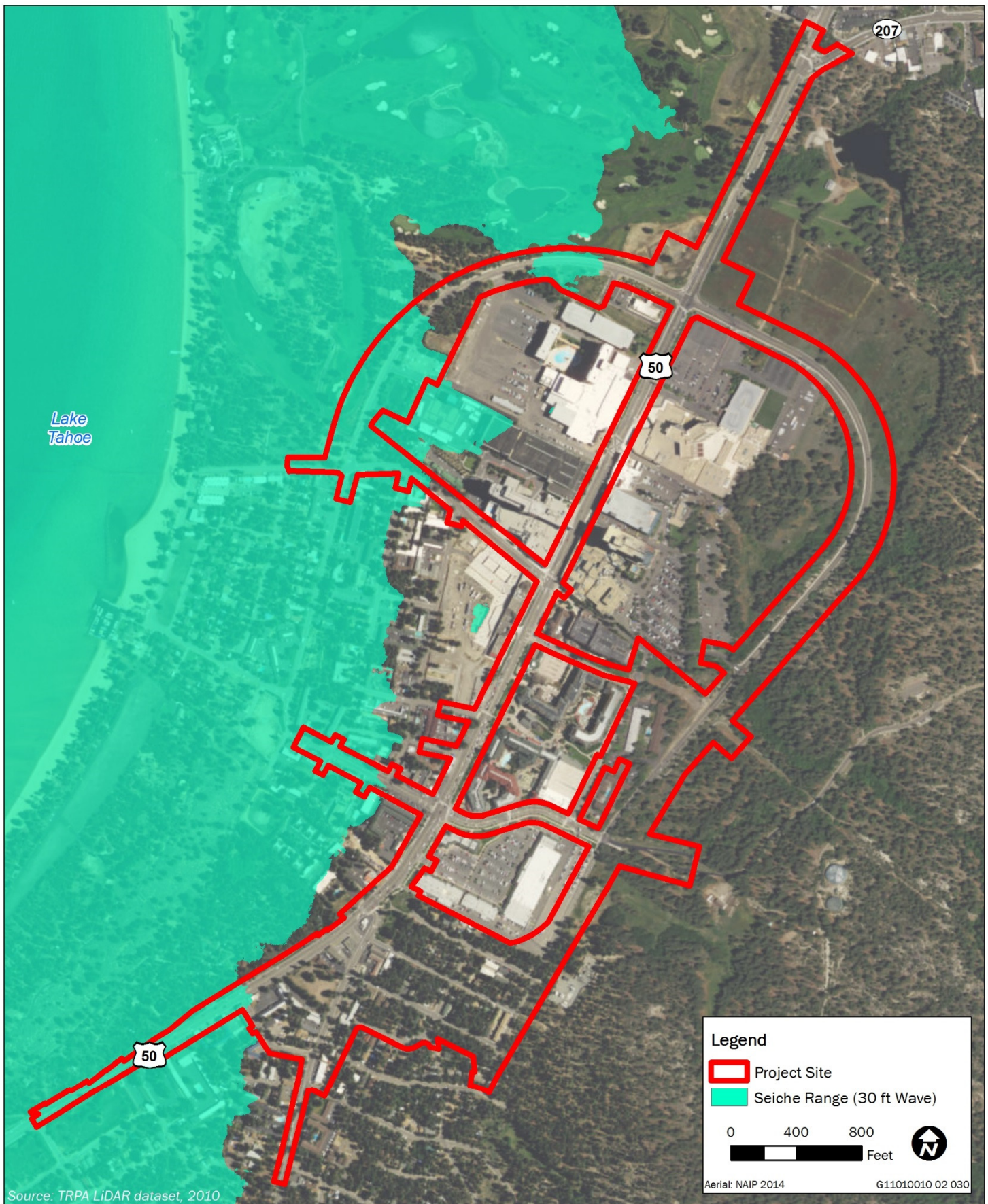


Exhibit 3.11-2

Seiche Range within the Project Site

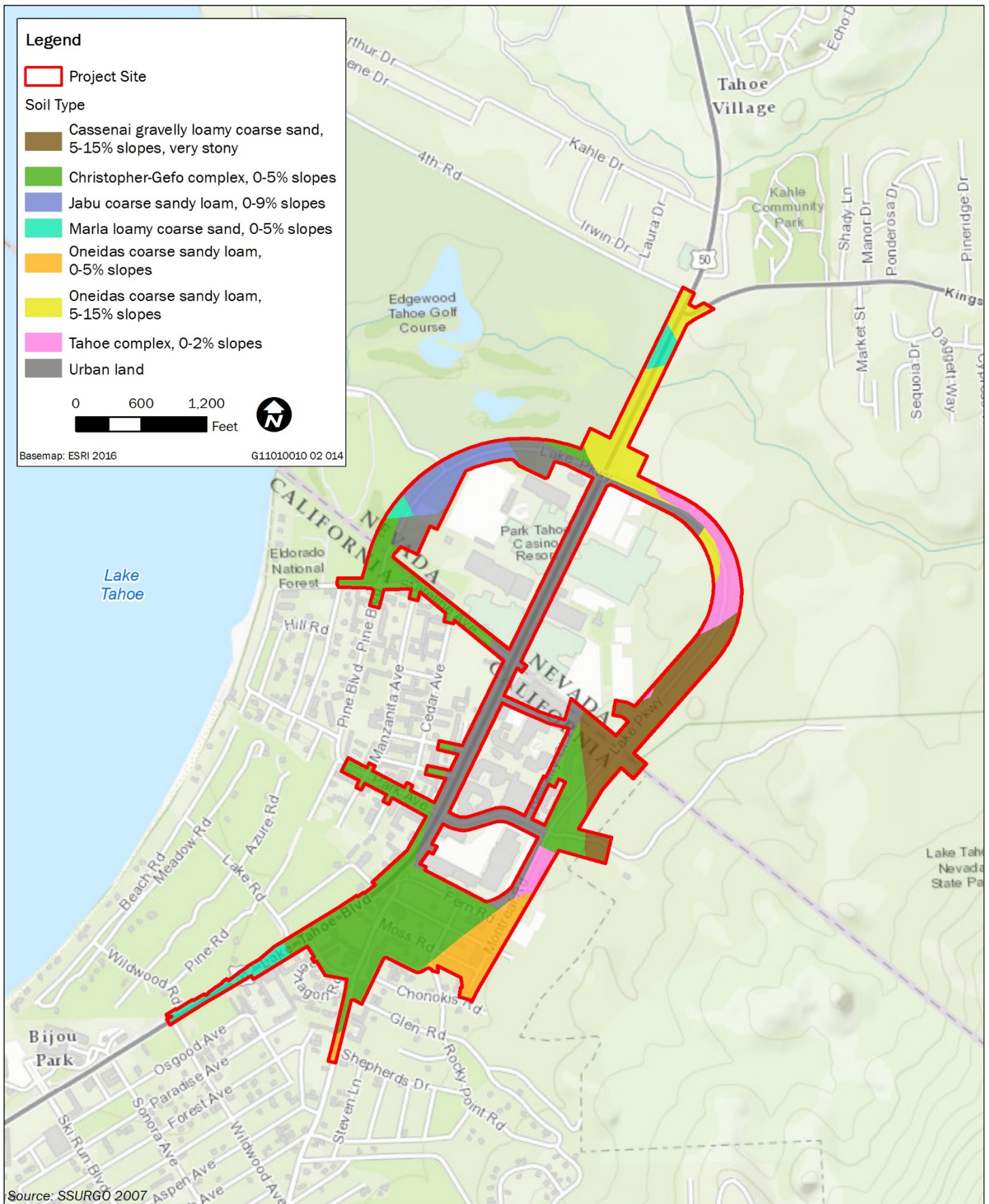


Exhibit 3.11-3

Project Site Soils

Marla loamy coarse sand, 0 to 5 percent slopes: The Marla loamy coarse sand makes up approximately 6 acres (5 percent) of the project site. This is an alluvial soil derived from granodiorite and is found on outwash terraces and valley flats. Vegetation consists of lodgepole pine forest with scattered white fir and Jeffrey pine. Willows, grasses, and forbs make up the understory. These soils are poorly drained because of the presence of a high water table and a clay layer between 47 to 59 inches, which slows permeability. The surface runoff class is “very high.”

Oneidas coarse sandy loam: The Oneidas coarse sandy loam makes up approximately 17 acres (15 percent) of the project site. Of this area, 8 acres are on 0 to 5 percent slopes and 11 acres are on 5 to 15 percent slopes. The Oneidas soil is found on outwash terraces. Although it is coarse textured, it contains a restrictive layer beginning near a depth of 10 inches that slows water movement through the soil. The Oneidas soils are considered poorly drained, with slow permeability and a runoff class of “very high.” The land capability verification for the Edgewood mountain parcel that borders the project site (APNs 1318-27-001-006, 1318-27-001-005, and 1318-00-002-006) found that the soils mapped as Oneidas did not have the restrictive layer indicated by the 2007 NRCS soil survey (TRPA 2014b). The presence or absence of the restrictive layer in the soils mapped as Oneidas within the remainder of the project site would be determined by the land capability verification completed before TRPA permit approval.

Tahoe complex, 0 to 2 percent slopes: The Tahoe Complex covers approximately 7 acres (6 percent) of the project site. This soil complex formed in stream and river deposits washed down from granitic and volcanic rock. It consists of small areas of recent alluvium adjacent to stream channels and in meadows. It is nearly level to gently sloping, and typical vegetation consists of sedges, meadow grasses, and scattered lodgepole pines. This mapping unit is made up of a “dry” and a “wet” variant. The “wet” soils have a high water table and some may be classified as hydric soils. These soils are poorly drained and have moderate permeability, and the surface runoff class is “low.”

Urban Land: Urban lands cover 27 acres (21 percent) of the project site. These are highly altered landscapes where most of the soil surface is covered by urban development or decorative landscaping. Most of the urban lands beneath the Heavenly Village Center and extending from the California/Nevada state line to the midline of the parcel currently occupied by the Hard Rock resort casino (APN 1318-27-001-009) are underlain by imported fill (Saucedo 2005). This area was the historic floodplain of Golf Course and Stateline Creeks.

Erosion Potential and Hazard Rating

Erosion is the process by which surface soils are detached and transported by water and/or wind. Erosion has a detrimental effect on soil productivity, because erosion begins with the upper horizons of a soil profile, which contain organic matter and microbial communities vital to supporting plant growth. Soil erosion is also an important concern in the Tahoe Region, because it can contribute sediment to the lake, including fine sediment, potentially affecting lake clarity. Factors that influence the erosion potential of a soil include vegetative cover; soil properties such as soil texture, structure, rock fragments, and depth; steepness and slope length; and climatic factors such as the amount and intensity of precipitation.

The NRCS soil surveys provide a rating of erosion hazard resulting from disturbance of non-road areas. This rating is based on slope and soil erosion factor (K). The predicted soil loss is caused by sheet or rill erosion (which occurs when shallow flows of water causing sheet erosion coalesce into rills, increasing in velocity and scouring capacity) in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by some kind of disturbance. The soils of the project site have an erosion hazard rating of “slight,” which indicates that erosion is unlikely under ordinary conditions.

Compaction Potential

Soil compaction refers to an increase in soil density or a loss of pore space. Soil pores provide storage space for the oxygen and water needed to facilitate biological activity within the soil. Compaction reduces soil productivity and hydrologic function because compacted soils resist water absorption, restrict air movement around roots, and create a physical barrier to root development. All soils are more vulnerable to compaction when they are wet; however, fine-textured, poorly-drained soils with little organic matter are the most

susceptible. The Tahoe complex soil map unit contains fine-textured soils with poor drainage and makes up approximately 7 acres of the project site. These soils could be susceptible to compaction.

LAND CAPABILITY AND COVERAGE

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). As explained in “Regulatory Setting” above, this system assigns LCDs to sites based primarily on soil characteristics and slope. The LCDs reflect the amount of development each site can support without experiencing soil or water quality degradation. The LCDs range from 1 to 7, with 1 being the most environmentally sensitive and 7 being most suitable for supporting development. LCD 1b is applied to land that is influenced by surface water or high groundwater and is also referred to as “Stream Environment Zone” or SEZ. The amount of compacted or impervious surface, known as coverage, allowed with a given parcel is limited by its LCD.

The 1974 Bailey Land Capability map is used as TRPA’s basis for determining LCDs; however, because this map was created for use at a landscape scale, verification of LCDs for each build alternative would be required before TRPA permit acknowledgement. Although portions of the project site have been reviewed through the Land Capability Verification process for other (unrelated) projects, a verification has not been completed for the project site as a whole. For the purposes of this analysis, LCDs were determined using verified land capability maps where available, and by using a combination of the Bailey LCD map and project-level vegetation mapping for unverified areas. The use of vegetation mapping completed for the project allows for improved accuracy in defining SEZ margins and inclusion of some small SEZ areas that were not shown on the landscape-scale Bailey mapping. Exhibit 3.11-4 shows the mapped extent of each LCD within the project site limits.

The project site is located in and around an urban center (i.e., the tourist core area) and, as such, contains a large amount of land coverage resulting from previous urban development and necessary infrastructure. As shown in Table 3.11-3, the portions of the project site within LCDs 1b, 3, and 7 currently exceed their coverage limits. Because the tourist core and resort-casinos were developed before the establishment of TRPA, it is likely that some of this coverage (especially in LCD 7) is legally existing, excess coverage.

Table 3.11-3 Project Site Land Capability and Coverage – Existing Conditions

LCD	Acres	Allowable Coverage ¹	Maximum Allowable Coverage (Acres)	Existing Coverage (Acres)	Coverage Balance (Acres; + = Exceedance)
1a	1.27	1%	0.01	0.01	0
1b	9.82	1%	0.10	3.18	+3.09
2	0.74	1%	0.09	0	- 0.04
3	7.19	5%	0.04	2.85	+2.49
4	7.40	20%/70%	0.36	2.51	- 0.35
5	31.77	25%/70%	2.87	11.39	- 1.79
6	1.69	30%/70%	13.19	0.09	- 0.42
7	71.25	30%/70%	0.52	44.53	+2.02

¹ Approximately 75 acres of the project site is located within a Regional or Town Center. Within Centers, the maximum allowable coverage for high capability lands is 70 percent.

Sources: Bailey (1974) and TRPA (2014a), adapted by Ascent Environmental in 2016

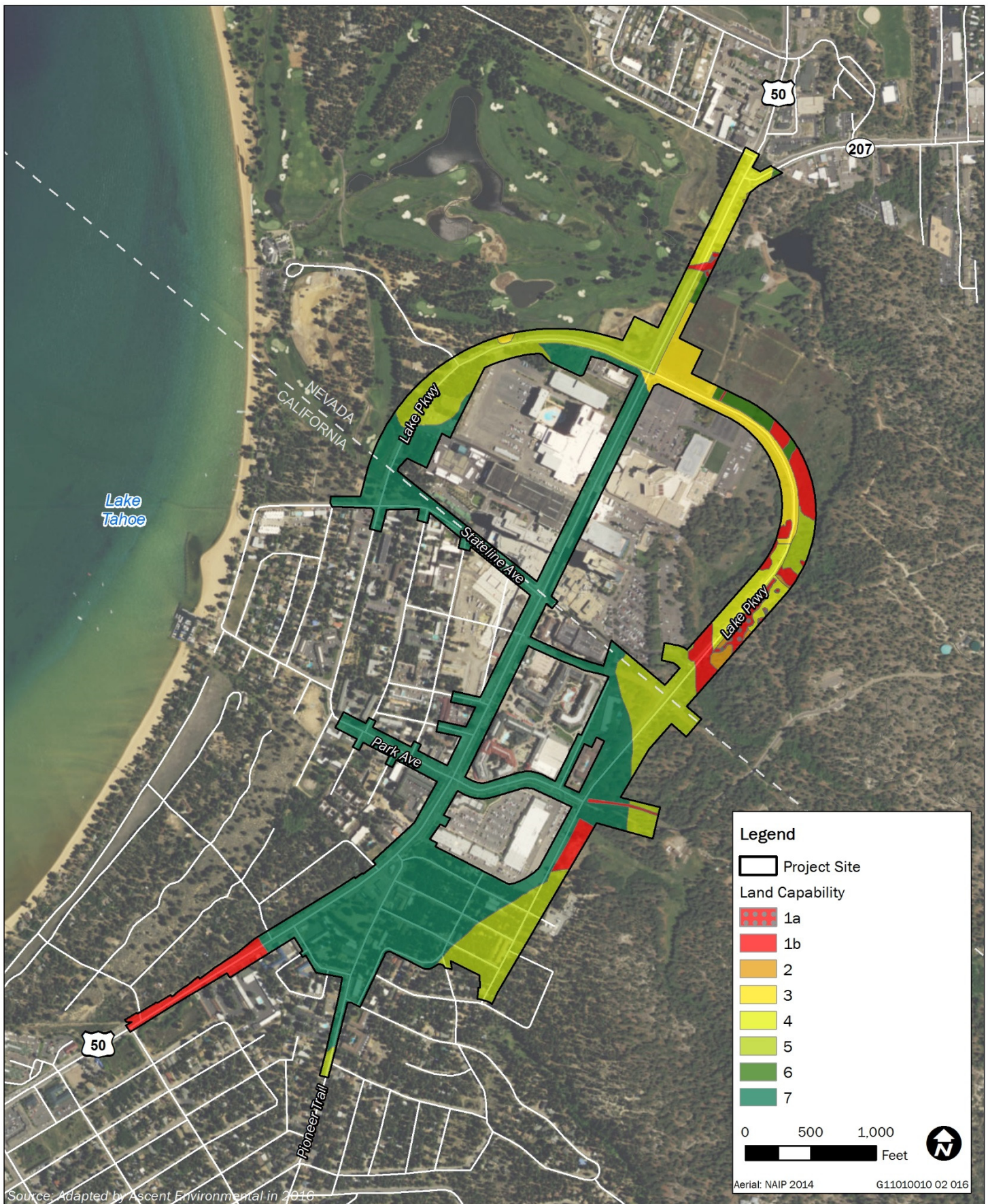


Exhibit 3.11-4

Land Capability Districts within the Project Site

3.11.3 Environmental Consequences

METHODS AND ASSUMPTIONS

Evaluation of potential geologic, soil, land capability, and coverage impacts was based on a review of documents pertaining to the project site, including the CGS and USGS geologic maps and the NRCS soil surveys; environmental impact reports and background reports prepared for plans and projects in the vicinity; and published and unpublished geologic literature. The information obtained from these sources was reviewed and summarized to understand existing conditions and to identify potential environmental effects, based on the thresholds of significance. In determining the level of significance, the analysis assumes that the project would comply with relevant federal, state, and local laws, regulations, and ordinances.

SIGNIFICANCE CRITERIA

NEPA Criteria

The factors that are taken into account under NEPA to determine the significance of an action in terms of the context and the intensity of its geologic effects are encompassed by the CEQA criteria used for this analysis. No specific factors related to geology and soils are contained in NEPA, CEQ Regulations Implementing NEPA, or FHWA NEPA regulations in 23 CFR 771 et seq.

TRPA Criteria

The “Land” criteria from the TRPA Initial Environmental Checklist were used to evaluate the geology and soils impacts of the alternatives. The project would result in a significant impact related to geology and soils if:

- ▲ compaction or covering of the soil beyond the limits allowed in the land capability districts;
- ▲ change in the topography or ground relief features of the site inconsistent with the natural surrounding conditions;
- ▲ unstable soil conditions during or after completion of construction;
- ▲ continuation of or increase in wind or water erosion of soils, either on or off the site; or
- ▲ exposure of people or property to earthquakes or related geologic hazards.

CEQA Criteria

In accordance with Appendix G of the State CEQA Guidelines, an alternative was determined to result in a significant impact related to geology and soils if it would:

- ▲ expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
 - strong seismic ground shaking;
 - seismic-related ground failure, including liquefaction;
- ▲ result in substantial soil erosion or the loss of topsoil; or

- be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or offsite landslide, lateral spreading, subsidence, liquefaction or collapse.

ENVIRONMENTAL EFFECTS OF THE PROJECT ALTERNATIVES

Impact 3.11-1: Soil compaction and land coverage

Implementation of Alternatives B, C, and D would result in an increase in land coverage within the project site limits: for Alternative B, between 5.47 and 7.62 acres; for Alternative C, 1.06 acres; and for Alternative D, between 5.76 and 7.91 acres. Because the project would comply with TRPA land coverage regulations, including mitigation of disturbances in LCD 1b at a ratio of 1.5:1, TRPA permit requirements (e.g., SWPPP, BMPs), and (for mixed-use development, including replacement housing) transfer of excess allowable land coverage, there would be minimal potential to create an adverse effect related to land coverage. Alternatives A and E would not result in changes to TRPA-related land coverage.

NEPA Environmental Consequences: The design features of Alternatives B, C, and D would avoid or minimize the soil compaction and land coverage environmental consequences such that no additional mitigation measures are needed or feasible to implement; No Impact for Alternatives A and E

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, and D; No Impact for Alternatives A and E

Alternatives B, C, and D would create new coverage in accordance with TRPA land coverage regulations within LCDs 1a, 1b, 2, 3, 4, 5, 6, and 7. Implementation of Alternatives A and E would not alter existing land coverage patterns. Table 3.11-4 provides a summary of preliminary coverage increases by LCD for the build alternatives. The preliminary coverage numbers would be refined as the design process progresses and before TRPA permit acknowledgement. The information presented here, although preliminary, is an accurate representation of the nature of the land coverage changes associated with the build alternatives and is sufficient for environmental impact analysis. The option to restripe Lake Parkway west of US 50 would not affect coverage, because it would occur within the paved portions of the existing roadway.

Table 3.11-4 Summary of Preliminary Land Coverage Increases for Alternatives B, C, D, and E

Alternatives/Options ¹	Net Increase in Land Coverage by LCD (acres)								Total (acres)
	1a	1b	2	3	4	5	6	7	
B: Triangle (Locally Preferred Action)									
With signal at US 50/Lake Parkway	0.43	1.46	0.19	0.74	0.47	2.75	0.59	0.99	7.62
With roundabout at US 50/Lake Parkway	0.29	1.07	0.12	0.64	0.24	1.75	0.34	1.02	5.47
C: Triangle One-Way									
With signal at US 50/Lake Parkway	0.03	0.27	0.00	-0.25	0.29	0.87	0.07	-0.22	1.06
D: PSR Alternative 2									
With signal at US 50/Lake Parkway	0.43	1.45	0.19	0.74	0.47	1.99	0.59	2.05	7.91
With roundabout at US 50/Lake Parkway	0.29	1.06	0.12	0.64	0.24	0.99	0.34	2.08	5.76
E: Skywalk	No Change in Land Coverage								

¹The number of lanes refers to the section of Lake Parkway west of US 50. "Signal" or "roundabout" refers to the traffic control treatment at US 50/Lake Parkway with Alternatives B, C, and D.

Source: Wood Rodgers 2015

Alternative A: No Build (No Project)

Alternative A would not result in changes to TRPA-regulated land coverage. For this reason, Alternative A would have **no impact** to this resource for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)**Transportation Improvements**

As shown in Table 3.11-4, Alternative B would create a net increase in land coverage between 5.47 and 7.62 acres relative to existing conditions and depending on the type of traffic control used at the US 50/Lake Parkway intersection. With a signal at US 50/Lake Parkway, approximately 4.8 acres of this new coverage would be created within high capability lands (LCDs 4 through 7), with the remaining 2.82 acres occurring on low capability land (LCDs 1a, 1b, 2, and 3). The proposed roundabout at this intersection would create 3.65 acres within high capability lands and 2.12 acres of coverage on low capability lands—slightly less than with a signal at this intersection, because the center of the roundabout would be pervious landscape and, therefore, not include coverage.

Although TRPA Code Section 30.5 prohibits additional land coverage in low capability land, an exemption is provided for public service facilities (i.e., linear public facilities or LPFs). TRPA and TTD have determined that the realignment of US 50 is an LPF that is necessary to improve public safety, reduce vehicle congestion, improve air quality, and encourage active transportation modes within the tourist core area. In addition, these agencies have determined that the general alignment of existing and proposed US 50 runs perpendicular to the Edgewood Creek, Golf Course Creek, and Stateline Creek SEZs and disturbance within these areas cannot be avoided; however, the increased land coverage and disturbance would be minimized through application of BMPs and restoration of low capability lands (LCDs 1a, 1b, 2, and 3) at a ratio of 1.5 acres of restoration for every 1 acre of disturbance (in accordance with TRPA Code Section 30.5.3). Therefore, Alternative B would qualify for this exemption.

TRPA's base allowable coverage standards by LCD normally limit the amount of coverage permitted for a project on a parcel-by-parcel basis (TRPA Code Section 30.4.1.A); however, because the project is an LPF (in accordance with TRPA Code Sections 21.4 and 30.4.2.D), the allowable land coverage would be limited, instead, to the minimum amount needed to achieve the project's public purpose. If the land coverage proposed by the project exceeds the base allowable coverage for a given parcel, the project proponent would purchase and transfer the required coverage allowance from offsite parcel owners ("sending parcels") in accordance with TRPA Code Chapter 30. The amount of coverage allowance to be purchased and transferred would be determined on a parcel-by-parcel basis as a function of: (1) the extent of TRPA-verified legally existing coverage; (2) the land capability and base allowable coverage of the parcel; (3) the type of agreement between the applicant and the affected parcel owners (such as a recorded deed-restricted easement or right-of-way dedication); and (4) the size of the affected parcel or width of the recorded easement. These details are unknown at this time and would be dependent on the alternative selected. Before TRPA permit acknowledgement, TTD would be required to demonstrate evidence of the source of coverage, the purchase or transfer of the required coverage allowance, and restoration of any relocated coverage, in accordance with TRPA regulations.

TRPA Code requires land coverage transfers to come from within the same hydrologically related area (HRA), as defined by TRPA. The project site is located within the South Stateline HRA, which, at approximately 11,000 acres, is the smallest HRA in the Basin. The South Stateline HRA includes the two study area watersheds (Bijou Park and Edgewood Creek) and two small adjacent watersheds (Bijou Creek and Burke Creek) (TRPA 2015). Transfers from outside the project's HRAs can only be permitted if transferred from sensitive lands (LCDs 1a, 1b, 1c, 2, and 3) to non-sensitive lands (LCDs 4 through 7) and if the receiving parcel is located farther than 300 feet from the high water line of Lake Tahoe (Code Section 30.4.3.B.6). These restrictions help ensure that development of excess land coverage and the accompanying mitigation affect the same or related soil and water resource areas.

The TCAP includes policies that encourage the reduction of coverage for all projects within the tourist core and encourage landscaping in all public and private redevelopment projects. Alternative B would incorporate the following measures to minimize coverage requirements:

- ▲ Reduced width of sidewalks and road shoulders,
- ▲ Reduced width of some left turn lanes, and
- ▲ Landscaped medians and increased green space in the existing US 50 corridor.

Overall, the Alternative B transportation improvements would result in a net increase in land coverage between 5.47 and 7.62 acres. Because the project would comply with TRPA land coverage regulations, including mitigation of disturbances in LCD 1b at a ratio of 1.5:1, the potential for Alternative B to create an adverse effect related to land coverage would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the soil compaction and land coverage environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative B would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. Redevelopment of the mixed-use sites could further increase coverage, before reductions are made for transfer of excess allowable land coverage.

The conceptual layout of the mixed-use development sites (refer to Exhibit 2-9) includes a mix of parcels with extensive existing coverage and some undeveloped parcels. Redevelopment of these sites would comply with TRPA land coverage regulations. The entire area of Sites 1 and 3 and most of Site 2 would be located within the Tourist Core Town Center. Areas within the Town Center would be permitted up to 70 percent maximum allowable land coverage within LCDs 4 through 7 (TRPA Code Section 30.4.2.B.1). All land coverage in excess of the base allowable would be purchased and transferred using the transfer ratios described in the TRPA Code, which would result in an overall reduction in land coverage. For example, a half-acre parcel in LCD 7 would have a base allowable land coverage of approximately 6,500 square feet. If this parcel were located within a Town Center, the maximum allowable land coverage would be approximately 15,250 square feet. To take advantage of this increase in allowable land coverage, the project would be required to purchase and transfer the difference between the base allowable and the maximum allowable land coverage, using the transfer ratios in TRPA Code Table 30.4.4-1. In this case, because the transfer ratio required for projects proposing 70 percent coverage is 2:1, the project would be required to purchase and transfer approximately 16,400 square feet of land coverage, resulting in a net reduction in land coverage.

As described above, Alternative B mixed-use development, including replacement housing, would result in an increase in land coverage relative to existing conditions. Because the project would comply with TRPA land coverage regulations, including mitigation of disturbances in LCD 1b at a ratio of 1.5:1 and transfer of excess allowable land coverage, the potential for Alternative B mixed-use development, including replacement housing, to create an adverse effect related to land coverage would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative B would avoid or minimize the soil

compaction and land coverage environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for soil compaction and land coverage environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential soil compaction and land coverage impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on soil compaction and land coverage.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative B would minimize the soil compaction and land coverage environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

The Alternative C transportation improvements would create a net increase in land coverage of 1.06 acres. Although Alternative C would create 0.27 acre of additional land coverage in LCD 1b and 0.03 acre in LCD 1a, there would be a reduction of 0.25 acre in LCD 3, resulting in a net increase in 0.05 acre of new coverage on low capability lands (LCDs 1a, 1b, 2, and 3). The remaining 1.01 acres coverage increase would occur on high capability lands (LCD 4 through 7). Overall, this is between 4.41 and 6.56 acres less new land coverage than under Alternative B. Alternative C would be subject to the same TRPA land coverage regulations described under Alternative B. Alternative C would also be subject to the same permitting requirements, including completion of a SWPPP and installation of permanent and temporary BMPs.

Alternative C transportation improvements would result in a net increase in land coverage of 1.06 acres; however, the project would comply with all TRPA land coverage regulations, including mitigation of disturbances in low capability lands at a ratio of 1.5:1. Therefore, the potential for Alternative C transportation improvements to create an adverse effect related to land coverage would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would avoid or minimize the soil compaction and land coverage environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative C would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. Redevelopment of the mixed-use sites could further increase coverage, before reductions are made for transfer of excess allowable land coverage. The conceptual mixed-use development considered under

Alternative C would be subject to the same TRPA land coverage regulations and permitting requirements evaluated under Alternative B.

Alternative C mixed-use development, including replacement housing, would result in a net increase in land coverage relative to existing conditions; however, the project would comply with all TRPA land coverage regulations, including mitigation of disturbances in low capability lands at a ratio of 1.5:1 and transfer of excess allowable land coverage. Therefore, the potential for Alternative C mixed-use development, including replacement housing, to create an adverse effect related to land coverage would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative C would avoid or minimize the soil compaction and land coverage environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for soil compaction and land coverage environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential soil compaction and land coverage impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on soil compaction and land coverage.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative C would minimize the soil compaction and land coverage environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

Alternative D transportation improvements would create a net increase in land coverage between 5.76 and 7.91 acres relative to existing conditions and depending on the type of traffic control used at the US 50/Lake Parkway intersection. With a signal and US 50/Lake Parkway, approximately 5.1 acres of this new coverage would be created in high capability lands (LCDs 4 through 7), with the remaining 2.81 acres occurring on low capability land (LCDs 1a, 1b, 2, and 3). The proposed roundabout at this intersection would create 3.65 acres of coverage on high capability lands and 2.11 acres of coverage on low capability lands. For both signalized and roundabout options, Alternative D would create an additional 0.29 acre of land coverage when compared to Alternative B. Alternative D would be subject to the same permitting requirements, including completion of a SWPPP and installation of permanent and temporary BMPs.

As described above, Alternative D would result in a net increase in land coverage relative to existing conditions; however, the project would comply with all TRPA land coverage regulations, including mitigation of disturbances in low capability lands at a ratio of 1.5:1. Therefore, the potential for Alternative D transportation improvements to create an adverse effect related to land coverage would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would avoid or minimize the soil compaction and land coverage environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative D would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. Redevelopment of the mixed-use sites could further increase coverage, before reductions are made for transfer of excess allowable land coverage. The conceptual mixed-use development sites considered under Alternative D (refer to Exhibit 2-11) would be subject to the same TRPA land coverage regulations and permitting requirements evaluated under Alternative B.

As described above, Alternative D mixed-use development, including replacement housing, would result in a net increase in land coverage relative to existing conditions; however, the project would comply with all TRPA land coverage regulations, including mitigation of disturbances in low capability lands at a ratio of 1.5:1 and transfer of excess allowable land coverage. Therefore, the potential for Alternative D mixed-use development, including replacement housing, to create an adverse effect related to land coverage would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative D would avoid or minimize the soil compaction and land coverage environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for soil compaction and land coverage environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential soil compaction and land coverage impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on soil compaction and land coverage.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative D would minimize the soil compaction and land coverage environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

Alternative E would create an elevated pedestrian structure in an area that is currently 100 percent covered in impervious materials. Because Alternative E would not result in changes to TRPA-regulated land coverage, it would have **no impact** relative to land coverage for the purposes of NEPA, CEQA, and TRPA.

Impact 3.11-2: Increased erosion and alteration of topography during construction

During construction, transportation improvements and replacement housing included in Alternatives B, C, D, and Alternative E would require ground disturbance and soil exposure, which could result in increased erosion and alteration of the existing topography. The total area of temporary and permanent disturbance (including areas that are currently developed or disturbed) would be 56.49 acres for Alternative B, 52.20 acres for Alternative C, 52.39 acres for Alternative D, and 0.79 acre for Alternative E. Because the project site is located in an urban environment, much of the project site has been developed or extensively disturbed. Topographic changes resulting from the project would be minimized and would be consistent with the existing urban environment. The potential for erosion and sediment movement would be minimized through compliance with Lahontan RWQCB and TRPA permit conditions and regulations. Alternative A would result in no changes to existing conditions related to erosion and alteration of topography.

NEPA Environmental Consequences: The design features of Alternatives B, C, D, and E would avoid or minimize the erosion and alteration of topography environmental consequences such that no additional mitigation measures are needed or feasible to implement; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, D, and E; No Impact for Alternative A.

Implementation of the project would require grading, excavation, and removal of existing asphalt and road materials and demolition and removal of existing structures in the area of Moss, Echo, and Fern Roads for transportation improvements and replacement housing included in Alternatives B, C, and D. Excavation would also be required to modify or install storm drain systems and for the relocation of underground utilities.

These construction activities would result in temporary disturbance of soil and would expose disturbed areas to precipitation during storm events. Rain of sufficient intensity and duration could dislodge soil particles, generate runoff, and cause localized erosion. Soil disturbance during the summer months could result in loss of topsoil from wind erosion and runoff from thunderstorm events. Additionally, the project would result in ground disturbance within and directly adjacent to the Edgewood Creek, Golf Course Creek, and Stateline Creek SEZ areas. The project site is located in an urban area, however, and much of the disturbance would occur in areas that have been developed and are already heavily disturbed. Although construction in developed areas would expose the soil surface and temporarily increase the potential for erosion, it would not add to the total acreage of land disturbance within the project site. Areas of the project site that are undeveloped have been previously disturbed by construction, or other human activity but are now covered by native or ornamental vegetation. The expansion of development into these areas would create new permanent ground disturbance. The amount of temporary and permanent ground disturbance created by each alternative is shown in Table 3.11-5, below.

Table 3.11-5 Acres of Ground Disturbance by Alternative

Alternative	Temporary			Permanent			Total		
	Undeveloped	Developed	Total	Undeveloped	Developed	Total	Undeveloped	Developed	Overall Total
Alternative A: No Build (No Action)	NA								
Alternative B: Triangle (Locally Preferred Action)	11.72	10.78	22.50	9.69	24.30	33.99	21.41	35.08	56.49
Alternative C: Triangle One-Way	13.58	10.62	24.20	5.19	22.81	28.00	18.77	33.43	52.20
Alternative D: PSR Alternative 2	10.83	9.05	19.88	9.34	23.17	32.51	20.17	32.22	52.39
Alternative E: Skywalk	0	0.76	0.76	0	0.03	0.03	0	0.79	0.79

NA = not applicable

Source: Wood Rodgers 2015; Adapted by Ascent Environmental

Alternative A: No Build (No Project)

Alternative A would not result in changes to topography or ground disturbance that could lead to increased erosion. For this reason, Alternative A would have **no impact** on these resources for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)**Transportation Improvements**

The Alternative B transportation improvements would create 22.50 acres of temporary disturbance, 11.72 acres of which would occur in undeveloped areas. Permanent disturbance would total 33.99 acres, with 9.69 acres occurring in undeveloped areas. Temporarily disturbed areas would be stabilized and revegetated with approved plant species following construction; however, the topography of these sites may be altered. In accordance with TRPA Code Section 36.5.1.A, the project would be designed to minimize topographical changes and to maintain the natural slope of the project site where feasible.

The NRCS Erosion Hazard rating estimates the risk of soil loss from sheet and rill erosion (erosion caused by overland flow of water) for disturbed soils where 50 to 75 percent of the soil surface has been exposed (NRCS 2007). Because the soils of the project site have low to moderate runoff potential and the topography (with the exception of stream banks) is gently sloped, the NRCS describes the Erosion Hazard rating at “slight.” This means that adverse, or substantial, erosion would be unlikely under normal conditions.

The BMPs required by TRPA, NDEP, and Lahontan RWQCB as conditions of construction permits would further reduce the potential for soil erosion and protect SEZ areas. One condition of the required NPDES permit is implementation of a SWPPP prepared by a qualified SWPPP practitioner. This plan would detail the BMPs that would be implemented to minimize erosion, reduce sediment transport, and control stormwater flow from the project site. In addition, the SWPPP would address grading and slope stabilization methods. Typical temporary BMPs include properly installed silt fences, sediment logs, detention basins, and inlet protection. Temporary BMPs would be installed before site grading begins and would be maintained throughout construction until permanent erosion control features are functioning. Construction-period BMPs installed as permit conditions have proven effective in controlling site runoff and sediment in stormwater. The required elements of a SWPPP are discussed in greater detail in Section 3.10, “Water Quality and Stormwater Runoff.” After construction is completed, temporarily disturbed areas would be stabilized and revegetated in accordance with TRPA Code Section 61.4.

Because the soils of the project site are not highly susceptible to erosion, temporary and permanent BMPs would be installed as requirements of the necessary TRPA and Lahontan RWQCB permits, and areas of temporary disturbance would be revegetated and regraded to match the natural topography of the site, the potential for the Alternative B transportation improvements to increase erosion or adversely affect the topography of the area would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the erosion and alteration of topography environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative B would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The redevelopment of the three mixed-use site would create ground disturbance in addition to that described in

Table 3.11-5; however, any future development would be subject to the same Lahontan RWQCB and TRPA permit conditions and, thus, would not increase the risk of erosion.

Because the soils of the project site are not highly susceptible to erosion, temporary and permanent BMPs would be installed as requirements of the necessary TRPA and Lahontan RWQCB permits, and areas of temporary disturbance would be revegetated and regraded to match the natural topography of the site, the potential for Alternative B mixed-use development, including replacement housing, to increase erosion or adversely affect the topography of the area would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative B would avoid or minimize the erosion and alteration of topography environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for erosion or alteration of topography environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential erosion or topography impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on erosion and alteration of topography.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative B would minimize the erosion and alteration of topography environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

The Alternative C transportation improvements would create 24.2 acres of temporary disturbance, 13.58 acres of which would occur in undeveloped areas. Permanent disturbance would total 28.00 acres, with 5.19 acres occurring in undeveloped areas. In total, Alternative C would create 52.20 acres of new disturbance, 2.64 fewer than Alternative B. Alternative C would be subject to the same TRPA, NDEP, and Lahontan RWQCB permitting requirements, including completion of a SWPPP and installation of permanent and temporary BMPs.

Because of the low erosion hazard of the project site and the stringent BMP requirements described above, the potential impacts of Alternative C transportation improvements in relation to alteration of existing topography and soil erosion would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would avoid or minimize the erosion and alteration of topography environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative C would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any

residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The mixed-use development, including replacement housing, considered under Alternative C would create ground disturbance in addition to that described in Table 3.11-5; however, any future development would be subject to the same permitting requirements evaluated under Alternative B. For the same reasons, the mixed-use development, including replacement housing, would not add to the potential risk of erosion.

Because of the low erosion hazard of the project site and the stringent BMP requirements described above, the potential impacts of Alternative C mixed-use development, including replacement housing, in relation to alteration of existing topography and soil erosion would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative C would avoid or minimize the erosion and alteration of topography environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for erosion or alteration of topography environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential erosion or topography impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on erosion and alteration of topography.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative C would minimize the erosion and alteration of topography environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

The Alternative D transportation improvements would create 19.88 acres of temporary disturbance, 10.83 acres of which would occur in undeveloped areas. Permanent disturbance would total 32.51 acres, with 9.34 acres occurring in undeveloped areas. In total, Alternative D would create 52.39 acres of new disturbance, 1.24 acres fewer than Alternative B. Alternative D would be subject to the same TRPA, NDEP, and Lahontan RWQCB permitting requirements, including completion of a SWPPP and installation of permanent and temporary BMPs.

Because of the low erosion hazard of the project site and the stringent BMP requirements described above, the potential impacts of Alternative D transportation improvements in relation to alteration of existing topography and soil erosion would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would avoid or minimize the erosion and alteration of topography environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative D would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The mixed-use development, including replacement housing, for Alternative D would create ground disturbance in addition to that described in Table 3.11-5; however, any future development would be subject to the same permitting requirements evaluated under Alternative B. For the same reasons, the mixed-use development, including replacement housing, would not add to the potential risk of erosion.

Because of the low erosion hazard of the project site and the stringent BMP requirements described above, the potential impacts of Alternative D mixed-use development, including replacement housing, in relation to alteration of existing topography and soil erosion would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative D would avoid or minimize the erosion and alteration of topography environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for erosion or alteration of topography environmental consequences as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential erosion or topography impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on erosion and alteration of topography.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative D would minimize the erosion and alteration of topography environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

Alternative E would result in ground disturbance for the installation of the support columns for the pedestrian walkway, which could require excavation up to 60 feet deep. Because the remainder of the project site for Alternative E is currently paved, the total area of temporary and permanent ground disturbance would be limited to approximately 34,500 square feet (0.79 acre), depending on the foundation type selected. Permanent disturbance would be limited to the skywalk support columns at approximately 1,500 square feet (0.03 acre). With a disturbance area of less than 1 acre, Alternative E would not be subject to an NPDES permit, and TRPA would hold the regulatory responsibility for erosion control and water quality protection. TRPA requires the use of temporary water quality BMPs in accordance with the TRPA *Best Management Practices Handbook*. Additionally, the proposed excavation would occur as an isolated disturbance surrounded by urban development, and the area where erosion could occur would be limited to the excavation site itself.

Because the area of exposed soil created by Alternative E would be less than 1 acre, isolated by urban development, and protected by TRPA-mandated temporary construction site BMPs, the potential for erosion and grading impacts would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would avoid or minimize the erosion and alteration of topography environmental consequences such that no additional mitigation measures are needed or feasible to implement.

Impact 3.11-3: Exposure to strong seismic shaking, liquefaction, or seiche inundation hazards

The project site is located in a seismically-active area and contains soils that could be subject to liquefaction under saturated conditions. All transportation improvement components of Alternatives B, C, and D would be designed to meet California Department of Transportation (Caltrans) and Nevada Department of Transportation (NDOT) seismic standards and state-specific, seismic design codes. The construction of the pedestrian bridge in Alternatives B, C, and D would require deep excavation and construction of footings in soils that could be subject to liquefaction. These structures would be subject to rigorous highway safety design standards, which would minimize the potential for seismic hazards. Implementation of Alternatives B, C, and D transportation improvements would result in the displacement of housing units that are now outside of the inundation area of a seismically induced seiche wave. Implementation of Alternatives B, C, and D mixed-use development, including replacement housing, would also not have the potential to increase the exposure of people and property to inundation by a seismically-induced seiche wave, because the mixed-use sites are outside the inundation area. Alternative E would be subject to the same design standards described for Alternatives B, C, and D and would not alter the level of exposure to seiche hazards. Alternative A would not create new structures that would be exposed to seismic hazards.

NEPA Environmental Consequences: The design features of Alternatives B, C, D, and E would avoid or minimize the potential risks due to seismic shaking, liquefaction, or seiche inundation hazards; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, D, and E; No Impact for Alternative A.

Alternative A: No Build (No Project)

Alternative A would not result in new structures that could be affected by seismic hazards. For this reason, Alternative A would have **no impact** relative to strong seismic shaking or liquefaction for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Alternative B transportation improvements would include construction and realignment of surface roads and US 50, an elevated pedestrian bridge over the proposed US 50 alignment, a bike path connection to Van Sickle Bi-State Park, and the demolition and replacement of residential and commercial structures. The project would be located in a seismically-active area within 8 miles of two active faults capable of producing large earthquakes. Three more active faults with the potential to generate large earthquakes are located within 15 miles of the project site (Table 3.11-2). A large earthquake on any of these faults could generate strong seismic shaking within the study area (Parikh Consultants 2011), which could damage project structures and surrounding properties, as well as posing a safety risk for people in the area.

The project site contains soils that could be susceptible to liquefaction under saturated conditions. Because existing groundwater monitoring data indicate a groundwater depth of 20–34 feet below grade (Parikh Consultants 2011), liquefaction is not a consideration at shallow depths. The construction of the pedestrian bridge would require excavation depths between 20 and 60 feet for installation of bridge footings. The potential for seismic shaking to create a liquefaction hazard is increased at these depths.

The potential for damage caused by seismic shaking and liquefaction would be minimized through compliance with existing seismic design requirements. Project components in Nevada would be limited to surface roads and would be constructed in accordance with current NDOT and American Association of State Highway Transportation Officials (AASHTO) seismic design standards. In California, the surface roads and elevated pedestrian bridge would be required to meet Caltrans seismic design standards. The Caltrans project design process requires the completion of a geotechnical design or materials report that covers geology, soils, seismicity, and foundations (Caltrans 2015). A foundation study would also be completed. The foundation investigation and foundation report must be developed and signed by a registered civil engineer or certified engineering geologist and would include project-specific test borings, an evaluation of seismic hazards, and recommendations for footing elevations and pile type (Caltrans 2015). Similarly, the South Lake Tahoe City Code requires geotechnical investigations for all excavations exceeding 10 feet. The City of South Lake Tahoe General Plan requires that all buildings and structures in the City be constructed to withstand seismic shaking and related geologic hazards.

As shown on Exhibit 3.11-2, portions of the project site are located within low-lying areas that could be inundated by a seismically induced seiche wave. Alternative B project components in the inundation area are limited to the improvement and/or realignment of existing roadways. Implementation of Alternative B would result in the displacement of housing units from outside of the seiche inundation area.

Although Alternative B transportation improvements would involve construction in a seismically-active area and deep excavation could encounter soil susceptible to liquefaction, the potential risks due to seismic shaking and liquefaction would be minimized through the required compliance with NDOT, AASHTO, and Caltrans design standards and state and local building codes. Therefore, the potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the potential risks due to seismic shaking, liquefaction, or seiche inundation hazards such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative B would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The mixed-use development, including replacement housing, resulting from the implementation of Alternative B would be subject to the seismic safety standards of the International Building Code or CBC. Compliance with these standards would protect structures and people from damage caused by strong seismic shaking or liquefaction. Additionally, the location of the mixed-use development, including replacement housing, are outside of the potential inundation area of a 30-foot seiche wave.

Although Alternative B mixed-use development, including replacement housing, would involve construction in a seismically-active area and deep excavation could encounter soil susceptible to liquefaction, the potential risks due to seismic shaking and liquefaction would be minimized through the required compliance with NDOT, AASHTO, and Caltrans design standards and state and local building codes. Therefore, the potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative B would avoid or minimize the potential

risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential seismic shaking, liquefaction, or seiche inundation hazard impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative B would minimize the potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

Alternative C transportation improvements would create the same structures as Alternative B and would be located in the same seismic and geologic context. As described above, the potential risks related to seismic shaking and liquefaction would be minimized through the required compliance with NDOT, AASHTO, and Caltrans design standards and state and local building codes. Additionally, as described above for Alternative B, Alternative C would displace housing from outside of the potential inundation zone of the potential 30-foot seiche wave. Compliance with existing seismic design standards and state and local building codes would minimize the potential risks to persons and property due to seismic shaking or liquefaction to a **less-than-significant** level for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the environmental consequences of implementing Alternative C transportation improvements on potential risks to people from seismic shaking or liquefaction **would not be adverse**.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would avoid or minimize the potential risks due to seismic shaking, liquefaction, or seiche inundation hazards such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative C would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, “Proposed Project and Project Alternatives”). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The conceptual mixed-use development considered under Alternative C would be subject to the same permitting requirements evaluated under Alternative B. For the same reasons, the mixed-use development, including replacement housing, concept would not increase potential risks related to seismic shaking, liquefaction, or seiche inundation hazards.

Although Alternative C mixed-use development, including replacement housing, would be located in a seismically-active area, compliance with existing seismic design standards and state and local building codes would minimize the potential risks to persons and property due to seismic shaking, liquefaction, or seiche inundation hazards to a **less-than-significant** level for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative C would avoid or minimize the potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential seismic shaking, liquefaction, or seiche inundation hazard impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative C would minimize the potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

Alternative D transportation improvements would create the same structures as Alternative B and would be located in the same seismic and geologic context. As described above, the potential risks related to seismic shaking and liquefaction would be minimized through the required compliance with NDOT, AASHTO, and Caltrans design standards and state specific building codes. Additionally, as described above for Alternative B, Alternative D would displace housing from outside of the potential inundation zone of the potential 30-foot seiche wave. Compliance with existing seismic design standards and state and local building codes would minimize the potential risks to persons and property due to seismic shaking or liquefaction to a **less-than-significant** level for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would avoid or minimize the potential risks due to seismic shaking, liquefaction, or seiche inundation hazards such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Prior to displacing existing residents, Alternative D would construct replacement housing along with supporting commercial uses that could be located at one or more of three mixed-use development sites identified within the project site (see Exhibits 2-9 and 2-11 in Chapter 2, "Proposed Project and Project Alternatives"). If replacement housing is not constructed at any of these sites, then TTD would construct replacement housing at another location in the South Shore area to be determined prior to displacing any residents. This alternative includes the option for three mixed-use redevelopment sites, which could include replacement housing for displaced residents, as well as other commercial uses (e.g., retail, restaurant). Use of one or more of these three sites, or at another location in the South Shore area for replacement housing, would require additional parcel acquisitions beyond that required for the transportation improvements. The conceptual mixed-use development considered under Alternative D would be subject to the same permitting

requirements evaluated under Alternative B. For the same reasons, the mixed-use development concept would not add to potential risks related to seismic shaking, liquefaction, or seiche inundation hazards.

Although Alternative D mixed-use development, including replacement housing, would be located in a seismically-active area, compliance with existing seismic design standards and state and local building codes would minimize the potential risks to persons and property due to seismic shaking, liquefaction, or seiche inundation hazards to a **less-than-significant** level for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development, including replacement housing, at the mixed-use development sites as part of Alternative D would avoid or minimize the potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential seismic shaking, liquefaction, or seiche inundation hazard impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards.

For the purposes of NEPA, taken as a whole, the design features of the transportation improvements and mixed-use development, including replacement housing, as part of Alternative D would minimize the potential risks to people and property due to seismic shaking, liquefaction, or seiche inundation hazards such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

Alternative E would involve the creation of an elevated pedestrian walkway raised above the US 50 corridor on concrete piers, spanning the California/Nevada state line. Excavation up to 60 feet could be required for installation of piles. As described under Alternative B, the walkway structure would be required to meet Caltrans and NDOT seismic design standards, as described under Alternative B. This would include site-specific geotechnical investigations, borings, and foundation reports that meet the criteria of each state. Additionally, Alternative E is located outside of the potential inundation area of the modeled 30 foot seiche wave. Compliance with these standards would reduce the potential risks to persons or property due to seismic shaking, liquefaction, or seiche inundation hazards to a **less-than-significant** level for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would avoid or minimize the potential risks due to seismic shaking, liquefaction, or seiche inundation hazards such that no additional mitigation measures are needed or feasible to implement.

AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

No avoidance, minimization, or mitigation measures are required to reduce effects on geology, soils, land capability, or coverage such that no additional mitigation measures are needed or feasible to implement for the purposes of NEPA or to a less-than-significant level for the purposes of CEQA and TRPA.

3.12 HAZARDS, HAZARDOUS MATERIALS, AND RISK OF UPSET

This section evaluates the risk of upset associated with the routine use, storage, and transport of hazardous materials, or the potential to encounter hazardous materials during construction, and the potential health consequences. (For purposes of this section, the term “hazardous materials” refers to both hazardous substances and hazardous wastes.) The potential for wildland fire, conflicts with airports, and risk of exposure of schools to hazardous materials that could result from implementation of the build alternatives are also evaluated. The following discussion describes the regulatory background and existing environmental conditions in the project site, and identifies potential impacts of the alternatives. The information provided in this section is derived, in part, from the *Phase I Initial Site Assessment, US Highway 50 Stateline Transportation Study Area, South Lake Tahoe, California and Stateline, Nevada*, prepared for the Tahoe Transportation District (TTD) by Wallace-Kuhl & Associates and dated November 26, 2014, revised September 15, 2016.

The following issues have been dismissed from further consideration in this EIR/EIS/EIS:

- ▲ The build alternatives are not located close enough to a public airport or a private airstrip to create a conflict or safety hazard. The Lake Tahoe Airport is located approximately 4 miles southwest of the project site. The Minden-Tahoe Airport is located over 9 miles east of the project site. The nearest private airstrip (Bailey Ranch) is located north of Carson City and over 9 miles east of the project site. The project site is not within the designated approach or departure routes of any airports or airstrips. The location of the project site so far from the nearest public or private airstrip or heliport would not result in a safety hazard for people residing or working at the project site.
- ▲ The build alternatives are not located within 0.25 mile of an existing or proposed school. Bijou Community School is located over 1 mile southwest of the project site. Zephyr Cove Elementary School and Whittell High School are located over 1 mile northeast of the project site. Implementation of the build alternatives would not emit or handle hazardous materials, substances, or wastes within 0.25 mile of an existing or proposed school.

Geological hazards, including seismic hazards and the potential for seiche inundation, are discussed in Section 3.11, “Geology, Soils, Land Capability, and Coverage.” Risks associated with flooding are discussed in Section 3.9, “Floodplains.” Interference with an adopted emergency response plan or emergency evacuation plan is address in Section 3.6, “Traffic and Transportation.” Cumulative hazards and public safety impacts are addressed in Section 3.19, “Cumulative Impacts.”

One comment was received in response to the Notice of Preparation related to hazards. It requested information on emergency response plans. Information on potential impacts and mitigation related to emergency response, is discussed in Section 3.6, “Traffic and Transportation.”

3.12.1 Regulatory Setting

Numerous federal, state, and local laws, regulations, and programs have been enacted to prevent or mitigate damage to public health and safety and the environment from the release or risk of release of hazardous substances into the community or environment, and to protect human health and environmental resources from potential existing contamination. Other regulations have been developed to address hazards associated with construction in California’s wildland-urban interface (WUI) areas. Key laws and regulations applicable to the US 50/South Shore Community Revitalization Project are discussed below.

FEDERAL

Management of Hazardous Materials

Federal laws require planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and if such materials are accidentally released, to prevent or mitigate injury to health or the environment. 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 the Code of Federal Regulations (CFR) Titles 29, 40, and 49. Hazardous materials, as defined in those regulations, 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 (RCRA)(42 USC Section 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 Section 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 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 Section 5101 et seq.; formerly the Hazardous Materials Transportation Act, 49 USC Section 1801 et seq.) is the basic statute regulating transport of hazardous materials in the United States. Hazardous materials regulations are enforced by the Federal Highway Administration, the U.S. Coast Guard, the Federal Railroad Administration, and the Federal Aviation Administration.

Explosives

Regulation of explosives comes under the jurisdiction of the Department of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives. Regulation of licenses or permits that are required for the manufacture, import, storage, and use of explosives takes place according to Title 27 CFR, Part 555, under Title XI, Regulation of Explosives (18 USC Chapter 40).

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 Section 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.

Fuel Reduction and Wildfire Prevention

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

The Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy for the Lake Tahoe Region (Fuel Reduction Strategy) provides land management, fire, and regulatory agencies with strategies to reduce the probability of a catastrophic fire in the Region (LTBMU et al. 2014).

The Lake Tahoe Basin Management Unit of the U.S. Forest Service (USFS) is the agency with primary responsibility for implementation of the Fuel Reduction Strategy; however, individual land owners and public agencies are responsible for aspects of its implementation. The Fuel Reduction Strategy is a comprehensive plan that combines projects from the following sources:

- ▲ Fuel Reduction and Forest Restoration Plan for the Lake Tahoe Basin Wildland Urban Interface (Tahoe Regional Planning Agency [TRPA] 2007);
- ▲ USFS Stewardship and Fireshed Assessment (Bahro et al. 2007);
- ▲ California Department of Forestry and Fire Protection (CAL FIRE) Unit Strategic Fire Plans for the Amador-El Dorado Unit and the Nevada-Yuba-Placer Unit (CAL FIRE 2015a, 2015b);
- ▲ California State Parks;
- ▲ California Tahoe Conservancy; and
- ▲ Nevada Tahoe Resource Team, representing Nevada Division of State Lands, Nevada Division of Forestry, and Nevada Division of State Parks.

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 Plans.

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. TRPA's Regional Plan for the Lake Tahoe Region addresses growth and development and provides a policy guide for decision-making. Two components of the Regional Plan address policies and regulations pertaining to hazards and hazardous materials: Goals and Policies and Code of Ordinances.

Environmental Threshold Carrying Capacities

TRPA has not established any environmental threshold carrying capacities related to hazards and hazardous materials.

Regional Plan

TRPA regulates growth and development in the Lake Tahoe Region through the Regional Plan, which includes the Goals and Policies, Code of Ordinances, and other guidance documents. The Regional Plan includes a Land Use element identifying goals and policies for addressing the Lake Tahoe Region's natural hazards (TRPA 2012). Relevant Goals and Policies are described below.

Goals and Policies

The Natural Hazards Subelement of the Goals and Policies Land Use Element establishes four policies to support the TRPA's goal of minimizing risk from natural hazards (Goal NH-1) (TRPA 2012: 2-29). These policies include regulation of development in avalanche and mass instability hazard areas; general prohibition of development, grading, and filling of lands within the 100-year flood plain (except for recreation facilities and public service facilities) and a requirement that facilities within the floodplain be constructed and maintained to minimize impacts; management of forest fuels and use of fire-resistant materials; and encouraging public safety agencies to prepare disaster plans. The full text of these goals and policies, along with a discussion of the project's consistency with the goals and policies, is included in Appendix E, "Goals and Policies Consistency Analysis."

Code of Ordinances

The TRPA Code of Ordinances includes regulations for timber harvest activities (primarily in Chapter 61.1 [Tree Removal] and Chapter 61.2 [Prescribed Burning]), which are relevant to fire fuel management for wildfire risks. 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.

Area Plans, Community Plans, and Plan Area Statements

As a means for providing orderly growth and development consistent with the TRPA Regional Plan, various Area Plans, Community Plans, and Plan Area Statements (PASs) have been developed for specific urbanized areas. These plans contain development goals and regulations specific to each plan area. Area Plans, Community Plans, and PASs do not contain policies related to hazards or hazardous materials.

STATE

California

Management of Hazardous Materials in California

In California, both federal and state community right-to-know laws are coordinated through the California Office of Emergency Services (Cal OES). Federal law, i.e., 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.

Information gathered in these four categories helps federal, state, and local agencies and communities understand the chemical hazards in a particular location or area and what chemicals individual facilities are using, storing, or producing onsite.

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, businesses within the project site would be required to prepare a Hazardous Materials Business Plan, which could 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, in this case the El Dorado County Department of Environmental Management, Hazardous Waste Division, to implement and enforce. The plan is to be updated annually.

The California Department of Toxic Substances Control (DTSC), a department of the California Environmental Protection Agency (CalEPA), 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.

The hazardous waste management program enforced by DTSC was created by the Hazardous Waste Control Act (California Health and Safety Code Section 25100 et seq.), which is implemented by regulations described in CCR Title 26. This program is similar to, but more stringent than, the federal program under RCRA. The regulations list materials that may be hazardous and establish criteria for their identification, packaging, and disposal.

Chapter 6.7 of the Health and Safety Code outlines the requirements for underground storage tanks (USTs). The code identifies requirements for corrective actions, cleanup funds, liability, and the responsibilities of owners and operators of USTs.

The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for several environmental programs. The Unified Program is a consolidation of state environmental programs into one program under the authority of a local agency, a Certified Unified Program Agency (CUPA). The six program elements of the Unified Program are: hazardous waste generators and hazardous waste on-site treatment, USTs, aboveground storage tanks (ASTs), hazardous material release response plans and inventories, risk management and prevention program, and Uniform Fire Code hazardous materials management plans and inventories. The El Dorado County Department of Environmental Management, Hazardous Waste Division, is approved by Cal EPA as the CUPA for El Dorado County.

Transport of Hazardous Materials and Hazardous Materials Emergency Response Plan in California

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 Title 26 of the 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 (CHP) 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 Cal OES, which coordinates the responses of other agencies in the study area.

Management of Construction Activities in California

In California, through the Porter-Cologne Water Quality Act and the National Pollution Discharge Elimination System (NPDES) program, the Lahontan Regional Water Quality Control Board (Lahontan RWQCB) has 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 3.9, “Floodplains,” and Section 3.10, “Water Quality and Stormwater Runoff.”

The project falls within the jurisdiction of the state Construction General Permit (Order No. 2009-009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ). The Construction General Permit covers areas that drain to the Truckee River and establishes a risk-based approach with monitoring. The NPDES Permit and Construction General Permit require that construction projects with greater than 1 acre of disturbance file permit registration documents, including a Notice of Intent and a storm water pollution prevention plan (SWPPP) that includes proposed best management practices (BMPs) and a site-specific Construction Site Monitoring and Reporting Plan developed by a Qualified SWPPP Developer. Although a major focus of the SWPPP is management of stormwater on the construction site, it must also address proper use and storage of hazardous materials, spill prevention and containment, and cleanup and reporting of any hazardous materials releases, if they do occur.

California 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 on-site evaluations and issues notices of violation to enforce necessary improvements to health and safety practices.

Title 8 of the CCR also includes regulations that provide for worker safety when blasting and explosives are utilized during construction activities. These regulations identify licensing, safety, storage, and transportation requirements related to the use of explosives in construction.

California Wildfire Responsibility Areas/State Responsibility Areas

CAL FIRE implements statewide laws aimed at reducing wildfire hazards, including in WUI areas. The laws are based in large part on hazard assessment and zoning. The laws apply to State Responsibility Areas (SRAs), which are defined as areas of the state in which the state has primary financial responsibility for preventing and suppressing fires, as determined by the state Board of Forestry and Fire Protection pursuant to Sections 4125 and 4102 of the California Public Resources Code (PRC). The applicable California PRC provisions address fire prevention and minimum fire safety standards related to defensible space for industrial operations and other land uses in SRAs (California PRC Part 2, Chapters 1 and 2). Fire safe regulations address road standards for fire equipment access, standards for signage, minimum water supply requirements for emergency fire use, and fuel breaks and greenbelts, among others. Fire protection outside SRAs is the responsibility of federal or local jurisdictions. These areas are referred to by CAL FIRE as Federal Responsibility Areas and Local Responsibility Areas.

As of July 2014, owners of habitable structures that can be used as residential space must pay an SRA Fire Prevention Fee to the state. This fee funds state efforts at fire prevention, including defensible space inspections, fire prevention engineering, emergency evacuation planning, and fire hazard severity mapping.

2010 Strategic Fire Plan for California

The 2010 Strategic California Fire Plan is the state’s road map for reducing the risk of wildfire. The Fire Plan is a cooperative effort between the state Board of Forestry and Fire Protection and CAL FIRE. By emphasizing fire prevention, the 2010 Strategic California Fire Plan seeks to reduce firefighting costs and property losses, increase firefighter safety, and to contribute to ecosystem health.

California Building Standards Code

The State of California provides minimum standards for building design through the California Building Standards Code (CCR, Title 24). The California Building Code (CBC) applies to building design and construction in the state and is based on the federal International Building Code used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). The CBC has been modified for California conditions with more detailed and/or more stringent regulations. Chapter 7A of the CBC specifies building materials and construction standards to be used in urban interface and wildland areas where there is an elevated threat of fire.

California Government Code Section 66474.02

Before approving a tentative map (or a parcel map where a tentative map is not required) for an area located in a SRA or a very high fire hazard severity zone, the legislative body of the county must find that: the design and location of each lot in the subdivision, and the subdivision as a whole, are consistent with any applicable regulations adopted by CAL FIRE pursuant to PRC Sections 4290 and 4291; structural fire protection and suppression services will be developed; and ingress and egress meets the road standards for fire equipment access adopted pursuant to PRC Section 4290 and any applicable local ordinance.

Nevada**Nevada State Emergency Response Commission**

Section 459.7052 of the Nevada Revised Statutes (NRS) requires motor carriers to register and obtain a permit for the transportation of hazardous materials before transporting a hazardous material upon a public highway of the state. As part of this statute the Nevada Department of Motor Vehicles (NDMV) requires anyone applying for a permit to transport hazardous waste to have a commercial driver's license and to undergo a background check that includes a fingerprint based Security Threat Assessment.

State agencies with primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies are the officers of the Nevada Highway Patrol (NRS 459.250).

Nevada State Emergency Response Commission

In compliance with the Community Right-to-Know Act of 1986, the Nevada State Emergency Response Commission (SERC) was established in 1987. SERC coordinates and supervises the activities of the Local Emergency Planning Committees to ensure that each committee has an approved Hazardous Materials Emergency Response Plan. SERC also collects chemical inventory reports, provides funds through grants, and processes information requests from the public.

Nevada Administrative Code

The Nevada Administrative Code (NAC) is the State of Nevada's code of state regulations. NAC 444.965 to 444.976 contains regulations pertaining to asbestos, including its removal, transportation, and disposal.

Nevada Division of Environmental Protection, Bureau of Waste Management

The Nevada Division of Environmental Protection, Bureau of Waste Management manages a Hazardous Waste Program that is responsible for enforcing state hazardous waste statutes and regulations in lieu of the EPA. With some modifications, Nevada adopts the federal hazardous waste regulations. The Hazardous Waste Program is responsible for permitting and inspecting hazardous waste generators and disposal, transfer, storage, and recycling facilities.

Nevada Department of Public Safety Hazmat Permitting Office

The Nevada Department of Public Safety Hazmat Permitting Office is responsible for the permitting and regulating of hazardous materials within the state of Nevada. Section 312 of the SARA requires covered facilities to submit hazardous chemical inventory forms annually. Information required for the substances at the facility include the quantity and location of hazardous chemicals stored or used onsite above the threshold planning quantity. Also required are the categories of each chemical's physical and health hazards.

Nevada Occupational Safety and Health Act

The Nevada Occupational Safety and Health Act (Nev-OSHA) promotes safe and healthful working conditions to provide job safety and health protection for workers in the State of Nevada. This act provides the Nevada Occupational Safety and Health Administration (Nevada OSHA) the power to issue citations for conditions inspected and found to be unsafe.

The Nev-OSHA poster (to be displayed in Nevada workplaces) states: each employer shall furnish to each of his employees, employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious physical harm to employees and shall comply with occupational safety and health standards adopted under the Act (Nevada OSHA 2014).

LOCAL

City of South Lake Tahoe

South Lake Tahoe General Plan

The Health and Safety Element of the City of South Lake Tahoe General Plan contains goals and policies related to wildland fire hazards and protection from hazardous materials. Goal HS-2 addresses minimizing fire hazards, and applicable policies require fire-resistant construction (Policy HS-2.1) and minimum fire flow requirements (Policy HS-2.5). Goal HS-6 addresses eliminating exposure to hazardous materials, waste, and natural substances; applicable policies include stopping construction activity if contamination is encountered (Policy HS-6.2). The full text of these goals and policies, along with a discussion of the project's consistency with the goals and policies, is included in Appendix E, "Goals and Policies Consistency Analysis."

Douglas County

Douglas County Code, Title 20, Section 20.690.030(I) requires projects and/or businesses that store hazardous materials, to prepare a spill management plan and containment systems to the satisfaction of the fire district with appropriate jurisdiction.

Douglas County Master Plan

The Douglas County Comprehensive Master Plan 2035 (DCMP) Land Use Policy 3.7 states that, within all land use designations, a variety of factors including "f) location in a high fire hazard area" shall be considered in reviewing and approving individual development proposals. It should be noted that a draft update of the DCMP was released in November 2011, and approved at the January 5, 2012 County Board of Supervisors meeting. However, the DCMP has not been finalized to reflect the requested changes of the TRPA Board. It may be several months before the update is finalized. Because the DCMP update has not yet been finalized, the relevant policies from the 2006 DCMP update remain in effect and are discussed in this EIS/EIR/EIS.

Section 9, "Environmental Quality," of the 2035 DCMP includes Goal 9-3, "Reduce the risks of loss from wildlife hazard." Policies addressing this goal include requiring multiple access points for development in wildfire areas (Policy 9-3B.1) and links from new development to existing development (Policy 9-3B.2); and ensuring that wildfire mitigation practices and policies are implemented throughout the development review process (Policy 9-3B.3). The full text of these goals and policies, along with a discussion of the project's consistency with the goals and policies, is included in Appendix E, "Goals and Policies Consistency Analysis."

Douglas County Hazard Mitigation Plan

In 2013 the Douglas County, Nevada Hazard Mitigation Plan was updated in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 USC 5165, enacted under Section 104 the Disaster Mitigation Act of 2000, Public Law 106-390 of October 30, 2000. The updated plan identifies ongoing and new hazard mitigation actions intended to eliminate or reduce the effects of future disasters throughout the county including drought, flood, epidemic, and wildland fire (Douglas County 2013).

Lake Tahoe Geographic Response Plan

The Lake Tahoe Geographic Response Plan (LTGRP) (Lake Tahoe Response Plan Area Committee 2014) 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.

3.12.2 Affected Environment

REGIONAL SETTING

The study area is characterized by developed urban uses, including residences, casinos, hotels, and tourist amenities, with Lake Tahoe located to the northwest and forested, mountainous areas, including Heavenly Ski Resort and Van Sickle Bi-State Park, to the southeast. Project construction activities are planned to occur mostly along major roadways, including US 50, Pioneer Trail, Lake Parkway, Park Avenue, and Stateline Avenue, and adjacent lands.

Topography, Soils, Surface Water, and Groundwater

The project site is located within the Sierra Nevada geomorphic province. The Sierra Nevada geomorphic province is a tilted fault block almost 400 miles long that is characterized by intrusions of granitic rocks, metamorphism of host rocks and block faulting along its eastern boundary. The eastern boundary of the province lies near the California–Nevada border and its western boundary is with the Great Valley Province. The project site is located on the eastern slope of the Sierra Nevada mountain range and is approximately 6,200 feet above mean sea level.

The project site consists of two distinct soil map units, as delineated by the Natural Resource Conservation Service: Christopher-Gefo complex and Cassenai gravelly loamy coarse sand. The Cassenai series consists of very deep soils that formed in colluvium over residuum weathered from granodiorite. The soils are somewhat excessively drained, moderately rapid permeability, with low to medium runoff. The Christopher-Gefo complex formed from granodiorite glacial outwash with rapid permeability (Wallace-Kuhl & Associates 2014). For more information about soil conditions, please refer to Section 3.11, “Geology, Soils, Land Capability, and Coverage.”

The project site is located within the California Department of Water Resources (DWR)-defined Tahoe Valley Groundwater Basin of the Tahoe Valley South Hydrologic Region. According to DWR, the closest well that is actively being monitored is located at the southwest end of Black Rock Road. Since May 2011, the depth to groundwater has fluctuated from approximately 0.5 to 1 feet below ground surface (bgs). Lahontan RWQCB's GeoTracker website lists a cluster of groundwater monitoring wells located at the Tahoe Tom's Gas Station facility (4029 Lake Tahoe Boulevard/US 50). According to the public records available, groundwater elevation at this location ranges from 8 to 23 feet bgs. For more information, please refer to Section 3.9, “Floodplains,” for surface water and groundwater discussions.

Wildland Fire Hazards

The Lake Tahoe Region is considered a “fire environment,” because of the climate, steep topography, and high level of available fuel in the forested areas. The threat of catastrophic fire is a major public concern. Prior to fire suppression policies and extensive logging in the Lake Tahoe Region and surrounding area, natural fire regimes would have included frequent, low-intensity burns occurring at intervals of approximately 5 to 18 years, which 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) (Living with Fire 2015). However, fire suppression policies have allowed the development of vegetation complexes that are more susceptible to high-intensity burning (e.g., crown fires). Hazardous fuel

conditions coupled with a WUI/intermix situation have resulted in an increased likelihood of ignition and high-intensity wildfire.

CAL FIRE has mapped Fire Hazard Severity Zones (FHSZs) for the entire state, including the Lake Tahoe Region. FHSZs are categorized as: moderate, high, and very high. Classification of Moderate, High, or Very High FHSZs are based on an evaluation of fuels, fire history, terrain, housing density, and occurrence of severe fire weather and are intended to identify areas where urban fires could result in catastrophic losses. According to CAL FIRE's Fire Resource Assessment Program's FHSZ Geographic Information System data, shown in Exhibit 3.12-1, the project site is located within moderate, high, and very high FHSZ. Very High FHSZ is defined as a wildland area that supports high to extreme fire behavior or developed/urban areas typically with at least 70 percent vegetation density. The areas within the City of South Lake Tahoe that are characterized as Very High FHSZ contain structures without appropriate roofing and siding materials, have decks or overhanging unenclosed features where embers can be trapped, and lack adequate defensible space around many structures (City of South Lake Tahoe 2011:8-15).

Nevada does not have an equivalent FHSZ classification system for fire hazards. However, the Nevada Fire Safe Council has identified the community of Stateline as having a Moderate Fire Hazard Rating (Nevada Fire Safe Council 2004). The relatively low fire hazard is primarily because of good defensible space and moderate slopes in this area.

Fuel Reduction Projects

The Tahoe Fire & Fuels Team (TFFT) was formed in 2008 to implement the Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy (LTBMU et al. 2014). The TFFT has divided the Tahoe Basin into five regions for easier management; the project is located in the South Tahoe and the Tahoe Douglas divisions. According to the 2015 Lake Tahoe Basin Community Wildfire Protection Plan, TFFT's forest fuels reduction project for the Tahoe Douglas Division has resulted in initial treatment for over 1,005 acres and mechanical treatments on 204 acres. All Nevada state lands and nearly all urban lands have received initial treatment. Fire crews have hand-thinned hundreds of acres in the South Tahoe Division and nearly all urban lands have received initial treatment (TFFT 2015).

EXISTING SITE CONDITIONS

Within the project site, existing US 50 has five lanes of through traffic and Pioneer Trail, Lake Parkway, Park Avenue, and Stateline Avenue are two-lane roads. Four resort-casinos, Harrah's, Harvey's, Montbleu, and the Hard Rock Hotel and Casino, are located along US 50 north of the state line between California and Nevada in the tourist core. South of the state line, parcels along US 50 are developed hotels, restaurants, and shops. Tahoe Tom's gasoline station is located at 4029 Lake Tahoe Boulevard, at the intersection of Park Avenue and US 50.

Hotels are located along the east and west sides of Park Avenue and Pine Boulevard. Heavenly Village Way is located to the east of Park Avenue and US 50. The north side of Heavenly Village Way is developed with a Marriott resort, the Heavenly Gondola, and Heavenly Village. The south side of Heavenly Village Way is developed with the Heavenly Village Center, containing a Raley's grocery store and other commercial/retail uses.

Properties along Fern Road, Echo Road, and Moss Road are developed with single-family residences and multi-family apartment buildings, with the exception of motels at the west end of each road.

An electrical substation is located 125 feet east of the intersection of Fern Road and Montreal Road. Vacant, forested land is located to the north of the electrical substation along the east side of Montreal Road, which changes to Lake Parkway north of Heavenly Village Way. North of Heavenly Village Way, the Forest Suites Resort is located to the west of Lake Parkway.

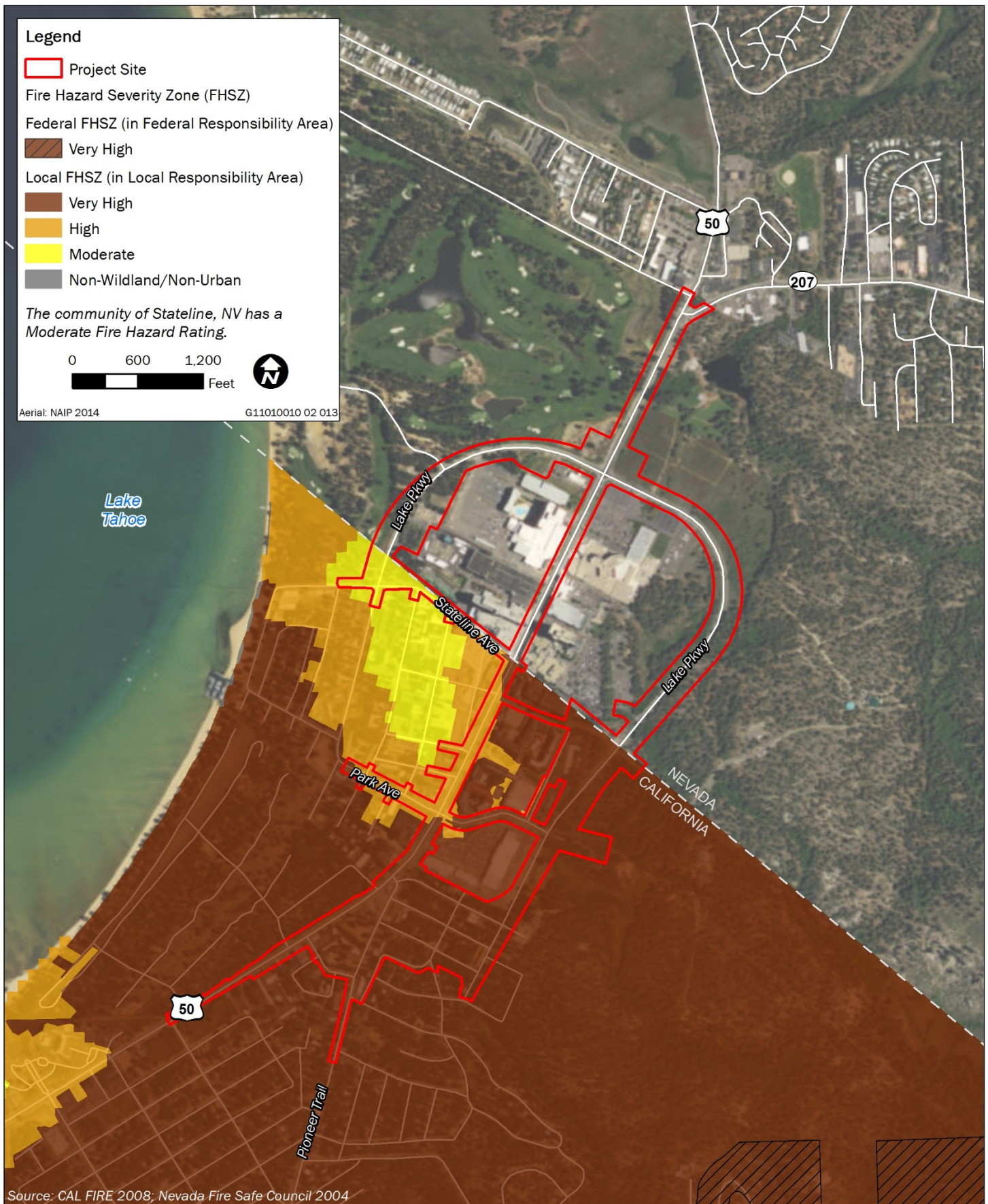


Exhibit 3.12-1

Fire Hazard Severity Zones in California

Hazards in the Lake Tahoe Region

Hazardous conditions can derive from human or natural sources. Human-made hazards are generally associated with the handling of chemicals routinely used in everyday products. Many chemicals used for household cleaning, construction, dry cleaning, film processing, landscaping, and automotive maintenance and repair are considered hazardous. Contamination of soil or groundwater may be caused by the improper storage or disposal of these hazardous materials.

Natural hazards can also create conditions hazardous to public health and safety. In the Lake Tahoe Region, natural hazards are most frequently related to the dangers of avalanches, wildfires, flooding, earthquakes, and seiches (TRPA 2012). (Geologic hazards including avalanche, earthquake, and seiche-related hazards are discussed in Section 3.11, “Geology, Soils, Land Capability, and Coverage.” Risks associated with flooding are discussed in Section 3.9, “Floodplains.”) The federal government is the entity with primary responsibility over wildfire protection and suppression in the Lake Tahoe area. The project site is classified as both a Federal Responsibility Area and a State Responsibility Area/Federal Direct Protection Area by the California-Nevada Tahoe Basin Fire Commission. (Direct Protection Areas are established to more efficiently provide protection over a contiguous area, and occur where the agency that provides fire suppression and prevention is different than the agency with legal and financial responsibility to provide those services.)

Hazardous Materials

Aerially Deposited Lead

Aerially deposited lead (ADL) refers to lead deposited along highway shoulders from past vehicle emissions. ADL is the result of tailpipe emissions during the years that lead was used as an additive in gasoline. Even though leaded fuel has been prohibited in California since the 1980s, ADL can still be found along the unpaved areas adjacent to highways that were in use before that time. ADL concentrations along highways can be high enough to cause the soil to be defined as a California hazardous waste. Hazardous waste law requires that this material is managed, transported, and disposed of at a Class I disposal facility (Caltrans 2014).

Given the age of the existing roadways, it is likely that ADL has impacted the surface soils along roadway shoulders within the project site. However, in areas where shoulders have been upgraded after the mid-1980s, ADL is not likely to remain.

Asbestos-Containing Materials

Asbestos, a naturally-occurring fibrous material, was used as a fireproofing and insulating agent in building construction before such uses were largely banned by EPA in the 1970s. Because it was widely used before the discovery of its health effects, asbestos is found in a variety of building materials, including sprayed-on acoustic ceiling texture, floor tiles, and pipe insulation.

Asbestos exposure is a human respiratory hazard when the asbestos becomes friable (easily crumbled) because inhalation of airborne fibers is the primary mode of asbestos entry into the body. Asbestos-related health problems include lung cancer and asbestosis. Asbestos-containing building materials are considered hazardous by Cal/OSHA when bulk samples contain more than 0.1 percent asbestos by weight. Asbestos can be evaluated only by sampling, performed by a certified technician, followed by laboratory analysis. These materials must be handled by a qualified contractor.

Structures located adjacent to the study area roads that were constructed before 1980 have a high likelihood of containing asbestos-containing building materials.

Lead-Based Paint

Lead is a potentially hazardous material that can result in cardiovascular effects, increased blood pressure and incidence of hypertension; decreased kidney function; reproductive problems; and nervous system damage. Lead can be found in old water pipes, solder, paint, and in soils around structures painted with lead-based paints. Lead-based paints are likely present on buildings constructed before the late 1970s, when the quantity of lead in paints became regulated. Potentially hazardous exposures to lead can occur

when lead-based paint is improperly removed from surfaces by dry scraping, sanding, or open-flame burning. Lead-based paints and coatings used on the exterior of buildings may have also flaked or oxidized and deposited into the surrounding soils.

Structures located adjacent to the study area roads that were constructed before 1980 have a high likelihood of containing lead-based paint.

Vapor Encroachment Conditions

Vapor encroachment occurs when volatile chemicals migrate from contamination in the soil or groundwater up into a building's interior space through interstitial space in the soil. Vapor encroachment can pose a potential health threat to the occupants of the building, especially to sensitive populations such as children. Vapor encroachment has been a particular concern with regards to contamination caused by dry cleaning solvents, because these chemicals are highly volatile and toxic. However, vapor encroachment can also occur with other contaminants such as petroleum products. Vapor encroachment can be caused by contamination on-site or off-site from a property.

Wallace-Kuhl & Associates conducted a preliminary screening for vapor encroachment conditions (VECs) beneath the project site using the Tier 1 vapor encroachment screening evaluation, which is based on the guidelines presented in the ASTM E 2600-10 Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions (Wallace-Kuhl & Associates 2014). The Tier I screening included performing a Search Distance Test to identify if there are any known or suspect contaminated properties surrounding or upgradient of the project site within specific search radii, and a Chemicals of Concern (COC) Test (for those known or suspect contaminated properties identified within the Search Distance Test) to evaluate whether or not COC are likely to be present. The ISA recommended that screening for VEC should be performed if residential properties were to be developed within the project site.

Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were domestically manufactured from 1929 until their manufacture was banned in 1979. They have a range of toxicity and vary in consistency from thin, light-colored liquids to yellow or black waxy solids. PCBs are highly persistent in the environment, and exposure can cause serious liver, dermal, and reproductive system damage.

Due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications. Products that may contain PCBs include: transformers, capacitors, and other electrical equipment; oil used in motors and hydraulic systems; and thermal insulation material. The pole-mounted electrical transformers located in the project site may contain PCBs; however, many utilities have instituted programs to renovate or replace equipment with a mineral oil that does not contain PCBs. A Liberty Energy electrical substation is located 125 feet east of the intersection of Fern Road and Montreal. Should fluid spills or releases from an electrical transformer occur, associated remediation efforts are typically the responsibility of the transformer owner (Liberty Energy) per federal regulation (40 CFR 761.125).

Natural Hazards

Natural hazards can also create conditions hazardous to public health and safety. In the Lake Tahoe Region, natural hazards are most frequently related to the dangers of avalanches, wildfires, flooding, earthquakes, and seiches (TRPA 2012). (Avalanche and earthquake hazards [such a seiches] are addressed in Section 3.9, "Geology, Soils, Land Capability, and Coverage."

Radon

Radon is an invisible, odorless, radioactive gas produced by decay of uranium that is naturally present in rock and soil. The EPA classifies El Dorado County as Zone 2, indicating that predicted average indoor radon levels are between 2 and 4 picocuries per liter of air (pCi/L), and there is a moderate potential hazard (EPA 2016). Douglas County is classified as Zone 1, indicating that predicted average indoor radon screening

levels greater than 4 pCi/L. Radon gas can move from underlying soil and rock into houses and other inhabited structures and become concentrated in the indoor air, posing a significant lung cancer risk for the residents (California Geological Survey [CGS] 2009). EPA has established an action threshold of 4 pCi/L for indoor air, above which it is recommended that radon gas in homes is mitigated.

Recognized Environmental Conditions

The *Phase I Initial Site Assessment* evaluated the areas along roadways within the project site for evidence of potential Recognized Environmental Conditions (RECs) resulting from current and/or former activities within the study area (Wallace-Kuhl & Associates 2014). RECs occur in the presence or likely presence of any hazardous materials or petroleum products that indicate an existing release, a past release, or a material threat of a release. The term includes properties where hazardous substances or petroleum products are stored, handled, and disposed of under conditions in compliance with applicable laws. RECs identified in the study area are described below.

Gas Station Facilities

The Tahoe Tom's Gas Station facility, 4029 Lake Tahoe Boulevard, is listed on the Lahontan RWQCB Leaking Underground Storage Tank (LUST) database. According to a Denial to Rescind April 23, 1997, No Further Action letter, dated January 18, 2007, two releases have occurred at the facility. The first released occurred in 1989 and a no further action status was granted for the release on April 23, 1997. A second release was discovered in 1998 and on-going monitoring assessment is being conducted for that release. According to a Second Quarter 2014 Quarterly Monitoring Report, dated May 30, 2014, methyl tertiary butyl ether (MTBE) impacted groundwater extends to the west of the facility and the direction of groundwater flow was reported to be to the south, toward Park Avenue. Based on the information reviewed, off-site concerns are noted from potential petroleum hydrocarbon impacted soils at the facility.

The former Shell Service Station facility at 3953 Lake Tahoe Boulevard (now a vacant site) is listed on the Lahontan RWQCB LUST database. According to a Lahontan RWQCB letter, dated November 8, 2004, the facility received a no further action status. Based on the information review during this assessment, this former facility is not suspected of negatively impacting the project site at this time.

The former Tosco #3553 facility at 4115 Lake Tahoe Boulevard is listed on the Lahontan RWQCB LUST database. According to a Lahontan RWQCB letter, dated March 1, 2005, the facility received a no further action status. The property has been redeveloped with the Chateau development that includes shops and restaurants. Based on the information reviewed during this assessment, this facility is not suspected of negatively impacting the project site at this time.

Former Retail Facility

The former T-Shirt Connection/SLT Redevelopment Agency facility, 4054 Lake Tahoe Boulevard, is listed on the Lahontan RWQCB LUST database. According to the Lahontan RWQCB GeoTracker website, the facility received a no further action status on September 18, 2003. Based on the information reviewed, this facility is not suspected of negatively impacting the project site at this time.

Former U.S. Post Office

The former Post Office facility at 3962 Lake Tahoe Boulevard is listed on the Lahontan RWQCB LUST database. According to the Lahontan RWQCB GeoTracker website, the facility received a no further action status on June 11, 2003. Based on the information reviewed, this facility is not suspected of negatively impacting the project site at this time.

Former Caesars Tahoe Hotel and Casino

The former Caesars Tahoe Hotel and Casino at 55 U.S. Highway 50 is listed on the Nevada Department of Environmental Protection Corrective Actions/Leaking Underground Storage Tanks database (Nevada Division of Environmental Protection [NDEP] 2016). According to the database, a release of total petroleum hydrocarbons (TPH), perchloroethylene (PCE), and benzene, toluene, ethylbenzene, and xylene (BTEX) to groundwater was reported in 1994.

3.12.3 Environmental Consequences

METHODS AND ASSUMPTIONS

Methods for the impact analysis provided below included a review of applicable laws, permits, and legal requirements pertaining to hazards and hazardous materials, as discussed above, and as applicable to the project alternatives and the project site. Within this framework, existing on-site hazardous materials, wildfire potential, and the potential for other safety or hazardous conditions were reviewed based on site reconnaissance and information available from publicly available hazard and hazardous materials information, site/location and cleanup status information, and other available information. The impact analysis considered potential for changes in the nature, extent, or presence of hazardous conditions to occur on-site as a result of project construction and operation, including increased potential for exposure to hazardous materials and conditions resulting from implementation of the US 50/South Shore Community Revitalization Project. Compliance with applicable federal, state, and local health and safety laws and regulations by residents and businesses would generally protect the health and safety of the public.

Potential effects associated with the project can be classified as either temporary or permanent. Temporary impacts generally include effects associated with construction activities, including the transport, storage, and use of potentially hazardous chemicals and the potential to encounter hazardous wastes during construction. Permanent impacts generally include effects associated with continued use of US 50 for the transport of hazardous materials.

SIGNIFICANCE CRITERIA

NEPA Criteria

An environmental document prepared to comply with the National Environmental Policy Act (NEPA) must consider the context and intensity of the environmental effects that would be caused by or result from the locally preferred action. Under NEPA, the significance of an effect is used solely to determine whether an Environmental Impact Statement must be prepared. The factors that are taken into account under NEPA to determine the significance of an action in terms of the context and the intensity of its effects are encompassed by the CEQA criteria used for this analysis. No specific factors related to hazards, hazardous materials, or risk of upset are contained in NEPA, Council on Environmental Quality Regulations Implementing NEPA, or Federal Highway Administration NEPA regulations in 23 CFR 771 et seq.

TRPA Criteria

TRPA significance criteria related to human health and risk of upset would be violated if a project would:

- ▲ result in creation of any health hazard (excluding mental health);
- ▲ result in exposure of people to potential health hazards; or
- ▲ involve a risk of explosion or the release of hazardous substances including, but not limited to, oil, pesticides, chemicals, or radiation in the event of an accident or upset condition.

CEQA Criteria

In accordance with Appendix G of the State CEQA Guidelines, a project is determined to result in a significant impact related to human health if it would do any of the following:

- ▲ 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 accident conditions involving the release of hazardous materials into the environment;
- ▲ 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 create a significant hazard to the public or the environment; or
- ▲ expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

ENVIRONMENTAL EFFECTS OF THE PROJECT ALTERNATIVES

Impact 3.12-1: Expose people or the environment to hazards because of the routine storage, use, and transport of hazardous materials or from accidental release or upset

Construction activities related to each of the build alternatives could involve the routine storage, use, and transport of hazardous materials typical of road and residential construction projects. Use of hazardous materials would occur in compliance with all local, state, and federal regulations.

NEPA Environmental Consequences: The design features of Alternatives B, C, D, and E would avoid or minimize the exposure of people or the environment to hazards such that no additional mitigation measures are needed or feasible to implement; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, D, and E; No Impact for Alternative A

Construction of any of the four build alternatives would temporarily increase the regional transportation, use, storage, and disposal of hazardous materials and petroleum products commonly used at construction sites (such as diesel fuel, lubricants, paints and solvents, and cement products containing strong basic or acidic chemicals), which could result in accidents or upset of hazardous materials that could create hazards to persons and the environment. However, these types of routine uses are carefully regulated and all materials would be used, stored, and disposed of in accordance with applicable federal, state, and local laws.

In California, transportation of hazardous materials on roadways is regulated by the CHP and Caltrans, and the use of these materials is regulated by DTSC. Standard accident and hazardous materials recovery training and procedures are enforced by the state and followed by private state-licensed, certified, and bonded transportation companies and contractors. Further, pursuant to 40 CFR 112, a spill prevention, containment, and countermeasures plan or, for smaller quantities, a spill prevention and response plan, that identifies BMPs for spill and release prevention and provides procedures and responsibilities for rapidly, effectively, and safely cleaning up and disposing of any spills or releases would be established for the US 50/South Shore Community Revitalization Project. As required under state and federal law, plans for notification and evacuation of site workers and local residents in the event of a hazardous materials release would be in place throughout construction.

In Nevada, transportation of hazardous materials on roadways is regulated by NDMV and the Nevada Highway Patrol (NRS 459.250) and the use of these materials is regulated by NDEP Bureau of Waste Management, Nevada Department of Public Safety Hazmat Permitting Office, and Douglas County Emergency Management Department.

The US 50/South Shore Community Revitalization Project would conform to permit and spill prevention plans prepared under SWRCB Construction General Permit (2009-0009 DWQ) to avoid spills and releases of hazardous materials and wastes. Additionally, all materials would be used, stored, and disposed of in

accordance with applicable federal, state, and local laws including Nev-OSHA, and Nevada's Hazardous Waste Management Program regulations, as well as manufacturer's instructions. Inspections would be conducted to verify consistent implementation of general construction permit conditions and BMPs to avoid and minimize the potential for spills and releases, and the immediate cleanup and response thereto. BMPs include, for example, the designation of special storage areas and labeling, containment berms, coverage from rain, and concrete washout areas.

Construction activity related to the build alternatives would comply with the regulations set forth by these organizations and all materials would be used, stored, and disposed of in accordance with applicable federal, state, and local laws. These existing regulations specify mandatory and prescriptive actions about how to fulfill the regulatory requirements as part of the project definition, leaving little discretion in their implementation.

Alternative A: No Build (No Project)

With implementation of Alternative A, there would be no construction activities that would involve the use of potentially hazardous materials. Transportation of hazardous materials would reflect existing conditions. Thus, there would be **no impact** for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Construction and operation of the Alternative B transportation improvements would result in the routine storage, use, and transport of hazardous materials. As discussed above, plans would be developed for the project that outline procedures and responsibilities for rapidly, effectively, and safely cleaning up and disposing of any spills or releases, in compliance with federal and state regulations.

No permanent impacts would be associated with use or disposal of hazardous materials during operation of the US 50/South Shore Community Revitalization Project. Transportation of hazardous materials on roadways would be routed to the realigned US 50, which would create the potential for a hazardous materials release in a new area. Implementation of Alternative B is intended to relieve traffic congestion and improve vehicular safety, which could reduce the possibility for traffic accidents that can result in release of hazardous materials that are being transported. Transport of hazardous materials would be regulated, as discussed above, and operation of Alternative B would not appreciably affect the risk associated with upset of hazardous materials during transportation.

Compliance with the various federal, state, and local regulations would minimize the risk of a spill or accidental release of hazardous materials during construction and operation of the Alternative B transportation improvements. The impact to the public and the environment from exposure to hazardous materials would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the exposure of the public and the environment to hazards such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Alternative B includes development of three mixed-use redevelopment sites, which could provide replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Pursuant to the State of California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act, California Health and Safety Code, Division 20, Chapter 6.95, Article 1), the future project applicant(s) or subsequent builder(s) of commercial facilities would be required to prepare a Hazardous Materials Business Plan and inventory of hazardous materials, if inventory would exceed threshold quantities of 500 pounds or more of solids, 55 gallons or more of liquids, 200 cubic feet or more of compressed gases, or include extremely hazardous substances. The Hazardous Materials Business Plan would be prepared before occupancy of subject buildings and would include:

- ▲ an inventory of hazardous materials handled;
- ▲ facility floor plans showing where hazardous materials are stored;
- ▲ an emergency response plan; and
- ▲ provisions for employee training in safety and emergency response procedures.

The project applicant would pay fees in effect at the time of payment and would submit the business plan to the El Dorado County Department of Environmental Management, Hazardous Waste Division, for review and approval. Hazardous materials would not be handled in regulated quantities without notification of El Dorado County Department of Environmental Management.

Compliance with the various federal, state, and local regulations would minimize the risk of a spill or accidental release of hazardous materials during construction and operation of the Alternative B mixed-use development sites. The impact to the public and the environment from exposure to hazardous materials would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development sites included in Alternative B would avoid or minimize the exposure of the public and the environment to hazards such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for exposure of the public and the environment to hazards as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for exposure of the public and the environment to hazards at another location would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the exposure of the public and the environment to hazards.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative B would minimize the exposure of the public and the environment to hazards such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

The Alternative C transportation improvements include the project components described above under Alternative B, except that it would split eastbound and westbound directions on US 50 from the Pioneer Trail/US 50 intersection in California to Lake Parkway/US 50 intersection in Nevada. As discussed under Alternative B, compliance with the various federal, state, and local regulations would minimize the risk of a spill or accidental release of hazardous materials during construction and operation of the project. Routine storage, use, and transport of hazardous materials would be regulated, as discussed above, and the potential for release of hazardous materials impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would avoid or minimize the exposure of the public and the environment to hazards such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Alternative C includes development of three mixed-use development sites, which could provide replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). As discussed

under Alternative B, compliance with the various federal, state, and local regulations would minimize the risk of a spill or accidental release of hazardous materials during construction and operation of the project. Routine storage, use, and transport of hazardous materials would be regulated, as discussed above, and the potential for release of hazardous materials impact associated with Alternative C would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development sites included in Alternative C would avoid or minimize the exposure of the public and the environment to hazards such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for exposure of the public and the environment to hazards as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for exposure of the public and the environment to hazards at another location would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the exposure of the public and the environment to hazards.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative C would minimize the exposure of the public and the environment to hazards such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

The Alternative D transportation improvements include the project components described above under Alternative B, however, the realigned US 50 would proceed east on a new roadway between existing Echo Road and Fern Road, as opposed to the existing Moss Road. As discussed under Alternative B, compliance with the various federal, state, and local regulations would minimize the risk of a spill or accidental release of hazardous materials during construction and operation of the project. Routine storage, use, and transport of hazardous materials would be regulated, as discussed above, and the potential for release of hazardous materials impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would avoid or minimize the exposure of the public and the environment to hazards such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Alternative D includes development of three mixed-use development sites, which could provide replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). As discussed under Alternative B, compliance with the various federal, state, and local regulations would minimize the risk of a spill or accidental release of hazardous materials during construction and operation of the project. Routine storage, use, and transport of hazardous materials would be regulated, as discussed above, and the potential for release of hazardous materials impact associated with Alternative D would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development sites included in Alternative D would avoid or minimize the exposure of the public and the environment to hazards such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for exposure of the public and the environment to hazards as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for exposure of the public and the environment to hazards at another location would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the exposure of the public and the environment to hazards.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative D would minimize the exposure of the public and the environment to hazards such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

Alternative E would involve construction of a concrete bridge over the entire width and length of the existing US 50 right-of-way (ROW) between Stateline Avenue and the northeastern end of Montbleu Resort that would serve pedestrians as a “skywalk” walkway along the casino corridor. Construction activities would occur at the same locations and at a similar intensity as under Alternative B. Therefore, compliance with the various federal, state, and local regulations would minimize the risk of a spill or accidental release of hazardous materials during construction and operation of the project, and the potential for release of hazardous materials impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would avoid or minimize the exposure of the public and the environment to hazards such that no additional mitigation measures are needed or feasible to implement.

Impact 3.12-2: Exposure to recognized environmental conditions

The transportation improvements could affect properties that are included on a list of hazardous materials sites. The project site is located in an area with a moderate to high potential for naturally-occurring radon gas, exposure to which has the potential to cause lung cancer. In addition, ADL could be present on and near roadway shoulders. Although the project incorporates best management practices, avoidance measures, and regulatory compliance, through construction of the project, it would be possible that previously unidentified contaminants, such as radon gas or ADL, could be disturbed or encountered by residents and workers. Although the project incorporates best management practices, avoidance measures, and regulatory compliance to reduce the potential for adverse effects, there is a risk of exposure of residents to radon gas and workers to ADL or other unknown contaminants.

NEPA Environmental Consequences: Mitigation Measures 3.12-2a, 3.12-2b, 3.12-2c, and 3.12-2d have been incorporated into Alternatives B, C, D, and E to further reduce to the extent feasible the potential for exposure to recognized environmental conditions; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, D, and E after implementation of Mitigation Measures 3.12-2a, 3.12-2b, 3.12-2c, and 3.12-2d; No Impact for Alternative A

Temporary impacts could occur if construction were to affect sites of known contamination or inadvertently disturb other hazardous materials or wastes in a manner that could release hazardous materials into the environment, or expose construction workers or nearby sensitive receptors to hazardous conditions. Six

RECs have been identified within or immediately adjacent to the project site. Five of these sites have all undergone remediation and are not expected to present a substantial hazard to construction. No soil contamination is known or suspected in the project site and, although the potential for groundwater contamination is currently under evaluation at two sites (Tahoe Tom's Gas Station and Caesars Tahoe Hotel and Casino), the potential for contaminated groundwater within the project site is low. Other hazardous materials potentially encountered during demolition of existing structures and project construction could include asbestos, lead-based paint and other coatings, ADL, heavy metals, polychlorinated biphenyls, and vapor encroachment conditions. Surveys for and removal of these substances are regulated. The project site could also be affected by undocumented contamination that has not been characterized or remediated and could, therefore, create a hazard to people or the environment.

Recognized Environmental Conditions

Gas Station Facilities

The Tahoe Tom's Gas Station facility, 4029 Lake Tahoe Boulevard, is listed on the Lahontan RWQCB Leaking Underground Storage Tank (LUST) database. According to a Denial to Rescind April 23, 1997, No Further Action letter, dated January 18, 2007, two releases have occurred at the facility. The first released occurred in 1989 and a no further action status was granted for the release on April 23, 1997. A second release was discovered in 1998 and on-going monitoring assessment is being conducted for that release. According to a Second Quarter 2014 Quarterly Monitoring Report, dated May 30, 2014, MTBE impacted groundwater extends to the west of the facility and the direction of groundwater flow was reported to be to the south, toward Park Avenue. Based on the information reviewed, off-site concerns are noted from potential petroleum hydrocarbon impacted soils at the facility.

The former Shell Service Station facility at 3953 Lake Tahoe Boulevard (now a vacant site) is listed on the Lahontan RWQCB LUST database. According to a Lahontan RWQCB letter, dated November 8, 2004, the facility received a no further action status. Based on the information review during this assessment, this former facility is not suspected of contaminating the project site at this time.

The former Tosco #3553 facility at 4115 Lake Tahoe Boulevard is listed on the Lahontan RWQCB LUST database. According to a Lahontan RWQCB letter, dated March 1, 2005, the facility received a no further action status. The property has been redeveloped with the Chateau development that includes shops and restaurants. Based on the information reviewed during this assessment, this facility is not suspected of contaminating the project site at this time.

Former Retail Facility

The former T-Shirt Connection/SLT Redevelopment Agency facility, 4054 Lake Tahoe Boulevard, is listed on the Lahontan RWQCB LUST database. According to the Lahontan RWQCB GeoTracker website, the facility received a no further action status on September 18, 2003. Based on the information reviewed, this facility is not suspected of contaminating the project site at this time.

Former U.S. Post Office

The former Post Office facility at 3962 Lake Tahoe Boulevard is listed on the Lahontan RWQCB LUST database. According to the Lahontan RWQCB GeoTracker website, the facility received a no further action status on June 11, 2003. Based on the information reviewed, this facility is not suspected of contaminating the project site at this time.

Former Caesars Tahoe Hotel and Casino

The former Caesars Tahoe Hotel and Casino at 55 U.S. Highway 50 is listed on the Nevada Department of Environmental Protection Corrective Actions/Leaking Underground Storage Tanks database (NDEP 2016). According to the database, a release of TPH, PCE, and BTEX to groundwater was reported in 1994. Based on the information reviewed, off-site groundwater contamination could be a concern from the release of TPH, PCE, and BTEX at this location, if construction activities extend below the existing ground surface.

Disturbance of Materials Containing Asbestos, Lead, or other Hazardous Materials

Existing features within the project site are believed to contain hazardous materials, including asbestos, lead, and heavy metals—primarily because many of the existing structures were constructed before the use of these materials was known to cause health concerns and, therefore, became regulated. Demolition of structures and roadways could result in inadvertent release or improper disposal of debris containing potentially hazardous materials; however, federal, state, and local regulations have been developed to address potential impacts related to the handling and disposal of hazardous materials during demolition. Potential impacts can be minimized through adherence to regulatory standards that prescribe specific methods of material characterization and handling. Specific actions incorporated into the build alternatives include the following:

- ▲ **Aerially deposited lead.** Exposed soils adjacent to existing roadways may contain elevated levels of lead. Surveying and sampling would be required to determine presence.
- ▲ **Asbestos.** All structures requiring demolition would be tested for the presence of asbestos-containing materials. Any asbestos would be removed and disposed of by an accredited contractor in compliance with federal, state, and local regulations (including the Toxic Substances Control Act and the National Emission Standard for Hazardous Air Pollutants). Compliance with these regulations would result in the safe disposal of asbestos-containing materials.
- ▲ **Lead-based paint or other coatings.** A survey for indicators of lead-based coatings would be conducted before demolition to further characterize the presence of lead on the project site. For the purposes of compliance with Cal-OSHA regulations, all coated surfaces would be assumed to potentially contain lead. There is also a potential for soil contamination because of deposition of deteriorated (i.e., flaked, peeled, chipped) lead-based paint adjacent to structures where lead-based exterior paints were used. Loose or peeling paint may be classified as a hazardous waste if concentrations exceed total threshold limits. Cal-OSHA regulations require air monitoring, special work practices, and respiratory protection during demolition where even small amounts of lead have been detected.
- ▲ **Vapor encroachment conditions.** If future properties include human occupancy of habitable structures, a screening for VEC should be performed, based on the type of facility, the information regarding the type of contaminant and groundwater flow, and the distance from the contaminant to the property. The screening would indicate if a full VEC study would be necessary; the study would then determine appropriate remediation as needed.
- ▲ **Heavy metals and polychlorinated biphenyls.** Spent fluorescent light bulbs and ballasts, thermostats, and other electrical equipment may contain heavy metals, such as mercury, or polychlorinated biphenyls. If concentrations of these metals exceed regulatory standards, they must be handled as hazardous waste in accordance with hazardous waste regulations.

Hazardous waste would be transported and disposed in compliance with applicable federal, state, and local regulations, including the federal Hazardous Materials Transportation Act.

Inadvertent Disturbance of Hazardous Materials or Wastes

The disturbance of undocumented hazardous wastes could also result in hazards to the environment and human health. Adverse impacts could result if construction activities inadvertently disperse contaminated material into the environment. For example, soils containing PCBs could be disturbed during site grading. Potential hazards to human health include ignition of flammable liquids or vapors, inhalation of toxic vapors in confined spaces such as trenches, and skin contact with contaminated soil or water. In addition, inadvertent disturbance of asbestos in structures and underground utilities could result in airborne asbestos fibers.

Alternative A: No Build (No Project)

With implementation of Alternative A, no construction activities would occur that could disturb hazardous sites. No new structures would be constructed and no existing structures would be removed. Thus, there would be **no impact** from exposure to environmental contaminants for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)**Transportation Improvements**

Construction and operation of the Alternative B transportation improvements would result in the full or partial acquisition of 99 parcels, and the demolition of associated buildings and other structures on the 42 parcels that would be fully acquired. Although there would be no direct adverse impact on the Tahoe Tom's Gas Station facility, the alternative does include roadwork near the station; activities would be limited to sidewalk improvements just south of the facility. Concerns are noted from potential petroleum-affected soils located along Park Avenue at the Tahoe Tom's Gas Station facility and potentially impacted groundwater at the former Caesars Tahoe Hotel and Casino. The structures contributing to the listing for the Shell Service Station facility, Tosco facility, former T-Shirt Connection, or former U.S. Post Office facility have been removed and, as discussed above, no evidence suggests that these sites present a current hazard within the project site.

Underground utilities, existing roadways, and the structures to be demolished could contain asbestos and lead-based paints and coatings that require special consideration during demolition and may have affected surrounding soils. Surface soils along US 50 could also contain ADL. The project site could also be affected by undocumented contamination that has not been characterized or remediated. Therefore, this is a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative B to further reduce to the extent feasible the environmental consequences related to the potential for exposure to RECs.

Mixed-Use Development including Replacement Housing

Alternative B includes the redevelopment of three mixed-use redevelopment sites, which could include replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Use of the three sites would require additional parcel acquisitions beyond that required for the transportation improvements. Certain hazardous materials and conditions present an elevated risk to residential populations.

Vapor encroachment occurs when volatile chemicals migrate from contamination in the soil or groundwater up into a building's interior space. Vapor encroachment can pose a potential health threat to the occupants of the building, especially to sensitive populations such as children. Vapor encroachment can be caused by contamination on-site or off-site from a property. The ISA performed for the project recommended that screening for VEC should be performed if residential properties were to be developed.

The project is located in an area with a moderate to high potential for naturally-occurring radon gas. Radon gas can be released from underlying soil and rock into houses and become concentrated in interior spaces without adequate ventilation, which has the potential to cause lung cancer.

Incorporation of standard best management practices into the project, along with coordination with regulatory agencies, would reduce the potential for adverse effects that could result from construction on known contaminated sites. However, the project site could be affected by undocumented contamination that has not been characterized or remediated, and construction of utility lines and transportation improvements along US 50 could result in exposure of workers to ADL. Furthermore, because of the potential for naturally-occurring radon gas in the region, there is a risk of elevated radon levels inside project residences or

structures; VECs are also a concern in residential properties. Therefore, this is a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the construction of the Alternative B mixed-use development sites to further reduce to the extent feasible the potential for exposure to RECs.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for exposure to RECs as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for exposure to RECs at another location would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact as it relates to the potential for exposure to RECs.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative B transportation improvements and mixed-use development sites to further reduce to the extent feasible the environmental consequences related to the potential for exposure to RECs.

Alternative C: Triangle One-Way

Transportation Improvements

The Alternative C transportation improvements include the same components described above under Alternative B, except that it would split eastbound and westbound directions on US 50 from the Pioneer Trail/US 50 intersection in California to Lake Parkway/US 50 intersection in Nevada. Construction and operation of Alternative C would result in the full or partial acquisition of 97 parcels and the demolition of associated buildings and other structures on the 40 parcels that would be fully acquired. As discussed under Alternative B, incorporation of standard best management practices and avoidance measures into the project, and coordination with regulatory agencies would reduce the potential for adverse effects that could result from construction on known contaminated sites. However, the project site could be affected by documented contamination at the site of the former Caesars Tahoe Hotel and Casino and undocumented contamination that has not been characterized or remediated, and construction of utility lines and transportation improvements along US 50 could result in exposure of workers to ADL. Construction activities would occur at the same locations and at a similar intensity as under Alternative B. Therefore, Alternative C has the potential to increase exposure of people or structures to RECs, and this impact is considered **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative C to further reduce to the extent feasible the environmental consequences related to the potential for exposure to RECs.

Mixed-Use Development including Replacement Housing

Alternative C includes the development of three mixed-use development sites, which could provide replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). As discussed under Alternative B, the mixed-use development could expose people to additional hazardous conditions. Due to the potential for naturally-occurring radon gas in the region, there is a risk of elevated radon levels inside project residences or structures. VECs are also a concern in residential properties. Construction activities and the mixed-use development would occur at the same locations and at a similar intensity as under Alternative B. Therefore, Alternative C has the potential to increase exposure of people or structures to RECs, and this impact is considered **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the construction of the Alternative C mixed-use development sites to further reduce to the extent feasible the potential for exposure to RECs.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for exposure to RECs as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for exposure to RECs at another location would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact as it relates to the potential for exposure to RECs.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative C transportation improvements and mixed-use development sites to further reduce to the extent feasible the environmental consequences related to the potential for exposure to RECs.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

The Alternative D transportation improvements include the project components described above under Alternative B; however, the realigned US 50 alignment would proceed east on a new roadway between existing Echo Road and Fern Road, as opposed to Moss Road. Construction and operation of Alternative D would result in the full or partial acquisition of 78 parcels and the demolition of associated buildings and other structures on the 37 parcels that would be fully acquired. As discussed under Alternative B, incorporation of standard best management practices and avoidance measures into the project, and coordination with regulatory agencies would reduce the potential for adverse effects that could result from construction on known contaminated sites. However, the project site could be affected by documented contamination at the site of the former Caesars Tahoe Hotel and Casino and undocumented contamination that has not been characterized or remediated, and construction of utility lines and transportation improvements along US 50 could result in exposure of workers to ADL. Construction activities would occur at the same locations and at a similar intensity as under Alternative B. Therefore, Alternative D has the potential to increase exposure of people or structures to RECs, and this impact is considered **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative D to further reduce to the extent feasible the environmental consequences related to the potential for exposure to RECs.

Mixed-Use Development including Replacement Housing

Alternative D includes the development of three mixed-use development sites, which could provide replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). As discussed under Alternative B, the mixed-use development sites could expose people to additional hazardous conditions. Due to the potential for naturally-occurring radon gas in the region, there is a risk of elevated radon levels inside project residences or structures. VECs are also a concern in residential properties. Construction activities and the mixed-use development would occur at the same locations and at a similar intensity as under Alternative B. Therefore, Alternative D has the potential to increase exposure of people or structures to RECs, and this impact is considered **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the construction of the Alternative D mixed-use development sites to further reduce to the extent feasible the potential for exposure to RECs.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for exposure to RECs as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for exposure to RECs at another location would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact as it relates to the potential for exposure to RECs.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative D transportation improvements and mixed-use development sites to further reduce to the extent feasible the environmental consequences related to the potential for exposure to RECs.

Alternative E: Skywalk

Alternative E would involve construction of a concrete bridge over the entire width and length of the existing US 50 ROW between Stateline Avenue and the northeastern end of the Montbleu Resort that would serve pedestrians as a “skywalk” walkway along the casino corridor. As discussed under Alternative B, incorporation of standard best management practices and avoidance measures into the project, and coordination with regulatory agencies would reduce the potential for adverse effects that could result from construction on known contaminated sites. However, the project site could be affected by documented contamination at the site of the former Caesars Tahoe Hotel and Casino and undocumented contamination that has not been characterized or remediated, and construction of utility lines and transportation improvements along US 50 could result in exposure of workers to ADL. Therefore, this is a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative E to further reduce to the extent feasible the environmental consequences related to the potential for exposure to RECs.

Impact 3.12-3: Exposure of people or structures to a significant risk of loss, injury, or death involving wildfires

Implementation of all of the build alternatives would result in construction activities associated with the proposed transportation improvements and mixed-use development, including replacement housing. There would be a temporary, elevated risk of accidental ignition of a wildland fire, because of increased construction activity in a forested area that has a moderate to very high fire hazard; however, standard construction practices include provisions to avoid ignitions, so the probability of starting a wildland fire would be very low. Implementation of Alternatives B, C, and D also includes three mixed-use development sites, which could provide replacement housing as well as other commercial uses (e.g., retail, restaurant). The mixed-use development could be exposed to potential risk of wildfire because of the siting of mixed-use development within an area containing very high risk of wildfire.

NEPA Environmental Consequences: The design features of Alternatives B, C, and D would avoid or minimize the potential to increase exposure of people or structures to wildland fire; No Impact for Alternatives A and E

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, and D; No Impact for Alternatives A and E

The US 50/South Shore Community Revitalization Project is located in two states that use different systems for determining wildland fire threat. In the California portion of the project site, wildland fire hazard threat is

moderate, high, and very high. In the Nevada portion of the project site, the fire hazard threat is moderate. Additionally, the project site is within a WUI in which there is an existing increased likelihood of ignition.

Alternative A: No Build (No Project)

With implementation of Alternative A, no construction activities would occur that could increase ignition risk or fuel loading or place people or structures in an area containing moderate to very high FHSZ. There would be **no impact** from the risk of wildfire for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Implementation of the Alternative B transportation improvements would result in the use of construction vehicles and equipment within portions of a vegetated and forested area with a moderate to very high fire hazard. Construction activities associated with road construction and the pedestrian bridge to Van Sickle, and intersection, bicycle, and pedestrian improvements would include activities such as excavation, grading, vegetation removal, demolition of existing structures, structure erection, laying of concrete and asphalt, finishing, and cleanup. Heat or sparks from construction vehicles or equipment activity could ignite dry vegetation and cause a fire. However, construction activities would be required to adhere to International Building Code standards and City of South Lake Tahoe, El Dorado County, and Douglas County Code standards for fire prevention during construction activities, which require that fire prevention practices be followed and that basic fire suppression equipment be maintained within the project site limits at all times. Removal of woody vegetation from the ROW and staging areas, and the demolition of structures identified in Chapter 2, "Proposed Project and Project Alternatives," would occur during the first phases of construction and could further reduce the potential for ignition of wildland fire during the remaining construction phases. In addition, construction activities would not increase fuel loading in the Tahoe Region or reduce defensible space. In fact, the US 50/South Shore Community Revitalization Project has been designed to ease congestion on US 50 through the Stateline area, potentially easing evacuation of the area in the event of a major hazard and improving access for emergency crews.

The realignment of US 50 would be a source of ignition risk because of cigarette butts or accidents along the southeast portion of the project site, which includes Van Sickle Bi-State Park. However, this risk currently exists from drivers using Montreal Road and Lake Parkway. Additionally, this area received fuels reduction and forest health treatments by the California Tahoe Conservancy under the supervision of a registered professional forester and in accordance with the terms of a TRPA Forest Health and Fuels Reduction Permit between December 2013 and spring 2014 to reduce some of the hazardous fuels that could contribute to a wildfire. Therefore, the potential for Alternative B to increase exposure of people or structures to wildland fire would be considered a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the potential to increase exposure of people or structures to wildland fire such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Alternative B includes the redevelopment of three mixed-use development sites, which could provide replacement housing for displaced residents, as well as commercial uses (e.g., retail, restaurant). The potential for ignition risk associated with construction of the mixed-use development would be similar to that described above for the Alternative B transportation improvements. The ignition risk associated with construction of the mixed-use development sites would be minimized similarly to that described above for Alternative B. People and structures occupying the mixed-use development sites would be exposed to the risk of wildfires similar to existing levels of severity in the surrounding neighborhood. The residential buildings would incorporate fire-resistant roofs, fire suppression systems, fire-resistant vegetation, and defensible space in accordance with the requirements of the City of South Lake Tahoe. Additionally, as identified in Impact 3.5-6, adequate fire protection services are available to serve the site. Because the mixed-use development sites are located in an area that is characterized with Very High FHSZ and that

currently includes housing units and hotel/motels, construction of the mixed-use development would not change existing conditions related to wildland fire hazards. In fact, wildland fire threat to these structures could be reduced after the new construction because it would include new fire-resistant roofing and updated fire suppression systems, as required by City of South Lake Tahoe General Plan Policy HS-2.1. Furthermore, implementation of Alternative B would not substantially increase the number of residents in this neighborhood residing in a Very High FHSZ, because the new residential construction is intended to provide replacement housing for residents that already live in Very High FHSZ areas.

With implementation of Alternative B, although there would be elevated levels of mechanical equipment activity in a forested area that has a very high fire hazard, the potential for standard construction practices to result in wildland fire would be very low. The mixed-use development sites and associated residents would be exposed to significant risk of loss, injury, or death involving wildland fires similar to the existing risk in the surrounding neighborhood. Additionally, the project site is adequately served by fire protection services. This, along with fire-resistant building materials, defensible space, fire-resistant vegetation and strategic planting, and installation of a fire suppression system incorporated into the design of the project, reduces the risks associated with wildland fires. Therefore, the potential for Alternative B to increase exposure of people or structures to wildland fire would be considered a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development sites included in Alternative B would avoid or minimize the potential to increase exposure of people or structures to wildland fire such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential to increase exposure of people or structures to wildland fire as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for exposure of people or structures to wildland fire would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the exposure of people or structures to wildland fire.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative B would minimize the exposure of people or structures to wildland fire.

Alternative C: Triangle One-Way

Transportation Improvements

The Alternative C transportation improvements includes the same project components described above under Alternative B, except that it would split eastbound and westbound directions on US 50 from the Pioneer Trail/US 50 intersection in California to Lake Parkway/US 50 intersection in Nevada. As discussed under Alternative B, although there would be elevated levels of mechanical equipment activity in a forested area that has a very high fire hazard, the potential for standard construction practices to result in wildland fire would be low. Construction activities and the transportation improvements would occur at the same locations and at a similar intensity as under Alternative B. Therefore, the potential for Alternative C to increase exposure of people or structures to wildland fire would be considered a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative C to further reduce to the extent feasible the environmental consequences related to the potential for exposure of people or structures to wildland fire.

Mixed-Use Development including Replacement Housing

Alternative C includes the redevelopment of three mixed-use development sites, which could provide replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). As discussed under Alternative B, the mixed-use development sites would pose a potential fire ignition risk during construction and expose people and structures to the risk of wildfires similar to the type of risk to people and structures that currently exists in the surrounding neighborhood. Construction activities and the mixed-use development sites would occur at the same locations and at a similar intensity as under Alternative B. Therefore, the potential for Alternative C to increase exposure of people or structures to wildland fire would be considered a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development sites included in Alternative C would avoid or minimize the potential to increase exposure of people or structures to wildland fire such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential to increase exposure of people or structures to wildland fire as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for exposure of people or structures to wildland fire would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the exposure of people or structures to wildland fire.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative C would minimize the exposure of people or structures to wildland fire.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

The Alternative D transportation improvements include the same project components described above under Alternative B; however, the realigned US 50 would proceed east on a new roadway between existing Echo Road and Fern Road, as opposed to the existing Moss Road. As discussed under Alternative B, although there would be elevated levels of mechanical equipment activity in a forested area that has a very high fire hazard, the potential for standard construction practices to result in wildland fire would be low. Construction activities and the transportation improvements would occur at the same locations and at a similar intensity as under Alternative B. Therefore, the potential for Alternative D to increase exposure of people or structures to wildland fire would be considered a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative D to further reduce to the extent feasible the environmental consequences related to the potential for exposure of people or structures to wildland fire.

Mixed-Use Development including Replacement Housing

Alternative D includes the redevelopment of three mixed-use development sites, which could provide replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). As

discussed under Alternative B, the mixed-use development sites would pose a potential fire ignition risk during construction and expose people and structures to the risk of wildfires similar to the type of risk to people and structures that currently exists in the surrounding neighborhood. Construction activities and the mixed-use development sites would occur at the same or similar locations and at a similar intensity as under Alternative B. Therefore, the potential for Alternative D to increase exposure of people or structures to wildland fire would be considered a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development sites included in Alternative D would avoid or minimize the potential to increase exposure of people or structures to wildland fire such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential to increase exposure of people or structures to wildland fire as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for exposure of people or structures to wildland fire would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the exposure of people or structures to wildland fire.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative D would minimize the exposure of people or structures to wildland fire.

Alternative E: Skywalk

Alternative E would construct a concrete bridge over the entire width and length of the existing US 50 ROW between Stateline Avenue and the northern end of the Montbleu Resort that would serve pedestrians as a “skywalk” walkway along tourist core near the resort-casinos. Construction activities would occur in an isolated portion of the project site and in area free of forested areas. Therefore, Alternative E would have **no impact** related to increasing the exposure of people or structures to wildland fire for the purposes of NEPA, CEQA, and TRPA.

3.12.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure 3.12-2a: Conduct surveys for asbestos-containing materials, aerially deposited lead, and lead-based paints and coatings

This mitigation would apply to the transportation improvements and mixed-use development sites associated with Alternatives B, C, and D, and Alternative E for the purposes of NEPA, CEQA, and TRPA.

1. Demolition of buildings and roadways containing asbestos and lead-based materials shall require specialized procedures and equipment, and appropriately certified personnel, as detailed in the applicable regulations. Buildings and roadways intended for demolition that were constructed before 1980 shall be surveyed for asbestos, while those constructed before 1971 shall be surveyed for lead.

Prior to construction, all existing road right-of-ways in the project site shall be surveyed for lead contamination because of ADL and use of paint and coatings containing lead. All sampling shall be conducted consistent with applicable Caltrans and NDMV requirements.

2. A demolition plan shall be prepared for any location with positive results for asbestos or lead. The plan will specify how to appropriately contain, remove, and dispose of the asbestos and lead-containing material while meeting all requirements and BMPs to protect human health and the environment. A lead compliance plan shall be prepared by a Certified Industrial Hygienist (consistent with the requirements of Caltrans' SSP 14-11.07).

Prior to demolition, the project applicant shall submit the written plan to the El Dorado County Department of Environmental Management, Hazardous Waste Division, describing the methods to be used to, including, but not limited to, the following: (a) identify locations that could contain hazardous residues; (b) remove plumbing fixtures known to contain, or potentially containing, hazardous materials; (c) determine the waste classification of the debris; (d) package contaminated items and wastes; and (e) identify disposal site(s) permitted to accept such wastes. Demolition shall not occur until the plan has been accepted by the El Dorado County Department of Environmental Management, Hazardous Waste Division and all potentially hazardous components have been removed to the satisfaction of El Dorado County Environmental Health Department staff. The project applicant shall also provide written documentation to the County that lead-based paint and asbestos testing and abatement, as appropriate, have been completed in accordance with applicable state and local laws and regulations. Lead abatement shall include the removal of lead-contaminated soil (i.e., soil with lead concentrations greater than 400 parts per million).

3. Prior to ground disturbance of any soils adjacent to the Tahoe Tom's Gas Station facility, soil samples shall be collected from the proposed construction footprint at this location to evaluate potential impacts from a petroleum hydrocarbon release that was discovered in 1998. Based on the results of the sampling, and consistent with standard industry practice, remediation measures shall be developed and implemented to the satisfaction of the El Dorado County Department of Environmental Management, Hazardous Waste Division.

Mitigation Measure 3.12-2b: Prepare a construction hazardous materials management plan

This mitigation would apply to the transportation improvements and mixed-use development sites associated with Alternatives B, C, and D, and Alternative E for the purposes of NEPA, CEQA, and TRPA.

A construction hazardous materials management plan shall be developed to address potentially contaminated soil, contaminated groundwater, lead-based paint, and asbestos-containing materials that may be encountered during project construction activities. The construction hazardous materials management plan shall include provisions for agency notification, managing contaminated materials, sampling and analytical requirements, and disposal procedures. The plan shall include identification of construction site BMPs to minimize the potential for water quality impacts.

The construction hazardous materials management plan shall cover, at a minimum, the following:

- ▲ petroleum hydrocarbon-contaminated soils and/or groundwater that may be encountered during project construction activities in areas where construction depths exceed 2 feet below ground surface (bgs) in the vicinity of the RECs described above;
- ▲ soils identified by the ADL surveys as being contaminated by lead within survey area ROWs;
- ▲ materials identified by the lead-based paint and asbestos-containing materials surveys as contaminated by lead-based paint and asbestos-containing materials within bridge, pipe, and building materials;
- ▲ guidance for relocation, removal, or repair of hazardous materials storage facilities (USTs or ASTs) that are affected by project construction; and
- ▲ information on assessment and potential handling of contaminated soils found during relocation.

The plan shall include procedures to stop work if evidence of potential hazardous materials or contamination of soils or groundwater is encountered during construction, including the applicable requirements of the Comprehensive Environmental Response, Compensation, and Liability Act and CCR Title 22 regarding the disposal of wastes.

Mitigation Measure 3.12-2c: Conduct radon investigation and implement radon-resistant construction techniques

This mitigation would apply to mixed-use development sites associated with Alternatives B, C, and D for the purposes of NEPA, CEQA, and TRPA.

Prior to the occupancy of housing units associated with the three future mixed-use development sites, the applicant or construction manager shall retain a licensed radon contractor to determine if radon is detected beyond the 4 pCi/L threshold. If the amount of radon exceeds the established threshold, the applicant shall retain a licensed radon contractor to reduce the radon in the affected residences to below the established threshold. Methods include, but are not limited to, the soil suction radon reduction system, which entails the installation of a vent pipe system and fan that pull radon from beneath the house and vent it to the outside. The radon contractor shall develop clear instructions for proper maintenance of the radon monitoring systems that would be installed in each residence, as well as the radon monitoring and reduction system, if required. The property disclosure statements shall indicate that the site is within an area with a moderate potential for indoor radon levels.

Mitigation Measure 3.12-2d: Conduct screening for VECs and, if necessary, conduct sampling and develop and implement remediation measures

This mitigation would apply to the mixed-use development sites associated with Alternatives B, C, and D for the purposes of NEPA, CEQA, and TRPA.

Prior to ground disturbance on any parcel intended for human occupancy, the applicant or construction manager shall retain an Environmental Professional as defined in 40 CFR Section 312.10 to perform a screening-level VEC evaluation based on the type of facility, information regarding the type of contaminant and groundwater flow, and the distance from the contaminant to the property to determine whether further study and sampling is warranted. If recommended by the screening, sampling shall be designed and conducted in coordination with DTSC and the CUPA, as appropriate. Based on the results of the sampling, and consistent with standard industry practice, remediation measures shall be developed and implemented to the satisfaction of the appropriate approval agency before building occupancy.

Significance after Mitigation

Implementation of Mitigation Measures 3.12-2a, 3.12-2b, 3.12-2c, and 3.12-2d would require that asbestos-containing building materials, lead-based paint, and other hazardous substances in building components are identified, removed, packaged, and disposed of in accordance with applicable state laws and regulations. This would minimize the risk of an accidental release of hazardous substances that could adversely affect human health or the environment. This would substantially reduce the potential hazards to construction personnel and the public from encountering documented or undocumented hazardous materials, including ADL and radon, to a **less-than-significant** level for all the build alternatives for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the environmental consequences of implementing the build alternatives with Mitigation Measures 3.12-2a, 3.12-2b, 3.12-2c, and 3.12-2d **would not be adverse**.

3.13 AIR QUALITY

This section includes a discussion of existing air quality conditions, a summary of applicable air quality regulations, and an analysis of potential short-term and long-term air quality impacts that could result from implementation of the US 50/South Shore Community Revitalization Project. The methods of analysis for short-term construction, long-term regional (operational), local mobile-source, and toxic air emissions are consistent with the recommendations of applicable regulatory agencies. In addition, mitigation measures are recommended as necessary to reduce significant air quality impacts.

One comment was received on the Notice of Preparation (NOP)/Notice of Intent (NOI) that expressed concern that future congestion, because of development, would occur at the realigned US 50 loop and conflict with applicable air quality thresholds. All applicable air quality thresholds were considered in this analysis and used to evaluate air emissions from the project.

Operational-related emissions would primarily be associated with mobile-sources (e.g., as a function of vehicle miles traveled [VMT] and trip generation from land-use development). These impacts are addressed below in Impact 3.13-2, Consistency with air quality plans and regional transportation conformity. However, with build Alternatives B, C, and D, the addition of the mixed-use development sites would result in operational area-source emissions associated with certain sources such as fireplaces/woodstoves, the use of consumer products, landscape maintenance equipment, and application of architectural coatings to buildings and parking lots. Because the proposed mixed-use development sites would replace existing residences and business planned to be displaced, the development of the mixed-use sites would not result in substantial new area-source emissions above existing conditions (i.e., no build Alternative A). Build Alternative E would not include new mixed-use development and therefore, similar to the No Build Alternative A, no increases in operational area sources would occur. This issue is not addressed further in this section and operational-related impacts to air quality focus on transportation-related emissions.

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) is located in many parts of California and is commonly associated with serpentine soils and rocks. The asbestos map of western El Dorado County (*Asbestos Review Areas, Western Slope, County of El Dorado, State of California*; El Dorado County 2005) shows the location of individual parcels and areas within the following four categories considered to be subject to elevated risk of containing NOA. Based on this map, the project site is not located within any of the areas known to contain NOA.

Asbestos may be contained in buildings/structures and could potentially be released during demolition of existing structures. However, air district rules and regulations are in place that would ensure the proper removal, handling, and disposal of materials potentially containing asbestos if it were to be discovered and therefore asbestos would not be released into the air. Section 3.12, "Hazards, Hazardous Materials, and Risk of Upset," further evaluates the potential for asbestos exposure during demolition activities. This issue is not addressed further in this section.

Minor odors from the use of heavy duty diesel equipment and the laying of asphalt during construction activities would be intermittent and temporary, and would dissipate rapidly from the source with an increase in distance. Construction-related odors would be considered temporary and minor. Land uses that are major sources of odor typically include wastewater treatment and pumping facilities, sanitary landfills, transfer stations, recycling and composting facilities, and various industrial uses such as chemical manufacturing and food processing. There are no major odor sources adjacent to or in the immediate vicinity of the project site. Further, El Dorado County Air Quality Management District (EDCAQMD) Rule 205-Nuisance is in place to protect citizens from harmful odors should they occur. This issue is not addressed further in this section.

3.13.1 Regulatory Setting

The US 50/South Shore Community Revitalization Project is located in portions of Douglas County, Nevada and the City of South Lake Tahoe in El Dorado County, California. The entire project site is in the Lake Tahoe Basin (Tahoe Basin).

The portion of the project site in California is part of the California Air Resources Board (ARB)-designated Lake Tahoe Air Basin (LTAB). The LTAB consists of the portions of the Tahoe Basin that are in the jurisdiction of either the EDCAQMD or the Placer County Air Pollution Control District (PCAPCD). For ARB-regulatory purposes, the LTAB does not include the Nevada side of the Tahoe Basin. Nonetheless, the geophysical, climatological, and meteorological characteristics of the Nevada side of the Tahoe Basin are similar to those of the California side.

Air quality in the LTAB, including the entire project site, is regulated by the U.S. Environmental Protection Agency (EPA) and the Tahoe Regional Planning Agency (TRPA). The California side of the project site is under the jurisdiction of ARB and EDCAQMD. The Nevada side of the project site is in the jurisdiction of the State of Nevada Division of Environmental Protection (NDEP) Bureau of Air Pollution Control (BAPC) and Bureau of Air Quality Planning (BAQP). Each of these agencies develop rules, regulations, policies, and/or goals to comply with applicable regulation. Although EPA regulations may not be superseded, state and local regulations may be more stringent.

FEDERAL

U.S. Environmental Protection Agency

EPA has been charged with implementing national air quality programs. The EPA air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments to the CAA were made by Congress in 1990.

Criteria Air Pollutants

The CAA required EPA to establish national ambient air quality standards (NAAQS). As shown in Table 3.13-1, EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), respirable and fine particulate matter (PM₁₀ and PM_{2.5}), and lead. The primary standards protect the public health and the secondary standards protect public welfare. Attainment status of the AAQS for the LTAB are shown below in Table 3.13-2.

The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The 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 would achieve air quality goals. If EPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. 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 3.13-1 Ambient Air Quality Standards and Attainment Status in the Lake Tahoe Air Basin

Pollutant	Averaging Time	California ^{1,2}	National ³	
			Primary ^{2,4}	Secondary ^{2,5}
Ozone	1-hour	0.09 ppm (180 µg/m ³)	– ⁵	Same as primary standard
	8-hour	0.070 ppm (137 µg/m ³)	0.070 ppm (147 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	LTAB 6 ppm ⁶ (7 mg/m ³)	9 ppm (10 mg/m ³)	
Nitrogen dioxide (NO ₂) ⁷	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)	Annual arithmetic mean	–	0.030 ppm	–
	24-hour	0.04 ppm (105 µg/m ³)	0.14 ppm	
	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	
Lead ⁷	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	8-hour	Extinction of 0.23 per km statewide, and 0.07 per km in LTAB, respectively		

Notes: µg/m³ = micrograms per cubic meter; km = kilometers; ppb = parts per billion; ppm = parts per million; LTAB = Lake Tahoe Air Basin

¹ California standards for ozone, 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 issued. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°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.

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 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.

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 Applicable in 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.

Sources: ARB 2016, EPA 2016a

Table 3.13-2 NAAQS/CAAQS Attainment Status of the Lake Tahoe Air Basin

Pollutant	State	Federal
O ₃ : 1-hour	Transitional Nonattainment	Not Applicable
O ₃ : 8-hour	Attainment	Attainment
CO	Attainment	Attainment/Maintenance
NO ₂	Attainment	Not Applicable
SO ₂	Attainment	Attainment
Lead	Attainment	Not Applicable
PM ₁₀	Nonattainment	Attainment
PM _{2.5}	Not Applicable	Attainment/Unclassified
All others	Attainment/Unclassified	Attainment/Unclassified

Notes: CO = carbon monoxide; NO₂ = nitrogen dioxide; O₃ = ozone; PM_{2.5} = particulate matter less than 2.5 microns in diameter; PM₁₀ = particulate matter less than 10 microns in diameter; SO₂ = sulfur dioxide

Source: ARB 2015 and EPA 2016b

In addition, general conformity requirements were adopted by Congress as part of the CAAA and were implemented by EPA regulations in 1993, which were amended most recently in 2010. General conformity requires that all federal actions conform to the SIP as approved or promulgated by EPA. The purpose of the general conformity program is to ensure that actions taken by the federal government do not undermine state or local efforts to achieve and maintain NAAQS. Before a federal action is taken, it must be evaluated for conformity with the SIP. All reasonably foreseeable emissions, both direct and indirect, that are predicted to result from the action are taken into consideration. The location and quantity of emissions must be identified. If it is found that the action would create emissions above de minimus levels specified in EPA regulations, the action cannot proceed unless mitigation measures are specified that would bring the project into conformance.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for CO, NO₂, O₃, PM₁₀ and PM_{2.5}, and in some areas (although not in California), SO₂. California has nonattainment or maintenance areas for all of these transportation-related “criteria pollutants” except SO₂, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the CAA to be covered in transportation conformity analysis. Regional conformity is based on the emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years for the RTP, and 4 years for the FTIP. RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the CAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA), make determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the CAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept, scope, and “open-to-traffic” schedule of a proposed transportation project is the same as described in the RTP and FTIP, then the project meets regional conformity requirements for purposes of project-level analysis.

Conformity analysis at the project-level includes verification that the project is included in the regional conformity analysis and a “hot-spot” analysis if an area is “nonattainment” or “maintenance” for CO and/or particulate matter (PM₁₀ or PM_{2.5}). A region is “nonattainment” if one or more of the monitoring stations in the region measures a violation of the relevant standard and EPA officially designates the area nonattainment. Areas that were previously designated as nonattainment areas but subsequently meet the

standard may be officially re-designated to attainment by EPA, and are then called “maintenance” areas. “Hot-spot” analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA purposes. Conformity does include some specific procedural and documentation standards for projects that require a hot-spot analysis. In general, projects must not cause the “hot-spot”-related standard to be violated, and must not cause any increase in the number and severity of violations in nonattainment areas. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Hazardous Air Pollutants, Mobile Source Air Toxics, and Toxic Air Contaminants

EPA and ARB regulate hazardous air pollutants (HAPs) and toxic air contaminants (TAC), respectively, through statutes and regulations that generally require the use of the maximum available control technology (MACT) or best available control technology (BACT) for TAC to limit emissions.

EPA has programs for identifying and regulating HAPs. Title III of the CAA directed EPA to promulgate national emissions standards for HAPs (NESHAP). The national emissions standards for HAPs may differ for major sources and for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources. The emissions standards are to be promulgated in two ways. First, EPA has technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring maximum available control technology for toxics. For area sources, the standards may be different, based on generally available control technology. Second, EPA also has health risk-based emissions standards, where deemed necessary, to address risks remaining after implementation of the technology-based NESHAP standards.

Controlling air toxic emissions became a national priority with the passage of the CAA Amendments of 1990, whereby Congress mandated that the EPA regulate 188 air toxics. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (also known as Mobile Source Air Toxics Rule, Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System. In addition, the EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA). These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While the FHWA considers these seven compounds to be the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules. Collectively, these seven compounds are referred to as mobile source air toxics (MSAT).

In addition to the Mobile Source Air Toxics Rule discussed above, other standards expected to impact MSAT emissions include Tier 3 emissions and fuel standards starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344).

Federal Highway Administration

On October 18, 2016, FHWA published the Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, which supersedes previous guidance. This Updated Interim Guidance incorporates new analysis conducted using updated Motor Vehicle Emissions Simulator (MOVES2014a). The Updated Interim Guidance provides an update on the status of scientific research on air toxic and provides recommendations for discussion and content to be included in MSAT analyses for NEPA documentation. Specific FHWA guidance is included below in the Methods and Assumptions section.

TAHOE REGIONAL PLANNING AGENCY

The TRPA Regional Plan includes the following elements related to air quality: Environmental Threshold Carrying Capacities adopted in 1982 and evaluated every 5 years since 1991 (TRPA 2012a); Goals and Policies (Air Quality Subelement); and the TRPA Code of Ordinances.

Environmental Threshold Carrying Capacities

In August 1982, TRPA adopted Resolution No. 82-11, which included Environmental Threshold Carrying Capacities (threshold standards) related to air quality and other resource topics for the Lake Tahoe Region. TRPA conducts a comprehensive evaluation every 5 years to determine whether each threshold standard is being achieved and/or maintained, makes specific recommendations to address problem areas, and directs general planning efforts for the next 4-year period. The most recent evaluation was completed in 2016 (TRPA 2016).

TRPA threshold standards address CO, ozone, regional and sub-regional visibility, and nitrate deposition. Numerical standards have been established for each of these parameters, and management standards have been developed that are intended to assist in attaining the threshold standards. The management standards include reducing particulate matter, maintaining levels of nitrogen oxides (NO_x), reducing traffic volumes on US 50, and reducing vehicle miles of travel (VMT). These threshold standards and associated management standards are described in more detail below. 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 region for which the standards are applicable. Attainment status and trends of each air quality indicator reporting categories are summarized in Table 3.13-3. Applicable threshold standards are summarized below.

AQ-1, Carbon Monoxide

- ▲ Numerical Standard: Maintain CO concentrations at or below 6 parts per million (ppm) averaged over 8 hours.
- ▲ Management Standard: Reduce traffic volumes on the US 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.

AQ-2, Ozone

- ▲ Numerical Standard: Maintain ozone concentration below 0.08 ppm averaged over 1 hour.
- ▲ Numerical Standard: Maintain NO_x emissions at or below the 1981 level.

AQ-3, Visibility

- ▲ Numerical Standards:
 - 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).
 - 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 3-year running periods. Beginning with the existing 1991-93 monitoring data as the performance standards to be met or exceeded.
 - 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).

- 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); and calculations will be made on 3-year running periods. Beginning with the existing 1991-93 monitoring data as the performance standards to be met or exceeded.
- PM_{10} 24-hour Standard – Maintain PM_{10} at or below 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) 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.
- PM_{10} Annual Arithmetic Average – Maintain PM_{10} at or below annual arithmetic average of $20 \mu\text{g}/\text{m}^3$ 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.
- Particulate Matter_{2.5} 24-hour Standard – Maintain $\text{PM}_{2.5}$ 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.
- Particulate Matter_{2.5} Annual Arithmetic Average – Maintain $\text{PM}_{2.5}$ at or below annual arithmetic average of $12 \mu\text{g}/\text{m}^3$ 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.

AQ-4, Nitrate Deposition

- ▲ Management Standards:
 - Reduce the transport of nitrates into the Tahoe Basin and reduce NO_x produced in the Tahoe Basin consistent with the water quality thresholds.
 - Reduce VMT in the Tahoe Basin by 10 percent of the 1981 base year values.

AQ-5, Odor

- ▲ Policy Statement
 - It is the policy of the TRPA Governing Board in the development of the Regional Plan to reduce fumes from diesel engines to the extent possible.

Lake Tahoe Regional Plan

Several components of the Lake Tahoe Regional Plan address policies and regulations pertaining to air quality: Goals and Policies, Code of Ordinances, Mobility 2035, Area Plans, and a best construction practices policy.

Goals and Policies

The Goals and Policies are designed to achieve and maintain adopted environmental threshold standards and are implemented through the TRPA Code, the Environmental Improvement Program (EIP), and the Transportation Improvement Plan (with the Tahoe Metropolitan Planning Organization). The Land Use Element (Chapter 4) of the Goals and Policies document consists of seven subelements, one of which is the Air Quality Subelement, with a goal to attain and maintain air quality at healthy levels (Goal AQ-1). This goal is to be accomplished in several ways such as to reduce or limit sources of pollutants that degrade visibility (Policy AQ-1.2), encourage the reduction of emissions from vehicles and motorized machinery (Policy AQ-1.3), promote the reduction of air quality impacts from construction (Policy AQ-1.7). The full text of these goals and policies, along with a discussion of the project's consistency with the goals and policies, is included in Appendix E, "Land Use Policy Consistency Table."

Table 3.13-3 TRPA Air Quality Indicator Attainment Status and Trends

Threshold Indicator Reporting Category	1991 Attainment Status	1996 Attainment Status	2001 Attainment Status	2006 Attainment Status	Threshold Standards ¹	2011 Attainment Status ²	2015 Attainment Status	Trend
Carbon monoxide (CO)	Non-attainment	Attainment	Attainment	Non-attainment	Highest 1-hour Concentration of Carbon Monoxide	Considerably better than target	Considerably better than target	Moderate improvement
					Highest 8-hour Average Concentration of Carbon Monoxide	Considerably better than target	Considerably better than target	Moderate improvement
					Average Daily Winter Traffic Volume, Presidents Weekend	At or somewhat better than target	Considerably better than target	Moderate improvement
Ozone	Non-attainment	Non-attainment	Non-attainment	Non-attainment	Highest 1-hour Average Concentration of Ozone	At or somewhat better than target	At or somewhat better than target	Moderate improvement
					Highest 8-hour Average Concentration of Ozone	At or somewhat better than target	Somewhat worse than target	Moderate improvement
					3 Year Average of the 4th Highest 8-hour Concentration of Ozone	At or somewhat better than target	At or somewhat better than target	Moderate improvement
					Oxides of Nitrogen Emissions	At or somewhat better than target	Considerably better than target	Moderate improvement
Visibility	Attainment	Non-attainment	Non-attainment	Attainment	Regional Visibility			
					Regional Visibility 50th Percentile ("Average Visibility Days")	At or somewhat better than target	At or somewhat better than target	Little or no change
					Regional Visibility 90th Percentile ("Worst Visibility Days")	At or somewhat better than target	At or somewhat better than target	Little or no change
					Subregional Visibility			
					Subregional Visibility 50th Percentile ("Average Visibility Days")	Insufficient data to determine status	Insufficient data to determine status	Insufficient data to determine trend
					Subregional Visibility 90th Percentile ("Worst Visibility Days")	Insufficient data to determine status	Insufficient data to determine status	Insufficient data to determine trend
Particulate matter	Non-attainment	Non-attainment	Attainment	Non-attainment	Highest 24-hour PM ₁₀ Concentration	Somewhat worse than target	Somewhat worse than target	Little or no change
					Annual Average PM ₁₀ Concentration	Insufficient data to determine status	Considerably better than target	Moderate improvement
					24-hour PM _{2.5} Concentration	Considerably better than target	At or somewhat better than target	Little or no change
					Annual Average PM _{2.5} Concentration	Considerably better than target	Considerably better than target	Little or no change
Nitrate deposition	Unknown	Unknown	Unknown	Unknown	Reduce generation and transport of nitrate to achieve water quality standards	Implemented ³	Implemented ³	Unknown
					Vehicle Miles Traveled (VMT)	At or somewhat better than target	At or somewhat better than target	Moderate improvement
Odor	No Designation	No Designation	No Designation	No Designation	Reduce diesel engine fumes	Implemented ³	Implemented ³	Unknown

Notes:

¹ In the 2015 Threshold Evaluation, attainment status was no longer provided for the Threshold Indicator Reporting Category and instead was provided for each threshold standard; therefore, attainment status is provided for each threshold standard for the 2011 Threshold Evaluation and 2015 Threshold Evaluation as a basis of comparison.

² Change in terminology occurred in 2011 Threshold Evaluation.

³ "Implemented" refers to implementation of a management standard rather than monitoring the achievement of a numerical standard.

Source: TRPA 2007:2-8; TRPA 2016:3-8 – 3-9

TRPA has jurisdiction within the LTAB portion of El Dorado County and Douglas County in regard to air quality. Therefore, the Air Quality Subelement of the Goals and Policies document has focused 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 and the Regional Transportation Plan (RTP) contain specific measures designed to monitor and achieve the air quality objectives of the Regional Plan.

Code of Ordinances

Applicable provisions of Chapter 65 (Air Quality and Transportation) of the TRPA Code (TRPA 2012b) are described below.

Chapter 65.1—Air Quality Control

The provisions of Chapter 65.1 apply to direct sources of air pollution in the Tahoe Region, including certain motor vehicles registered in the region, combustion heaters installed in the region, open burning and stationary sources of air pollution, and idling combustion engines. Provisions potentially applicable to the project are provided below.

- ▲ Section 65.1.3, “Vehicle Inspection and Maintenance Program,” states that to avoid duplication of effort in implementation of an inspection/maintenance program for certain vehicles registered in the CO nonattainment area, TRPA shall work with the affected state agencies to plan for applying state inspection/maintenance programs to the Tahoe Region.
- ▲ 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).

Mobility 2035: Lake Tahoe Regional Transportation Plan

In 2012, the Tahoe Metropolitan Planning Organization (TMPO) prepared the *Mobility 2035: Lake Tahoe Regional Transportation Plan* (RTP), which seeks to improve mobility and safety for the commuting public while at the same time delivering environmental improvements throughout the transportation network in the Tahoe Basin. Important directions of the plan are to reduce the overall environmental impact of transportation in the Tahoe Region, create walkable, vibrant communities, and provide real alternatives to driving. The plan also supported an update of the Transportation Element of the TRPA Regional Plan. Finally, the plan met the challenge of California’s Senate Bill 375 by presenting an integrated land use and transportation strategy that will allow the Tahoe Region to achieve targets for reducing greenhouse gas (GHG) emissions by 2035.

The 2017 Regional Transportation Plan (2017 RTP), which is an update to the 2012 RTP, and its joint CEQA/TRPA environmental document have been circulated for public review. The vision and goals of the 2017 RTP were based on the 2012 RTP. The projects listed in the 2017 RTP are substantially similar to those in the 2012 RTP, and the US 50/South Shore Community Revitalization Project is included in both documents.

Although the draft 2017 RTP has been released for public review, and includes the US 50/South Shore Community Revitalization Project, the 2012 RTP/SCS is the currently adopted plan. Because an initial study/initial environmental checklist (IS/IEC) has been prepared for the 2017 RTP as a supplement to the RTP/SCS Environmental Impact Report/Environmental Impact Statement (EIR/EIS) and does not result in new significant environmental impacts, the analysis below continues to rely on the 2012 RTP/SCS EIR/EIS.

Area Plans

The project site is within the Tourist Core Area Plan (TCAP) and the South Shore Area Plan (SSAP). The TCAP includes a goal to reduce air emissions in the Tourist Core (Goal NCR-5 Air Quality) and a policy to achieve this goal that requires implementation of dust and exhaust emissions controls for construction projects (Policy NCR-5.1). The South Shore Area Plan does not have specific goals or policies in place for reducing air quality but does acknowledge the importance of maintaining healthy air quality in the plan area.

Construction Practices Policy for Construction Emissions

TRPA coordinates implementation of its Best Construction Practices Policy for Construction Emissions through TRPA-approved plans, project-permitting, or projects/programs developed in coordination with local or other governments that require, as a condition of project approval, implementation of feasible measures and best management practices (BMPs) to reduce construction-generated emissions to the extent feasible. TRPA developed its Best Construction Practices Policy (approved by the TRPA Governing Board on November 13, 2013) pursuant to Mitigation Measure 3.4-2 of the RTP EIR/EIS and Mitigation Measure 3.4-2 of the Regional Plan Update EIS.

TRPA's Best Construction Practices Policy for Construction Emissions includes the following measures applicable to the project (TRPA 2013):

- ▲ Fugitive dust shall not exceed 40 percent opacity and not go beyond the property boundary at any time during project construction.
- ▲ No open burning of removed vegetation shall occur during infrastructure improvements.
- ▲ Minimize idling time to 5 minutes in California and 15 minutes in Nevada for all diesel-power equipment (refer to TRPA Code Section 65.1.8, "Idling Restrictions," for all idling restrictions).
- ▲ Apply water to control dust as needed to prevent dust impacts offsite. Operational water truck(s) shall be onsite, as required, to control fugitive dust. Construction vehicles leaving the site shall be cleaned to prevent dust, silt, mud, and dirt from being released or tracked offsite.
- ▲ Apply approved chemical soil stabilizers, vegetative mats, or other appropriate BMPs to manufacturer's specifications, to all inactive construction areas (previously graded areas which remain inactive for 96 hours). Spread soil binders on unpaved roads and employee/equipment parking areas and wet broom or wash streets if silt is carried over to adjacent public thoroughfares.
- ▲ Utilize existing power sources (e.g., power poles) or clean-fuel generators rather than temporary diesel power generators, wherever feasible.

STATE**California**

ARB 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). California law authorizes ARB to set ambient (outdoor) air pollution standards (California Health and Safety Code Section 39606) in consideration of public health, safety, and welfare (California Ambient Air Quality Standards [CAAQS]; Table 3.13-1).

Criteria Air Pollutants

ARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases 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 achieve and maintain the CAAQS by the earliest date practical. The act specifies that local air districts should focus particular attention on reducing the emissions from transportation and area wide emission sources, and provides districts with the authority to regulate indirect sources.

Among ARB's other responsibilities are overseeing local air district compliance with federal and state laws, approving local air quality plans, submitting SIPs to EPA, monitoring air quality, determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

Toxic Air Contaminants

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). AB 1807 sets forth a formal procedure for ARB to designate substances as TACs. Research, public participation, and scientific peer review are required before ARB can designate a substance as a TAC. To date, ARB has identified more than 21 TACs, including diesel PM, and adopted EPA's list of HAPs as TACs.

Once a TAC is identified, ARB 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 BACT for toxics to minimize emissions.

ARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). Recent milestones included the low-sulfur diesel fuel requirement and tighter emissions standards for heavy-duty diesel trucks (effective in 2007 and subsequent model years) and off-road diesel equipment (2011). Over time, replacing older vehicles will result in a vehicle 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) in California have been reduced substantially over the last decade; such emissions will be reduced further through a progression of regulatory measures (e.g., low emission vehicle/clean fuels and Phase II reformulated-gasoline regulations) and control technologies.

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.

Nevada

At the state level, the Nevada BAPC and BAQP are the agencies responsible for coordination and oversight of state air pollution control programs, including the Chemical Accident Prevention Program (CAPP), and air quality surveillance in Nevada. The authority for the BAPC and BAQP to implement air pollution control programs is drawn from the Nevada Revised Statutes (NRS) 445B.100 through 445B.825 and 486A.010 through 486A.180. The agencies achieve and maintain air quality conditions in Douglas County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air-quality issues.

The clean air strategy of the BAPC and BAQP includes the preparation of plans and programs for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The BAPC and BAQP also oversee compliance with Nevada and federal laws; prepare SIPs; conduct inspections; observe and review source test data, excess emission reports, and compliance certification reports; investigate air quality complaints; operate an ambient air quality monitoring network; develop and implement strategies to control air pollution from motor vehicles, convert motor vehicle fleets to use cleaner-burning alternative fuels; and coordinate and facilitate prescribed outdoor burning.

LOCAL

El Dorado County Air Quality Management District

Criteria Air Pollutants

EDCAQMD attains and maintains air quality conditions in El Dorado County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean-air strategy of EDCAQMD 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. EDCAQMD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the CAA, CAAA, and CCAA.

All projects in El Dorado County, including those in the City of South Lake Tahoe, are subject to adopted EDCAQMD rules and regulations in effect at the time of construction. Specific EDCAQMD rules applicable to the construction of the project may include but are not limited to the following:

- ▲ Rule 202—Visible Emissions,
- ▲ Rule 215—Application of Architectural Coatings,
- ▲ Rule 223-1—Fugitive Dust,
- ▲ Rule 223-2—Asbestos,
- ▲ Rule 224—Cutback and Emulsified Asphalt Paving Materials, and
- ▲ Rule 501—Permit Requirements.

Specifically, Rule 223-1 establishes standards to be met by project activities generating fugitive dust. It applies to all of El Dorado County and addresses fugitive dust generated by construction and grading activities, and by other land uses including recreation uses. Among the standards to be met is a prohibition on visible dust crossing the property boundary, generation of high levels of visible dust (dust sufficient to obscure vision by 40 percent), and controls on the track-out of dirt and mud on to public roads. The regulation also establishes minimum dust mitigation and control requirements. When an area to be disturbed is greater than 1 acre, and if required by a project condition of approval or discretionary permit, a dust control plan must be submitted to and approved by EDCAQMD before any construction activities. Further, Rule 223-2 requires activities to reduce asbestos dust created from earth moving activities.

Toxic Air Contaminants

At the local level, air districts may adopt and enforce ARB's airborne toxic control measures. Under EDCAQMD Rule 501 ("Permit Requirements"), EDCAQMD Rule 523 ("New Source Review"), and EDCAQMD Rule 522, ("Federal Operating Permit") all sources that have the potential to emit TACs are required to obtain permits from the district. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. EDCAQMD limits emissions and public exposure to TACs through a number of programs.

City of South Lake Tahoe General Plan

The City of South Lake Tahoe adopted the 2030 General Plan on May 17, 2011. The Natural and Cultural Resources Element of the General Plan provides city-wide goals and policies aimed at improving air quality (City of South Lake Tahoe 2011) that are applicable to the build alternatives, including a goal to incorporate air quality improvements and emission reductions directly with land use and transportation planning (Goal NCR-5) and a policy to incorporate mitigation for projects that have significant construction emissions (Policy NCR-5.10). The full text of this goal and policy, along with a discussion of the project's consistency with this goal and policy, is included in Appendix E, "Land Use Policy Consistency Table."

Douglas County Master Plan

Douglas County adopted a twenty-year Master Plan in 1996. The Master Plan, or Comprehensive Plan, is required by Nevada Revised Statutes (Chapter 278.150) for the purpose of providing long-term guidance on

the development of cities, counties, and regions in Nevada. The 15 Year Update of the Douglas County Master Plan (2011) was adopted by the Douglas County Board of Commissioners on March 1, 2012.

The Environmental Resources and Conservation Element of the plan includes goals and policies/actions aimed at improving air quality within the County, including a goal to maintain and improve existing air quality (ERC Goal 13) and an action to establish standards for roadway surfacing and maintenance which reduces dust generation (ERC Action 13.3). A discussion of the project's consistency with this goal and policy, is included in Appendix E, "Land Use Policy Consistency Table."

3.13.2 Affected Environment

The project site and study area are located in the LTAB. The LTAB comprises portions of El Dorado and Placer counties on the California side of the Lake Tahoe Basin, and Washoe County, Douglas County, and the Carson City Rural District on the Nevada side.

Ambient concentrations of air pollutants are determined by the amount of pollutants emitted and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the LTAB are determined by such natural factors as climate, meteorology, and topography, in addition to the level of emissions released by existing air pollutant sources. These factors are discussed separately below.

CLIMATE, METEOROLOGY, AND TOPOGRAPHY

Lake Tahoe lies in a topographic depression between the crests of the Sierra Nevada and Carson ranges on the California-Nevada border at a surface elevation of approximately 6,260 feet above mean sea level. The LTAB is defined by the 7,000-foot contour, which is continuous around the Lake, except near Tahoe City. The mountains surrounding the Lake are approximately 8,000 to 9,000 feet in height on average, with some reaching 10,000 feet.

Pollutants from local sources are trapped by frequent inversions in the LTAB, greatly limiting the volume of air into which the pollutants are mixed (e.g., diluted), which results in accumulation and elevated concentrations of pollutants. A second important meteorological regime is the transport of pollutants from the Sacramento Valley and San Francisco Bay Area because winds from these areas move upslope in the Sierra Nevada and the Lake is located directly east of the Sierra Nevada crest (Cahill and Cliff 2000:1).

The project site generally experiences warm, dry summers and wet, snowy winters. Maximum temperatures occur during July and reach 78 degrees Fahrenheit on average. Minimum temperatures can be as low as 23 degrees Fahrenheit during winter months (WRCC 2016a). Average annual precipitation of approximately 12.9 inches (63.5 inches of snowfall) occurs primarily during the months of November through March and average annual wind speed is 6.1 miles per hour from the south in South Lake Tahoe (WRCC 2016b).

CRITERIA AIR POLLUTANTS

Concentrations of emissions from criteria air pollutants are used to indicate the quality of the ambient air. A brief description of key criteria air pollutants is provided below, including emission source types and health effects. For descriptions of health effects, "acute" refers to effects of short-term exposures to criteria air pollutants, usually at fairly high concentrations whereas "chronic" refers to effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations.

Ozone

Ozone is a photochemical oxidant (a molecule 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 ROG and 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 of nitrogen and oxygen that result from the combustion of fuels (EPA 2016c).

Emissions of the ozone precursors ROG and NO_x have decreased in California 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 (ARB 2014).

Acute health effects include cough, chest pain, shortness of breath, and throat/airway inflammation. Chronic health effects include reduced lung function, worsening of existing condition such as bronchitis, emphysema, and asthma (EPA 2016c).

Carbon Monoxide

CO is a colorless, odorless gas produced by incomplete combustion of fuels (i.e., motor vehicle exhaust). Acute health effects include headache, dizziness, fatigue, nausea, vomiting, and eventually death. Chronic health effects include permanent heart and brain damage (EPA 2016c).

Nitrogen Dioxide

Nitrogen dioxide (NO₂) is one of a group of highly reactive gases known as oxides of nitrogen or nitrogen oxides (NO_x). NO₂ primarily gets in the air from the burning of fuel. NO₂ forms from emissions from cars, trucks and buses, power plants, and off-road equipment (EPA 2016c). Acute health effects include respiratory diseases, particularly asthma, leading to respiratory symptoms such as coughing, wheezing, or difficulty breathing. Chronic health effects include development of asthma and potential increased susceptibility to respiratory infection (EPA 2016c).

Sulfur Dioxide

Sulfur dioxide (SO₂) is gaseous compound of sulfur and oxygen. Sources of SO₂ include coal and oil combustion, refineries, and other processes such as extracting metal from ore. Acute health effects include irritation of upper respiratory tract and difficulty breathing (EPA 2016c).

Particulate Matter

Particulate matter (PM) with an aerodynamic diameter of 10 micrometers or less is referred to as PM₁₀. This size particle is of concern because it is small enough to reach deep into the lungs. 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 (ARB 2014). PM_{2.5} includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less. PM₁₀ and PM_{2.5} emissions are dominated by emissions from area sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, farming operations, construction and demolition, and particles from residential fuel combustion (ARB 2014). Direct emissions of PM₁₀ in California have increased slightly over the last 20 years, and are projected to continue to increase slightly through 2035 (ARB 2014:3-7). PM_{2.5} emissions have remained relatively steady over the last 20 years and are projected to decrease slightly through 2035 (ARB 2014:3-6). Acute health risks include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, and premature death. Chronic effects include alterations to the immune system and cancer formation.

MONITORING STATION DATA

Concentrations of criteria air pollutants are measured at several monitoring stations near the project site. The Echo Summit Station in Nebelhorn, located approximately 11 miles to the southwest, is the closest monitoring station to the project site with recent data for ozone. The nearest monitoring station with recent data for PM₁₀ is the South Lake Tahoe-Sandy Way station, which is located approximately 2 miles to the west of the project site. In general, the measurements of ambient air quality from the monitoring stations at the Echo Summit Station, Truckee Station, and South Lake Tahoe Station are the most representative of the air quality at the project site. Table 3.13-4 summarizes the air quality data from these stations from 2011 through 2014.

Table 3.13-4 Summary of Annual Air Quality Data (2011–2014)

Ozone ¹	2011	2012	2013	2014
Maximum concentration (1-hour/8-hour, ppm)	0.108/0.071	0.084/0.077	0.082/0.076	0.081/0.072
Number of days state standard exceeded (1-hour/8-hour)	1/1	0/11	0/1	0/2
Number of days national standard exceeded (8-hour)	0	1	0	0
Respirable Particulate Matter (PM ₁₀) ²	2011	2012	2013	2014
Maximum Concentration (µg/m ³)	55.8	84.1	139.3	58.6
Number of days state standard exceeded (measured ³)	3	4	4	2
Number of days national standard exceeded (measured ³)	*	*	*	0
Fine Particulate Matter (PM _{2.5}) ⁴	2011	2012	2013	2014
Maximum Concentration (µg/m ³)	68.9	27.5	61.2	253.0
Annual Average (µg/m ³)	*	11.0	*	14.3
Number of days national standard exceeded (measured ³)	0	0	0	0

Notes: µg/m³ = micrograms per cubic meter; ppm = parts per million; * = Insufficient data to determine the value; N/A = not available

¹ Data from the Echo Summit Station in Nebelhorn.

² Data from the South Lake Tahoe – Sandy Way Station.

³ Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard. The number of days above the standard is not necessarily the number of violations of the standard for the year.

⁴ Data from the Truckee Fire Station.

Sources: ARB 2015b, ARB 2015c, ARB 2015d.

In 2013, TRPA installed a CO monitor at their monitoring station at 128 Market Street in Stateline, Nevada. Existing conditions with regards to CO are characterized in TRPA's *2015 Threshold Evaluation* (TRPA 2016). The threshold evaluation uses three separate indicators to evaluate CO in the LTAB—the 1-hour CAAQS of 20 ppm; the 8-hour CAAQS of 6 ppm; and winter traffic volumes. The LTAB has been in compliance with the 1- and 8-hour CAAQSs since 1983 and 2003, respectively. The most recent threshold evaluation determined that the 1- and 8-hour CAAQS are “considerably better than target” and continuing to improve moderately with a moderate level of confidence. It also determined that winter traffic volumes are “considerably better than target” and this indicator has had “moderate improvement” since 1980 with a moderate level of confidence.

The EPA and ARB use monitoring data, such as that provided in Table 3.13-4, to designate areas according to their attainment status for criteria air pollutants. 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 areas that cannot be classified on the basis of available information as meeting or not meeting the standards. The current national and state attainment designations for the LTAB are shown above in Table 3.13-2 for each criteria air pollutant. Ambient air quality standards define clean air and are established to protect even the most sensitive individuals in communities. An air quality standard defines the maximum amount of a pollutant that can be present in outdoor air without harm to public health.

TOXIC AIR CONTAMINANTS

Concentrations of TACs are also used to indicate the quality of ambient air. A TAC is 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 trace quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to the *California Almanac of Emissions and Air Quality* (ARB 2014), the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being diesel PM. 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 an emissions control system is being used.

Sources of TACs vary considerably and include (but are not limited to) consumer products, gasoline dispensing stations, auto repair and auto body coating shops, dry cleaning establishments, chrome plating and anodizing shops, welding operations, and other stationary sources. Major sources of TACs in the vicinity of the project site are highways and roadways associated with the presence of diesel PM emissions from vehicle exhaust. US 50 and other local roadways are the primary source of TACs in the study area.

The Mobile Source Air Toxics Rule includes new standards as of 2011 that will decrease MSAT emissions through nationwide use of cleaner fuels and engines. Specifically, fuel refiners must meet lower gasoline benzene and non-methane hydrocarbon content. As a result of these standards, passenger vehicles will emit 45 percent less benzene, a direct reduction in PM_{2.5} emissions. Based on emissions modeling conducted by FHWA, diesel PM is the dominant MSAT of concern for highway projects (FHWA 2016).

SENSITIVE LAND USES

Sensitive land uses are generally considered to include those uses where exposure to pollutants could result in health-related risks to individuals. Residential dwellings and places where people recreate or congregate for extended periods of time such as parks or schools are of primary concern because of the potential for increased and prolonged exposure of individuals to pollutants. Existing sensitive land uses near the project site include single family homes, multi-family homes, and vacation rentals in the area east of Pioneer Trail, west of Montreal Road, and south of the Village Center. The Bright Beginnings Preschool and Tahoe Douglas Christian Preschool are located approximately a half-mile from the northern end of the project site.

3.13.3 Environmental Consequences

METHODS AND ASSUMPTIONS

Short-term construction-related emissions of criteria air pollutants and precursors were calculated using the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Roadway Construction Emissions Model (Version 8.1.0), and the California Emissions Estimator Model (CalEEMod) Version 2016.3.1 computer program (California Air Pollution Control Officers Association [CAPCOA] 2016), as recommended by EDCAQMD and other air districts in California. Modeling was based on project-specific information (e.g., length of road, area to be graded, and area to be paved), where available; reasonable assumptions based on typical construction activities; and default values that are based on the project's location and land use type. The modeling conservatively assumed that project construction/grading phases could begin as early as 2017 with final project completion for transportation improvements occurring by 2020. The potential redevelopment of the mixed-use development sites was conservatively assumed to occur simultaneously with the transportation improvements to evaluate maximum potential emissions. To model maximum construction emissions from the mixed-use sites, it was conservatively assumed that two of the three sites

could be constructed simultaneously. For a detailed description of model input and output parameters and assumptions, refer to Appendix J.

Operational-related emissions of criteria air pollutants and precursors was evaluated qualitatively by comparing the project to already adopted, applicable air quality plans in the region. The evaluation was based on information and traffic volumes available in the most recent traffic study completed for the project (Wood Rogers 2016).

The potential for project-generated traffic to result in concentrations of CO that exceed the NAAQS and CAAQS for this pollutant was evaluated using EDCAQMD-recommended screening criteria. Because EDCAQMD has not developed conservative screening methods for CO, the potential for CO hot-spots was further evaluated using a quantitative screening method recommended by SMAQMD as described in Impact 3.13-3, below.

Health risk from project-generated, construction- and operation-related emissions of TACs were assessed qualitatively. This assessment is based on the location from which construction- or operation-related TAC emissions would be generated by land uses developed under the project relative to onsite sensitive receptors as subsequent phases are built, as well as the duration during which TAC exposure would occur. Guidance for MSAT/TACs analysis is available from numerous agencies. The FHWA published the Interim Guidance on Mobile Source Toxic Analysis in NEPA, with a recent update in October 2016. The California Department of Transportation (Caltrans) also uses the FHWA Guidance, with some minor tweaks, and ARB published the Air Quality and Land Use Handbook in 2005, which provides screening distances and general guidance for siting receptors near roadways or locating new roadways near receptors (ARB 2005). To evaluate operational impacts associated with build alternatives, project-generated traffic volumes were available from the traffic study conducted for the project (Wood Rogers 2016).

SIGNIFICANCE CRITERIA

NEPA Criteria

An environmental document prepared to comply with NEPA must consider the context and intensity of the environmental effects that would be caused by or result from the proposed actions in comparison to the no build alternative. Context means that the significance of the action must be considered in terms of the region as a whole, affected interests, and the specific locality. Intensity refers to the severity of an effect. Under NEPA, the significance of an effect is used solely to determine whether an EIS must be prepared. The factors that are taken into account under NEPA to determine the significance of an action in terms of the context and the intensity of its effects as compared to the no build alternative are based on available guidance from applicable regulatory agencies.

With regards to MSAT analysis in NEPA documents, FHWA has developed a tiered approach, depending on specific project circumstances. The guidance is shown below.

- ▲ Category 1: No analysis for projects with no potential for meaningful MSAT effects.
 - Projects qualifying as a categorical exclusion under Title 23 of the Code of Federal Regulations (CFR) Section 771.117(c);
 - Projects exempt under the CAA conformity rule under 40 CFR 93.126; or
 - Other projects with no meaningful impacts on traffic volumes or vehicle mix.
- ▲ Category 2: Qualitative analysis for projects with low potential MSAT effects.
 - Projects that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions.

- Project examples include minor widening projects; new interchanges; replacing a signalized intersection on a surface street; or projects where design year traffic is projected to be less than 140,000 to 150,000 Average Annual Daily Traffic (AADT).
 - Any projects not meeting the criteria in Category (1) or Category (3) should be included in this category.
 - ▲ Category 3: Projects with higher potential MSAT effects.
 - Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel PM in a single location, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles for expansion projects; or
 - Create new capacity or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000 or greater by the design year;
- And also*
- Be proposed to be located in proximity to populated areas.

TRPA Criteria

The “Air Quality” criteria from the TRPA Initial Environmental Checklist were used to evaluate the air quality impacts of the alternatives. The project would result in a significant impact if it would result in:

- ▲ substantial air pollutant emissions;
- ▲ deterioration of ambient (existing) air quality;
- ▲ the creation of objectionable odors;
- ▲ alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally; or
- ▲ increased use of diesel fuel.

CEQA Criteria

Based on Appendix G of the State CEQA Guidelines, an air quality impact is considered significant if implementation of the project would do any of the following:

- ▲ conflict with or obstruct implementation of the applicable air quality plan;
- ▲ violate any air quality standard or contribute substantially to an existing or projected air quality violation (Table 3.13-1);
- ▲ result in a cumulatively considerable net increase of any criteria air pollutant for which the project region is in nonattainment under any applicable national or state ambient air quality standards (including releasing emissions that exceed quantitative standards for ozone precursors); or
- ▲ expose sensitive receptors to substantial pollutant concentrations (including TACs/HAPs).

As stated in Appendix G, the significance criteria established by the applicable AQMD or air pollution control district (APCD) may be used to make the above determinations. Thus, as identified by EDCAQMD, an air quality impact also is considered significant if implementation of the project would:

- ▲ result in a net increase in short-term construction-related or long-term operation-related (regional) emissions of ROG or NO_x, that exceed mass emissions of 82 pounds per day (lb/day). Note that EDCAQMD does not have a threshold for exhaust PM₁₀/PM_{2.5}, but considers these emissions significant if ROG and NO_x thresholds are exceeded;

- ▲ not include construction-related dust control measures designed to prevent visible dust emissions beyond the property lines of the project site;
- ▲ would result in CO emissions from construction or operation that exceeds CAAQS/NAAQS. EDCAQMD considers development projects of the type and size that fall below the significance thresholds for ROG and NO_x to also be insignificant for CO emissions. Screening criteria established by SMAQMD that determined that traffic volumes at nearby intersections experiencing more than 31,600 vehicles per hour would result in CO impacts; or
- ▲ expose sensitive receptors to TAC emissions that would exceed 10 in 1 million for the carcinogenic risk (i.e., the risk of contracting cancer) or a noncarcinogenic Hazard Index of 1 for the maximally-exposed individual; and/or in accordance with ARB, FHWA, and Caltrans guidance, would result in exposure to sensitive receptors to a roadway experiencing more than 100,000 ADT.

Although significance criteria have not been adopted by the state of Nevada air quality agencies or Douglas County, significance thresholds developed by EDCAQMD are intended to ensure compliance with CAAQS and NAAQAS. Further, emissions that do not exceed EDCAQMD-recommended thresholds would not be expected to contribute substantially to a violation of applicable ambient air quality standards. Therefore, it is appropriate to apply EDCAQMD significance thresholds to portions of the project located in Nevada.

ENVIRONMENTAL EFFECTS OF THE PROJECT ALTERNATIVES

Impact 3.13-1: Short-term, construction-generated emissions of criteria air pollutants and precursors

Construction of Alternatives B, C, D, and E would not exceed EDCAQMD's ROG threshold. Construction of Alternatives B, C, and D would exceed EDCAQMD's NO_x threshold, and therefore CO, exhaust PM₁₀, and PM_{2.5} emissions could be significant. Construction of Alternative E would not exceed EDCAQMD's NO_x or ROG threshold and therefore exhaust emissions would not be significant. All build alternatives (Alternatives B through E) could result in excessive fugitive dust emissions.

In addition to construction associated with the transportation improvements, construction emissions related to the potential mixed-use development sites for Alternatives B, C, and D would also occur. The mixed-use development would begin prior to the transportation improvements in California but may occur simultaneously with transportation improvements occurring in Nevada. Emissions from the mixed-use developments were evaluated separately and in combination with the construction activities for the transportation improvements. Construction associated with redeveloping the mixed-use sites alone or in combination with the transportation improvements would not exceed EDCAQMD's threshold for ROG. Construction associated with redeveloping the mixed-use sites alone and in combination with the transportation improvements would exceed EDCAQMD's thresholds for NO_x, and therefore CO, exhaust PM₁₀, and PM_{2.5} could be significant. Excessive fugitive dust emissions could occur during construction of the mixed-use sites alone and in combination with the transportation improvements.

NEPA Environmental Consequences:	Mitigation Measures 3.13-1a and 3.13-1b have been incorporated into Alternatives B, C, D, and E to further reduce to the extent feasible short-term construction-generated emissions of criteria air pollutants and precursors; No Impact for Alternative A
CEQA/TRPA Impact Determinations:	Less Than Significant for Alternatives B, C, D, and E after implementation of Mitigation Measures 3.13-1a and 3.13-1b; No Impact for Alternative A

Construction-related activities would result in project-generated emissions of ROG, NO_x, CO, PM₁₀, and PM_{2.5} from site preparation (e.g., excavation, grading, and clearing), off-road equipment, material delivery, worker commute exhaust emissions, vehicle travel, construction, asphalt paving, application of architectural coatings, and other miscellaneous activities. Fugitive dust emissions are associated primarily with site

preparation and grading and vary as a function of soil silt content, soil moisture, wind speed, and area of disturbance. Ozone precursor emissions of ROG, NO_x, and CO are associated primarily with exhaust from construction equipment, haul truck trips, and worker trips. ROG emissions are also generated during asphalt paving and the application of architectural coatings.

Construction of the transportation improvements are conservatively expected to be completed as early as 2020. For Alternatives B, C, and D demolition activities for right-of-way acquisition would occur before the US 50 realignment work and other improvements. A portion of the mixed-use development is expected to begin before the transportation improvements in California to accommodate the displaced residents. The remainder of the mixed-use development is expected to occur following completion of the transportation improvements. Alternative E would not result in any demolition of existing structures or the development of any new land uses. Construction-related emissions are discussed for all alternatives as it relates to the transportation improvements and mixed-use development, where applicable, below.

Alternative A: No Build (No Project)

With Alternative A there would be no improvements to existing US 50, Lake Parkway, or other roadways within the project site. There would be no demolition or construction, and no new land use development. Alternative A would not result in any emissions of criteria air pollutants or precursors. Thus, there would be **no impact** for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

As described in Chapter 2, “Proposed Project and Project Alternatives,” Alternative B would include realignment of US 50, demolition of existing structures within the right-of-way of the proposed highway realignment, construction of an approximate 76-foot pedestrian bridge above the realigned US 50 alignment connecting the tourist core to Van Sickle Bi-State Park, and various bicycle and pedestrian facilities such as bicycle lanes and sidewalks. The maximum daily emissions associated with the construction of the transportation improvements were modeled and are shown below in Table 3.13-5.

Table 3.13-5 Maximum Daily Construction Emissions (lb/day) Associated with the Transportation improvements (Alternatives B, C, and D)

Construction Activity	ROG	NO _x	PM ₁₀	PM _{2.5}	CO
Demolition	1.5	17.7	4.9	1.4	10.6
Grubbing/Land Clearing	1.7	19.3	50.9	11.2	12.3
Grading/Excavation	8.5	93.1	54.7	14.7	61.4
Drainage/Utilities/Sub-Grade	4.5	43.2	52.4	12.6	35.9
Paving	2.0	18.92	1.2	1.0	19.1
Maximum Daily Emissions	8.5	93.1	54.7	14.7	61.4
EDCAQMD Thresholds of Significance	82	82	AAQS	AAQS	AAQS
Exceed EDCAQMD Thresholds of Significance?	NO	YES	YES	YES	YES

Notes: lb/day = pounds per day; ROG = reactive organic gases; NO_x = oxides of nitrogen; PM₁₀ = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; PM_{2.5} = respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less; AAQS = Ambient Air Quality Standards

Source: Modeled by Ascent Environmental, Inc. in 2016

As shown in Table 3.13-5, construction associated with the Alternative B transportation improvements could result in maximum daily NO_x emissions of approximately 93 lb/day, which would exceed EDCAQMD thresholds of significance for NO_x, while emissions of ROG would not exceed applicable EDCAQMD thresholds of 82 lb/day. Because maximum daily emissions of NO_x would exceed applicable thresholds, exhaust emissions of CO, PM₁₀, and PM_{2.5} could also potentially result in exceedances of the AAQS. With respect to fugitive dust PM₁₀ and PM_{2.5} emissions, EDCAQMD determines significance based on whether or not all available fugitive dust control measures as described in EDCAQMD’s CEQA Guide (2002) are implemented. Although some dust control measures would be required by TRPA and EDCAQMD (i.e., Rule

202 and 223-1) as described above in Section 3.13.1, “Regulatory Setting,” further dust control measures are available and recommended for implementation by EDCAQMD. Thus, because all available dust control measures are not included in the project, construction activities could result in excessive fugitive dust emissions. Project construction could result in exceedances of NAAQS and CAAQS with respect to exhaust emissions of NO_x, CO, PM₁₀, and PM_{2.5}, and could generate excessive fugitive dust emissions. This would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative B transportation improvements to further reduce to the extent feasible short-term construction-generated emissions of criteria air pollutants and precursors.

Mixed-use Development including Replacement Housing

In addition to the Alternative B transportation improvements discussed above, three individual mixed-use development sites could be redeveloped. It is assumed that one of these sites would be constructed prior to the construction of the transportation improvements in California to accommodate residents displaced for right-of-way purposes. Construction of these sites could occur in conjunction with transportation improvements. Each site would include a mix of commercial and residential land uses as well as a combination of parking structures and parking lots. See Exhibits 2-9 and 2-10 in Chapter 2, “Proposed Project and Project Alternatives,” for the location of the three mixed-use sites and conceptual site plans.

The maximum allowable development that could occur between the three sites could include up to 224 housing units, 48,000 square feet of commercial space, and 472 parking spaces. Because development of the replacement housing at the three mixed-use development sites would occur prior to the US 50 improvements in California but may occur simultaneously with the US 50 improvements occurring in Nevada, emissions modeling was conducted separately so that the various scenarios could be evaluated. For a conservative analysis, it was assumed that construction of the two largest sites (i.e., Sites 1 and 2) could overlap in time. Existing structures and vegetation would be removed for development of Site 1 and Site 2. Site 3 is currently a surface parking lot and therefore would only require minimal site preparation. Maximum daily emissions associated with construction of the mixed-use sites and combined maximum emissions are shown in Table 3.13-6.

As shown in Table 3.13-6, construction associated with the mixed-use development sites, including replacement housing, would not result in maximum daily ROG emissions that exceed applicable EDCAQMD thresholds of significance of 82 lb/day. However, construction of the mixed-use development, whether constructed alone or simultaneously with the US 50 transportation improvements, would result in maximum daily NO_x emissions that exceed applicable EDCAQMD thresholds of significance of 82 lb/day. Because maximum daily emissions of NO_x would exceed applicable thresholds, exhaust emissions of CO, PM₁₀, and PM_{2.5} could also potentially result in exceedances of the AAQS. With respect to fugitive PM₁₀ and PM_{2.5} emissions, EDCAQMD determines significance based on the consistency of the project with incorporation of all available fugitive dust control measures as described in EDCAQMD’s CEQA Guide (2002). Although some dust control measures would be required by TRPA and EDCAQMD (i.e., Rule 202 and 223-1) as described above in Section 3.13.1, “Regulatory Setting,” further dust control measures are available. Thus, because daily NO_x thresholds would be exceeded and all available dust control measures are not included in the project, construction activities could result in exceedances of NAAQS and CAAQS with respect to exhaust emissions of NO_x, CO, PM₁₀, and PM_{2.5}, and could generate excessive fugitive dust PM₁₀ and PM_{2.5} emissions. This would be a **significant** impact for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative B mixed-use development, including replacement housing, to further reduce to the extent feasible short-term construction-generated emissions of criteria air pollutants and precursors.

Table 3.13-6 Mixed-Use Development Maximum Daily Construction Emissions (lb/day) Associated with Alternatives B, C, and D

Mixed-Use Only	ROG	NO _x	PM ₁₀	PM _{2.5}	CO
Site 1 Maximum Emissions	27.7	52.3	21.0	12.6	24.8
Site 2 Maximum Emissions	21.4	52.4	21.1	12.6	24.6
Site 3 Maximum Emissions	35.6	45.4	7.6	4.5	24.6
Maximum Emissions (Site 1 and Site 2)	49.1	104.7	42.1	25.2	48.9
EDCAQMD Thresholds of Significance	82	82	AAQS	AAQS	AAQS
Exceed EDCAQMD Thresholds of Significance?	NO	YES	YES (fugitive dust only)	YES (fugitive dust only)	NO
Mixed-Use + Transportation Improvements Overlap	ROG	NO _x	PM ₁₀	PM _{2.5}	CO
Maximum Emissions (Mixed-Use + Transportation Improvements)	57.7	197.8	96.8	39.9	110.3
Exceed EDCAQMD Thresholds of Significance?	NO	YES	YES (fugitive dust only)	YES (fugitive dust only)	NO

Notes: lb/day = pounds per day; ROG = reactive organic gases; NO_x = oxides of nitrogen; PM₁₀ = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; PM_{2.5} = respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less; AAQS = Ambient Air Quality Standards

Source: Modeled by Ascent Environmental, Inc. in 2016

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for construction-period emission exceedances of NAAQS and CAAQS as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for short-term construction emissions to exceed NAAQS and CAAQS would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **significant** impact as it relates to short-term construction-generated emissions of criteria air pollutants and precursors.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative B transportation improvements and mixed-use development sites to further reduce to the extent feasible short-term construction-generated emissions of criteria air pollutants and precursors.

Alternative C: Triangle One-Way

Transportation Improvements

The alignment of Alternative C would be the same as Alternative B. However, Alternative C would involve one-way travel within the tourist core and on the realigned US 50. Exhibit 2-3 provides an overview of the roadway network, intersection improvements, and travel patterns associated with Alternative C. Proposed construction activities and construction duration would be similar on a given day with Alternative C as compared to Alternative B (See Table 3.13-5 for emissions estimate). Therefore, maximum construction-related emissions and associated impacts would be the same. This would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative C transportation improvements to further reduce to the extent feasible short-term construction-generated emissions of criteria air pollutants and precursors.

Mixed-use Development including Replacement Housing

Alternative C includes the potential redevelopment of the same three mixed-use development sites within the project site as Alternative B. Exhibits 2-9 and 2-10 show the location and redevelopment potential for Alternative C. The maximum amount of development that could occur on these three sites with Alternative C would be the same as that described above for Alternative B (See Table 3.13-6 for emissions estimate). Therefore, maximum construction-related emissions and associated impacts would be the same. This impact would be a **significant** impact for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, additional mitigation measures have been incorporated into Alternative C mixed-use development, including replacement housing, to further reduce to the extent feasible short-term construction-generated emissions of criteria air pollutants and precursors.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for construction-period emission exceedances of NAAQS and CAAQS as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for short-term construction emissions to exceed NAAQS and CAAQS would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **significant** impact as it relates to short-term construction-generated emissions of criteria air pollutants and precursors.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative C transportation improvements and mixed-use development sites to further reduce to the extent feasible short-term construction-generated emissions of criteria air pollutants and precursors.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

Alternative D is similar to Alternative B in that it would construct a new alignment for US 50 to the southeast of existing US 50 from the Pioneer Trail intersection in California to Lake Parkway in Nevada. The relocated US 50/Pioneer Trail intersection would be further east than the Alternative B alignment. Exhibit 2-4 provides and overview of the realignment of US 50, intersection improvements, and travel patterns associated with Alternative D. Proposed construction activities and construction duration would be similar under this alternative as compared to Alternative B (see Table 3.13-5 for emissions estimate). Therefore, maximum construction-related emissions and associated impacts would be the same. This would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative D transportation improvements to further reduce to the extent feasible short-term construction-generated emissions of criteria air pollutants and precursors.

Mixed-use Development including Replacement Housing

Similar to Alternative B, Alternative D includes the potential redevelopment of the three mixed-use development sites. Because the highway realignment differs from Alternative B in the area southwest of the Heavenly Village Center, the configuration of Sites 1 and 2 are different for Alternative D. Exhibits 2-11 and 2-12 show the location and a potential mix of uses that could be developed at these sites through a public private partnership. The maximum amount of development that could occur on these three sites under Alternative D would be essentially the same as that described above for Alternative B (see Table 13.1-6 for emissions estimate). Therefore, maximum construction-related emissions and associated impacts would be the same. This impact would be a **significant** impact for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, additional mitigation measures have been incorporated into Alternative D mixed-use development, including replacement housing, to further reduce to the extent feasible short-term construction-generated emissions of criteria air pollutants and precursors.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for construction-period emission exceedances of NAAQS and CAAQS as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential for short-term construction emissions to exceed NAAQS and CAAQS would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **significant** impact as it relates to short-term construction-generated emissions of criteria air pollutants and precursors.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative D transportation improvements and mixed-use development sites to further reduce to the extent feasible short-term construction-generated emissions of criteria air pollutants and precursors.

Alternative E: Skywalk

Alternative E would feature a concrete deck over the entire width and length of existing US 50 within the tourist core between a location about 100 feet south of Stateline Avenue and a location near the northern end of the Montbleu Resort (about 450 feet south of Lake Parkway). The deck would serve as a pedestrian “skywalk” facility or pedestrian walkway above US 50 near the existing resort-casinos. The width would be approximately 75 feet. The skywalk would be constructed on 4-foot wide columns spaced approximately 20 feet on center running along both sides of the highway for the entire length of the bridge. Construction-related emissions associated with this alternative are shown below in Table 3.13-7.

Table 3.13-7 Maximum Daily Construction Emissions (lb/day) Associated with the Transportation improvements for Alternative E

	ROG	NO _x	PM ₁₀	PM _{2.5}	CO
Demolition	1.5	17.7	4.9	1.4	10.6
Grubbing/Land Clearing	1.2	14.1	50.6	10.9	7.2
Grading/Excavation	3.6	38.6	52.0	12.2	26.1
Drainage/Utilities/Sub-Grade	6.3	64.3	53.4	13.6	45.3
Paving	2.4	23.2	1.5	1.4	18.1
Maximum Daily Emissions	6.3	64.3	53.4	13.6	45.7
EDCAQMD Thresholds of Significance	82	82	AAQS	AAQS	AAQS
Exceed EDCAQMD Thresholds of Significance?	NO	NO	YES (fugitive dust only)	YES (fugitive dust only)	NO

Notes: lb/day = pounds per day; ROG = reactive organic gases; NO_x = oxides of nitrogen; PM₁₀ = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; PM_{2.5} = respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less; AAQS = Ambient Air Quality Standards

Source: Modeled by Ascent Environmental, Inc. in 2016

As shown in Table 3.13-7, construction associated with Alternative E would not result in maximum daily NO_x or ROG emissions that exceed applicable EDCAQMD thresholds of significance of 82 lb/day. With regards to construction-related exhaust emissions of CO, PM₁₀, and PM_{2.5} because ROG and NO_x emissions would not exceed applicable thresholds, all other exhaust emissions would also be considered less than significant (EDCAQMD 2002). With respect to fugitive dust PM₁₀ and PM_{2.5} emissions, EDCAQMD determines

significance based on the consistency of the project with incorporation of all available fugitive dust control measures as described in EDCAQMD's CEQA Guide (2002). Although some dust control measures would be required by TRPA and EDCAQMD (i.e., Rule 202 and 223-1) as described above in Section 3.13.1, "Regulatory Setting," further dust control measures are available. Thus, because all available dust control measures are not included in the project, construction activities could result in excessive fugitive dust emissions. This would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative E to further reduce to the extent feasible short-term construction-generated emissions of criteria air pollutants and precursors.

Impact 3.13-2: Consistency with air quality plans and regional transportation conformity

The US Department of Transportation (DOT) made a CAA conformity determination for the TMPO's 2012 RTP/SCS (i.e., Mobility 2035) on January 28, 2013 (FHWA 2013). The 2015 Federal Transportation Improvement Program is consistent with the transportation system and financial plan described in the most recent amendment to the Mobility 2035 and was adopted by TRPA and TMPO on December 12, 2012 (TRPA and TMPO 2012). The 2015 FTIP met all air quality conformity requirements when approved. The design concept and scope of Alternatives B, C, and D are consistent with the project description in the applicable RTP/SCS and FTIP. Although Alternative E would not be consistent with the design concept and scope described in the RTP/SCS, this alternative would not increase regional VMT. Therefore, implementation of Alternatives B, C, D, and E would be consistent with the assumptions in the regional emissions analysis in the RTP and would conform to the SIP and meet Federal Conformity Requirements. There would be no regional increase in mobile-source emissions and the region would continue to conform to applicable air quality plans.

NEPA Environmental Consequences: Alternatives B, C, D, and E would avoid an adverse effect on air quality and are consistent with air quality plans and regional transportation conformity such that no additional mitigation measures are needed or feasible to implement; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, D, and E; No Impact for Alternative A

As discussed above in Section 3.13.1, "Regulatory Setting," the CAA of 1970, as amended, requires a demonstration that federal actions conform to the SIP and similar approved plans in areas that are designated as nonattainment or have maintenance plans for criteria pollutants. Transportation measures, such as the locally preferred action, are analyzed for conformity with the SIP as part of the applicable RTP and FTIP. If the design concept and scope of a proposed transportation project is consistent with the project description in the applicable RTP and FTIP, as well as the assumptions in the regional emissions analysis for the RTP and FTIP, then the locally preferred action would conform to the SIP, would meet Federal Conformity requirements, and would not result in an adverse impact on regional air quality.

Alternative A: No Build (No Project)

Under Alternative A there would be no improvements to existing US 50, Lake Parkway, or other roadways within the project site or new land use development. Alternative A would not result in any operational-related regional emissions. Existing traffic conditions, including existing levels of congestion and traffic flow would continue, and therefore, could potentially prevent full, effective implementation of the 2035 RTP, which aims to improve connectivity, reliability, travel times, and operations of public transportation, as well as increased mobility and safety of bicycles and pedestrians. However, with Alternative A there would be no change in existing conditions and, thus, **no impact** would occur for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

TMPO and DOT must make a determination that the applicable RTP and FTIP conform to the applicable SIP. Conformity to the SIP means that transportation activities would not create new air quality violations, worsen existing violations, or delay the attainment of the NAAQS. Federal regulations also require TMPO to conduct an air quality conformity analysis of all regionally-significant projects that increase the capacity of the transportation system. All regionally-significant capacity-increasing transportation projects, regardless of funding sources, must be included in the FTIP.

TMPO adopted its RTP, *Mobility 2035: Lake Tahoe Regional Transportation Plan (2035 RTP)*, on December 12, 2012 (TRPA and TMPO 2012). Upon adoption of the RTP, FHWA and the Federal Transit Administration (FTA) approved the air quality conformity finding. The locally preferred action, US 50 South Shore Community Revitalization Project, is included in the 2035 RTP in the “Planned Corridor Revitalization Projects” (TRPA and TMPO 2012). In addition, the 2013 FTIP, a four-year program of surface transportation projects, was adopted on September 26, 2012 and amended on January 23, 2013 (TMPO 2013). The locally preferred action is included in the 2015 FTIP and shown on the Project Location Map (TMPO 2014). The locally preferred action is also included in the list of projects in the 2017 RTP, which is an update to the 2012 RTP and has been circulated for public review.

The design concept and scope of Alternative B are consistent with the project description in the federally approved 2012 RTP and 2015 FTIP, and the assumptions included in TRPA’s regional emissions analysis. Therefore, Alternative B would not result in long-term operational-related increases in criteria air pollutants or precursors, would conform to the SIP and meet Federal Conformity Requirements, and no adverse regional air quality impact would occur as a result of implementation of Alternative B. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the Alternative B transportation improvements would avoid an adverse effect on air quality and are consistent with air quality plans and regional transportation conformity such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

The Alternative B mixed-use development, including replacement housing, could generate slightly more trips in the study area than the land uses they would replace (a net increase of approximately 1,400 to 1,700 additional daily trips). However, the concentration of transit-oriented types of mixed-use development that could occur with Alternative B are an example of the type of project contemplated in the TRPA Regional Plan and RTP, as well as the TCAP, for this area. Because growth in the Tahoe Basin is controlled by the TRPA commodity system and the Regional Plan EIS, RTP EIR/EIS, and TCAP anticipated growth of this scale in this area, the development potential associated with the three mixed-use sites would not cause regional VMT in the Tahoe Basin to increase beyond that which has already been contemplated (TMPO and TRPA 2012). Therefore, because similar land uses and development densities were accounted for in TRPA’s regional emissions analysis, the development of these mixed-use sites would not interfere with the Region’s ability to meet VMT reduction targets set forth in the RTP.

Nonetheless, emission modeling was conducted to estimate potential impacts associated with the trips generated by the mixed-use sites. As shown in Appendix J, operational-related mobile emissions associated with all of the mixed-use sites combined and assuming no VMT benefits from existing surrounding land uses would not exceed 29 lb/day of NO_x or 10 lb/day of ROG, which is substantially below EDCAQMD’s adopted operational thresholds for NO_x and ROG of 82 lb/day. (Note: Diesel exhaust emissions are discussed separately under Impact 3.13-4.) This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the Alternative B mixed-use development sites would avoid an adverse effect on air quality and are consistent with air quality plans and regional transportation conformity such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for an adverse effect on air quality to occur as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential air quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on air quality and are consistent with air quality plans and regional transportation conformity.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative B would avoid an adverse effect on air quality and are consistent with air quality plans and regional transportation conformity such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

Impacts of Alternative C transportation improvements would be the same as described for Alternative B transportation improvements because the design concept and scope of Alternative C would also be consistent with the description of the US 50 South Shore Community Revitalization Project in the 2035 RTP and the 2013 FTIP, and the assumptions in TMDP's Regional emissions analysis. Therefore, Alternative C would not result in long-term operational-related increases in criteria air pollutants or precursors, would conform to the SIP and meet Federal Conformity Requirements, and no adverse regional air quality impact would occur as a result of implementation of Alternative C. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the Alternative C transportation improvements would avoid an adverse effect on air quality and are consistent with air quality plans and regional transportation conformity such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

The Alternative C mixed-use development, including replacement housing, would result in the same trip generation increases as described above for Alternative B, because the redevelopment sites are the same. Thus, for the same reasons described for Alternative B, the addition of mixed-use development for this alternative would not result in substantial long-term operational criteria air pollutants or precursors, or interfere with the regions ability to meet VMT reduction targets set in the RTP. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the Alternative C mixed-use development sites would avoid an adverse effect on air quality and are consistent with air quality plans and regional transportation conformity such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for an adverse effect on air quality to occur as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential air quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on air quality and are consistent with air quality plans and regional transportation conformity.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative C would avoid an adverse effect on air quality and are consistent with air quality plans and regional transportation conformity such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2**Transportation Improvements**

Impacts of Alternative D would be the same as described for Alternative B because the design concept and scope of Alternative D would also be consistent with the description of the US 50 South Shore Community Revitalization Project in the 2035 RTP and the 2013 FTIP, and the assumptions in TMPO's Regional emissions analysis. Therefore, Alternative D would not result in long-term operational-related increases in criteria air pollutants or precursors, would conform to the SIP and meet Federal Conformity Requirements, and no adverse regional air quality impact would occur as a result of implementation of Alternative D. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the Alternative D transportation improvements would avoid an adverse effect on air quality and are consistent with air quality plans and regional transportation conformity such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

The Alternative D mixed-use development, including replacement housing, under this alternative would result in similar trip generation increases as described above for Alternative B. Thus, for the same reasons described for Alternative B, the addition of the mixed-use developments under this alternative would not result in substantial long-term operational criteria air pollutants or precursors, or interfere with the Region's ability to meet VMT reduction targets set in the RTP. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the Alternative D mixed-use development would avoid an adverse effect on air quality and are consistent with air quality plans and regional transportation conformity such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for an adverse effect on air quality to occur as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential air quality impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on air quality and are consistent with air quality plans and regional transportation conformity.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development as part of Alternative D would avoid an adverse effect on air quality and are consistent with air quality plans and regional transportation conformity such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

The design concept and scope of this alternative are not consistent with the project description in the approved RTP and FTIP. However, regional VMT would not increase over existing VMT as a result of this alternative. Therefore, Alternative E would be consistent with assumptions included in TRPA's regional emissions analysis and conform to the SIP and meet Federal Conformity Requirements. No adverse regional air quality impact would occur as a result of implementation of Alternative E. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, because Alternative E would avoid an adverse effect on air quality, as there would be no change in VMT, no additional mitigation measures are needed or feasible to implement.

Impact 3.13-3: Project-level transportation conformity with respect to localized, long-term mobile-source carbon monoxide emissions

Though implementation of all of the build alternatives (Alternatives B through E) and the mixed-use development, including replacement housing, associated with Alternatives B, C, and D would result in changes to the roadway network and traffic patterns in the study area, implementation of any of the alternatives would not result in increases in traffic such that quantitative screening criteria for local CO emissions would be triggered during project operations. Implementation of any of the alternatives, including Alternative A and mixed-use development sites, where applicable, would not result in increased concentrations of CO that would expose sensitive receptors to unhealthy levels.

NEPA Environmental Consequences: The design features of Alternatives A, B, C, D, and E would avoid or minimize localized, long-term mobile-source carbon monoxide such that project-level conformity is met and no additional mitigation measures are needed or feasible to implement

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives A, B, C, D, and E

In addition to a regional conformity determination, as discussed above under Impact 3.13-2, a microscale or "hot-spot" analysis is required for projects within a federal nonattainment or maintenance area. With regards to the NAAQS for CO, the El Dorado County portion of the LTAB is designated as a maintenance area and therefore, consistent with NEPA requirements, a further demonstration of conformity—at the project level—is required. This analysis includes a screening procedure consistent with EDCAQMD guidance.

In addition, a quantitative hot-spot analysis, consistent with information published by FHWA related to project-level Conformity Analysis, the Standard Environmental Reference (SER) Air Quality Conformity Findings Checklist, applicable U.S. EPA project-level analysis guidance, the Transportation Conformity Regulations at 40 CFR 93 Subpart A, and Section 176(c) of the CAA (42 USC 7506(c)) has been conducted and is included in Appendix J of this document. The following discussion is focused on compliance with EDCAQMD CEQA guidance.

A CO hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. CO hotspots are a direct function of traffic volume, speed, and delay. Transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. However, under certain specific meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels at nearby sensitive land uses, such as housing units, schools, and childcare facilities. Thus, high CO concentrations are considered to have a direct influence on the receptors they affect.

Caltrans has developed a Transportation Project-Level Carbon Monoxide Protocol (Protocol) for assessing CO impacts for federal conformity determinations, NEPA, and CEQA. The Protocol is the standard method for project-level CO analysis used by Caltrans. Using this methodology, if a project is determined to not have a significant CO impact under these guidelines it would also not be considered to have a significant impact

under State of Nevada standards. According to the protocol, projects may worsen air quality if they increase the percentage of vehicles in cold start modes by 2 percent or more; significantly increase traffic volumes (by 5 percent or more) over existing volumes; or worsen traffic flow, defined for signalized intersections as increasing average delay at intersections operating at Level of Service (LOS) E or F, or causing an intersection that would operate at LOS D or better without the project, to operate at LOS E or F.

EDCAQMD considers development projects of the type and size that fall below the significance thresholds for ROG and NO_x to also be insignificant for CO emissions. CO emissions associated with land use projects would mostly be associated with impacts from large concentrations of vehicles. EDCAQMD's CEQA guidance recommends that the project be modeled according to CO concentration isopleth maps available in the guidance. However, given that the guidance was published in 2002 and had forecasted CO concentrations only out to 2010, more recent screening criteria from SMAQMD and the Bay Area Air Quality Management District (BAAQMD) are considered in this CO impact discussion (EDCAQMD 2002).

Screening criteria for SMAQMD and BAAQMD were developed based on a conservative analysis of local intersections. If the project exceeds criteria, a detailed dispersion modeling analysis would need to be performed based on local data. These screening criteria have been developed in a manner such that, if they are met, operation-related local emissions of CO (associated with mobile sources generated by development) would not violate a standard or contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations. According to BAAQMD, a project would result in a less-than-significant CO impact if the project traffic would not increase volumes at affected intersections to more than 44,000 vehicles per hour (BAAQMD 2010). According to SMAQMD, a project would result in a less-than-significant CO impact if the project would not result in an affected intersection experiencing more than 31,600 vehicles per hour (SMAQMD 2009). For the purpose of this analysis, a significant impact related to CO emissions during operation would occur if the project would increase traffic volumes at nearby intersections to more than 31,600 vehicles per hour.

Traffic volumes and traffic-related effects of the build alternatives discussed in this impact are based on information provided in Section 3.6, "Traffic and Transportation," as well as the traffic study conducted for this EIR/EIS/EIS (Wood Rogers 2016).

Alternative A: No Build (No Project)

With Alternative A, there would be no improvements to existing US 50, Lake Parkway, or other roadways within the project site. However, regional traffic would continue to grow and during summer peak hours, the US 50/Stateline Avenue intersection would degrade to LOS E. No new trips would be generated by this alternative and no changes to the roadway system would occur. Further, no study intersection would experience peak traffic volumes that exceed 31,600 vehicles per hour, the screening criterion used to determine whether a CO impact could occur. Therefore, implementation of this alternative would not result in operational-related CO emissions that could exceed applicable standards or expose receptors to high CO concentrations. Further, the modeling results shown in Appendix J indicate that project-related CO emissions would not cause or contribute to any new or worsened localized violations of the federal 1-hour or 8-hour CO ambient standards. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative A would avoid creating a CO hotspot such that no additional mitigation measures are needed or feasible to implement.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

As described in more detail in Section 3.6, "Traffic and Transportation," implementation of Alternative B transportation improvements would result in changes to traffic patterns and delay times at affected intersections. However, implementation of Alternative B transportation improvements would not result in any intersections operating at LOS E or F. Further, no study intersection would experience peak traffic volumes that exceed 31,600 vehicles per hour. Therefore, implementation of Alternative B would not result in operational-related CO emissions that could exceed applicable standards or expose receptors to high CO

concentrations. Further, the modeling results shown in Appendix J indicate that project-related CO emissions would not cause or contribute to any new or worsened localized violations of the federal 1-hour or 8-hour CO ambient standards. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the Alternative B transportation improvements would avoid creating a CO hotspot such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

As discussed in Section 3.6, "Traffic and Transportation," Alternative B mixed-use development, including replacement housing, at Sites 1, 2, and 3 would generate slightly more trips than the land uses they would replace. Further, operation of the mixed-use developments would result in changes to traffic patterns and delay times at affected intersections relative to the transportation improvements alone. However, with the addition of the mixed-use development for Alternative B, the LOS at study area intersections would not degrade to LOS E or F. Further, maximum peak-hour traffic volumes associated with all three sites combined would be 143 vehicles/hour. Adding this to intersection peak volumes described above for Alternative B transportation improvements, and dispersed over the study intersections, would not result in peak-hour traffic volumes that come close to or exceed the 31,600 vehicle/hour threshold. The mixed-use development associated with Alternative B would not result in operational-related CO emissions that could exceed applicable standards or expose receptors to high CO concentrations. Further, the modeling results shown in Appendix J indicate that project-related CO emissions would not cause or contribute to any new or worsened localized violations of the federal 1-hour or 8-hour CO ambient standards. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the Alternative B mixed-use development, including replacement housing, would avoid creating a CO hotspot such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for a CO hotspot effect to occur as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential CO hotspots would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the potential to create CO hotspots.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative B would avoid creating a CO hotspot such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

As described in more detail in Section 3.6, "Traffic and Transportation," implementation of Alternative C transportation improvements would result in changes to traffic patterns and delay times at affected intersections. Based on the traffic study conducted for the project, implementation of Alternative C would cause operations at the signal at Realigned US 50/Pioneer Trail/Existing US 50 and the roundabout at Realigned US 50/Lake Parkway/Existing US 50 to be degraded from LOS B to LOS F, and operations at the signal at Realigned US 50/Lake Parkway/Existing US 50 to be degraded from LOS B to LOS E. However, with implementation of this alternative no study intersection would experience peak traffic volumes that exceed 31,600 vehicles per hour. Therefore, although LOS would be degraded at some intersections associated with Alternative C, existing plus project-related peak traffic volumes would not reach levels associated with

high CO concentrations. Thus, in accordance with applicable screening criteria, implementation of Alternative C transportation improvements would not result in operational-related CO emissions that could exceed applicable standards or expose receptors to high CO concentrations. Further, the modeling results shown in Appendix J indicate that project-related CO emissions would not cause or contribute to any new or worsened localized violations of the federal 1-hour or 8-hour CO ambient standards. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the Alternative C transportation improvements would avoid creating a CO hotspot such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

Alternative C includes redevelopment of the same three mixed-use development sites and replacement housing within the project site as with Alternative B. However, as described above for Alternative C transportation improvements, implementation of this alternative would cause three intersections to operate at LOS E or F.

With the addition of the mixed-use development, including replacement housing, and related traffic to Alternative C, the intersection of existing US 50/Stateline Ave would also operate at LOS F. However, maximum peak-hour traffic volumes associated with all three sites combined could reach 154 vehicles per hour. Adding this to intersection peak volumes described above for the transportation improvements, and dispersed over the study intersections, would not result in peak-hour traffic volumes that come close to or exceed the 31,600 vehicles per hour threshold. The addition of the mixed-use development to Alternative C would not result in operational-related CO emissions that could exceed applicable standards or expose receptors to high CO concentrations. Further, the modeling results shown in Appendix J indicate that project-related CO emissions would not cause or contribute to any new or worsened localized violations of the federal 1-hour or 8-hour CO ambient standards. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the Alternative C mixed-use development, including replacement housing, would avoid creating a CO hotspot such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for a CO hotspot effect to occur as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential CO hotspots would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the potential to create CO hotspots.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative C would avoid creating a CO hotspot such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

As described in more detail in in Section 3.6, "Traffic and Transportation," implementation of Alternative D transportation improvements would result in changes to traffic patterns and delay times at affected intersections. However, implementation of Alternative D would not result in any intersection operating at LOS E or F. Further, no study intersection would experience peak traffic volumes that exceed 31,600 vehicles per

hour. Therefore, implementation of Alternative D would not result in operational-related CO emissions that could exceed applicable standards or expose receptors to high CO concentrations. Further, the modeling results shown in Appendix J indicate that project-related CO emissions would not cause or contribute to any new or worsened localized violations of the federal 1-hour or 8-hour CO ambient standards. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the Alternative D transportation improvements would avoid creating a CO hotspot such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

Alternative D includes redevelopment of the same three sites within the project site as Alternative B. Because the highway realignment differs from Alternative B, the configuration of Sites 1 and 2 are different for Alternative D. However, the maximum amount of development that could occur on these three sites under Alternative D would be similar to that evaluated and described above for Alternative B. Similar to Alternative B, LOS would not be altered as a result of adding the mixed-use developments. Peak-hour traffic volumes associated with Alternative D mixed-use development, including replacement housing, with this alternative would be slightly lower as compared to Alternative B (i.e., 126 vehicles per hour). Therefore, impacts associated with operational-related CO emissions would be the same as Alternative B. Further, the modeling results shown in Appendix J indicate that project-related CO emissions would not cause or contribute to any new or worsened localized violations of the federal 1-hour or 8-hour CO ambient standards. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the Alternative D mixed-use development site, including replacement housing, would avoid creating a CO hotspot such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for a CO hotspot effect to occur as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential CO hotspots would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the potential to create CO hotspots.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative D would avoid creating a CO hotspot such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

As described in more detail in Section 3.6, "Traffic and Transportation," implementation of Alternative E would result in changes to traffic patterns in the resort-casino area with the removal of the signal and at-grade pedestrian scramble between Hard Rock and Montbleu and delay times at affected intersections. However, implementation of Alternative E would not result in any intersections operating at LOS E or F. Further, no study intersection would experience peak traffic volumes that exceed 31,600 vehicles per hour. Therefore, implementation of Alternative E would not result in operational-related CO emissions that could exceed applicable standards or expose receptors to high CO concentrations. Further, the modeling results shown in Appendix J indicate that project-related CO emissions would not cause or contribute to any new or worsened localized violations of the federal 1-hour or 8-hour CO ambient standards. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would avoid creating a CO hotspot such that no additional mitigation measures are needed or feasible to implement.

Impact 3.13-4: Exposure of sensitive receptors to Mobile Source Air Toxics/Toxic Air Contaminants

Construction-related activities would result in short-term project-generated emissions of diesel PM under all build alternatives. However, construction would be relatively short in duration (i.e., up to 3 years), would not occur in the same location for extended periods of time, and with incorporated mitigation exhaust emissions would not be significant. As such, construction activities associated with Alternatives B, C, D, and E transportation improvements and mixed-use development, including replacement housing, would not expose sensitive receptors to excessive levels of MSAT/TACs.

In accordance with FHWA guidance, projects that do not result in more than 140,000 AADT have a low potential to result in impacts from MSAT. Further, guidance provided by ARB indicates that elevated health risks from operational exposure to diesel exhaust is associated primarily with high volume roadways of 100,000 ADT or more. Implementation of Alternatives B, C, D, and E would result in less than 40,000 ADT during the summer peak season for all affected roadway segments. Therefore, implementation of Alternatives B, C, D, and E is not anticipated to result in a significant health risk impact to sensitive receptors in the study area. Implementation of Alternative A would not result in any new sensitive receptors placed in close proximity to existing sources of MSAT/TAC emissions and no sources of MSAT/TAC emissions would be placed in close proximity to sensitive land uses.

NEPA Environmental Consequences: The design features of Alternatives A, B, C, D, and E would avoid or minimize the exposure of sensitive receptors to air toxics such that no additional mitigation measures are needed or feasible to implement

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives A, B, C, D, and E

In addition to the criteria air pollutants for which there are NAAQS and CAAQS, the EPA and ARB also regulate air toxics. As described in Section 3.13.1, “Regulatory Setting,” above, the seven compounds acrolein, benzene, 1,3-butadiene, diesel PM, formaldehyde, naphthalene, and polycyclic organic matter are collectively referred to as MSAT.

Diesel PM, one of the seven MSAT mentioned above, was identified as a TAC by ARB in 1998. The potential cancer risk from the inhalation of diesel PM outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs and MSAT. As a result, diesel PM is the primary TAC of concern with regards to health effects on sensitive receptors. However, because diesel PM is included within the compounds determined by EPA as an MSAT, for purposes of this analysis, MSAT are synonymous with TACs.

When it comes to evaluating MSAT emissions at the project level, health effects on nearby sensitive receptors is the primary concern. In FHWA’s view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute. Two Health Effects Institute studies are summarized in Appendix D of FHWA’s Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents (FHWA 2016). Among the adverse health

effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling, dispersion modeling, exposure modeling, and then final determination of health impacts; each step in the process builds on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70-year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by the Health Effects Institute. As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA and the Health Effects Institute have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the CAA to determine whether more stringent controls are required to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires the EPA to determine a “safe” or “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the United States Court of Appeals for the District of Columbia Circuit upheld the EPA’s approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision-makers, who would need to weigh this information against project benefits such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, which are better suited for quantitative analysis.

Considering the limitations and uncertainties involved in MSAT analysis. FHWA has published guidance for conducting MSAT analyses, which provides a tiered approach, depending on the specific project circumstances. Based on 2016 FHWA guidance, no analysis for projects with no potential for meaningful MSAT effects; Qualitative analysis for projects with low potential MSAT effects; or Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects should be conducted. In 2005 ARB published the Air Quality and Land Use Guidebook, which provides recommendations for siting sensitive land uses near roadways. Operational-related MSAT/TAC emissions were evaluated in accordance with FHWA and

ARB guidance. The basis of this analysis relies on the FHWA guidance and incorporates California-specific requirements/considerations where applicable.

The project would include on- and off-road mobile sources associated with construction vehicle fleet as well as on-road vehicle travel on existing and new roadway alignments associated with the build alternatives. Based on the project-specific traffic study, implementation of any of the build alternatives transportation improvements and mixed-use development, including replacement housing, would not result in traffic volumes of 140,000 AADT or greater and therefore a qualitative analysis is warranted (Wood Rogers 2016). Emissions from construction and operations are evaluated separately.

Traffic volumes and traffic-related effects as a result of action alternatives discussed in this impact is based on information provided in Section 3.6, "Traffic and Transportation," as well as the traffic study conducted for this EIR/EIS/EIS (Wood Rogers 2016).

Alternative A: No Build (No Project)

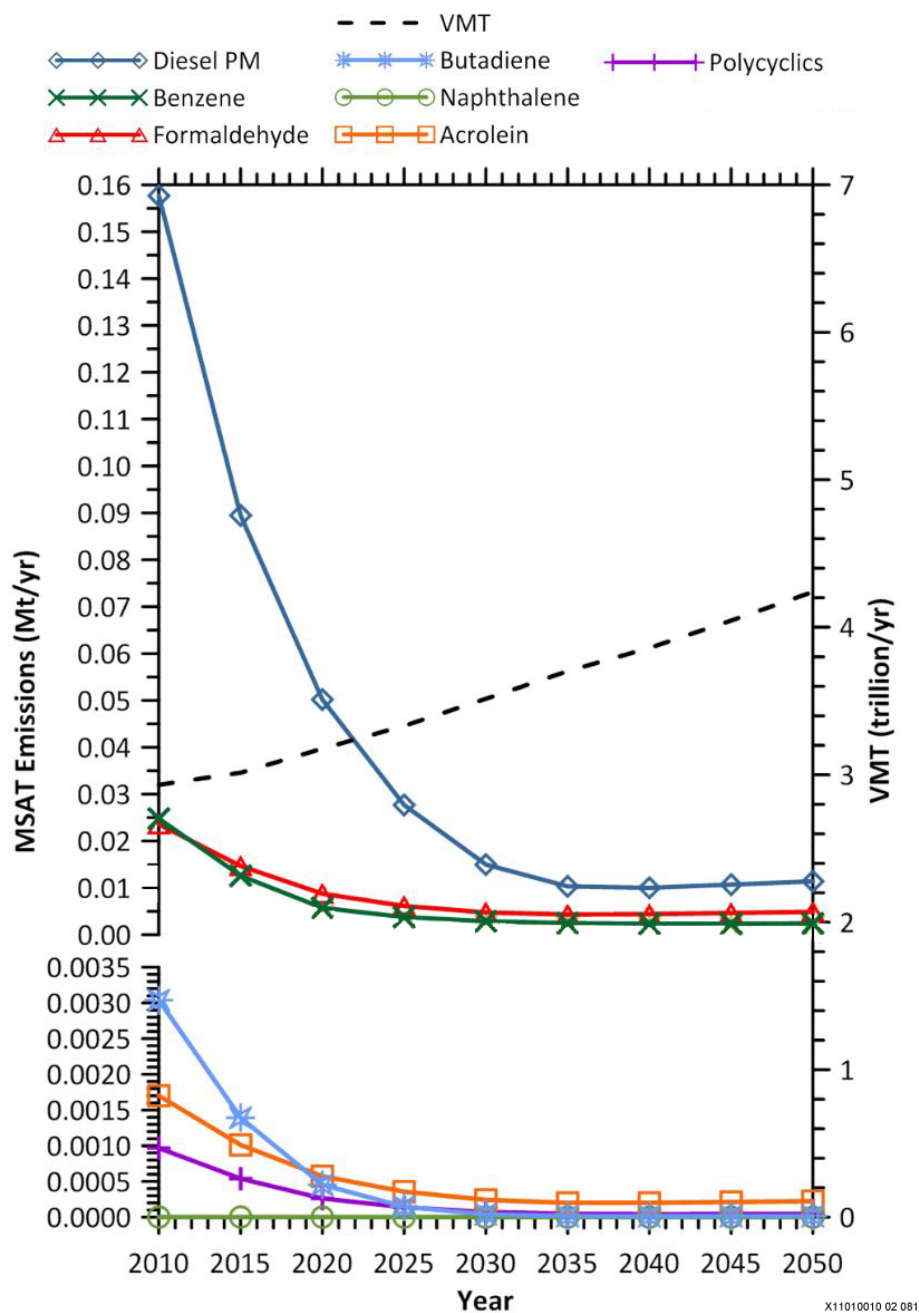
Under Alternative A there would be no improvements to existing US 50, Lake Parkway, or other roadways within the project site. There would be no demolition or construction, and no new land use development. Alternative A would not result in any construction-related emissions of MSAT/TACs. No new sensitive receptors would be placed in close proximity to existing sources of MSAT/TACs and no sources of MSAT/TACs emissions would be placed in close proximity to sensitive land uses. Further, as described in the Regulatory Setting and in further detail below, MSAT emissions are expected to continue to decrease into the future. This impact would be **less than significant** for the purposes of CEQA and TRPA.

With Alternative A (No Project), the roadway system within the project site boundaries would continue to be inadequate to meet the existing or projected traffic volumes. The continued periods of traffic congestion during the peak summer and winter seasons would degrade and discourage bicycle and pedestrian travel in the tourist core and along major roadways, and inhibit the operation of and accessibility to transit services. Cut-through traffic on local roadways would continue as it does today.

Further, Alternative A assumes that the US 50/South Shore Community Revitalization Project, which is included in RTP EIR/EIS Alternative 3, would not be constructed. Therefore, the community revitalization opportunity of the highway realignment would not be realized, including the reduction of VMT made possible by revitalization of a more walkable, bikable, and transit-served urban center. Alternative A would not substantially change VMT nor contribute toward the Region reaching its goal of reducing VMT below 1981 levels.

Nonetheless, according to recent FHWA MSAT trends analysis using updated emissions modeling that incorporates all MSAT-reducing rules and regulations, FHWA estimates that even if VMT increases (nationwide) by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period. Exhibit 3.13-1 below shows the results of MSAT emissions analysis conducted by FHWA.

As shown above, a substantial decrease in MSAT emissions can be expected between the existing and future No Project conditions. Thus, even considering that no regional benefits to VMT would occur with Alternative A, MSAT emissions would be expected to continue to decrease in the future. For the purposes of NEPA, Alternative A would not expose sensitive receptors to air toxics, such that no additional mitigation measures are needed or feasible to implement.



Notes: MSAT = Mobile Source Air Toxics; Mt = Megatonnes; yr = year; VMT = Vehicle Miles Traveled.

Source: FHWA 2016

Exhibit 3.13-1 **Projected National Mobile Source Air Toxics Emission Trends 2010 through 2050 for Vehicles Operating on Roadways**

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

For construction activities, diesel PM is the primary TAC of concern. Construction-related activities for Alternative B transportation improvements would result in short-term project-generated emissions of diesel PM from the exhaust of off-road heavy-duty diesel equipment used in site preparation (e.g., clearing and grading); onsite hauling of soil for cut and fill activities; paving; on-road truck travel; and other miscellaneous activities. On-road diesel-powered haul trucks and worker commute vehicles (MSAT other than diesel PM are associated with gasoline engines) traveling to and from the construction area to deliver materials and equipment are less of a concern because they would not stay on the site for long durations.

The primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards) is the dose to which receptors are exposed. Existing sensitive receptors are located throughout the study area and could be located in relative close proximity to construction activities (i.e., within 100 feet).

Dose is a function of the concentration of one or more substances in the environment and the duration of exposure to that substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA) Health Risk Assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70- or 30-year exposure period (OEHHA 2012). Construction activities associated with the transportation improvements under this alternative are conservatively assumed to last up to three years. However, due to the linear nature of the project and the relatively short duration of overall activities, no one receptor would be exposed to construction-related emissions for excessive periods of time. Thus, given that construction activities would move throughout the site limiting exposure to any one area, and the relatively short overall construction period of three years, emissions of MSAT/TAC during construction would not expose nearby sensitive receptors to excessive levels (i.e., an incremental increase in cancer risk that exceeds of 10 in one million or a Hazard Index greater than 1.0 at the maximally exposed individual).

With regards to operations and as described in more detail in Section 3.6, "Traffic and Transportation," implementation of Alternative B would result in slight increases in AADT and VMT on affected roadway segments. Further, as a result of the new alignment, existing sensitive land uses currently not in close proximity to US 50 (e.g., residences along Primrose Road and Moss Road) would now be located as close as 100 feet to the realigned US 50 alignment.

In accordance with FHWA guidance, projects that do not result in more than 140,000 AADT have a low potential to result in impacts from MSAT. Further, given the regulatory environment associated with MSAT, as described in Section 3.13.1, "Regulatory Setting," and shown above in Exhibit 3.13-1, MSAT emissions have been trending down and will continue to decrease into the future. In addition, guidance provided by ARB indicates that elevated health risks from operational exposure to diesel exhaust is associated primarily with high volume roadways (100,000 ADT) and facilities with substantial diesel exhaust such as truck stops, distribution centers and transit centers. Based on the traffic study conducted, implementation of this alternative would result in less than 40,000 ADT during the summer peak season for all affected roadway segments, with less than 3 percent truck trips. Therefore, Alternative B transportation improvements are not anticipated to result in a significant health risk impact to sensitive receptors in the study area. This impact would be **less than significant** for the purposes of CEQA and TRPA.

The amount of MSAT emitted would be proportional to the VMT, assuming that other variables such as fleet mix remains the same as compared to Alternative A (No Project). While the highway realignment in Alternative B would result in a small increase in VMT when through trips are analyzed on their own, it is consistent with the community revitalization objectives of the approved RTP Alternative 3, which results in a beneficial reduction in regional VMT. Thus, because Alternative B would contribute to an overall regional reduction in VMT, higher levels of MSAT are not expected from Alternative B compared to Alternative A (No

Project). Also, emissions would likely be lower than present levels in the design year as a result of the EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (FHWA 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations. Because of the reasons stated above, for the purposes of NEPA, the Alternative B transportation improvements would not expose sensitive receptors to air toxics such that additional mitigation measures are not needed or feasible to implement.

Mixed-use Development including Replacement Housing

Construction of the mixed-use sites would generally be less intense than the construction associated with the transportation improvements. Based on modeling conducted for the mixed-use sites, assuming maximum buildout for each site and overlapping construction between Sites 1 and 2, ROG and NO_x emissions would not exceed EDCAQMD's daily thresholds. Construction of the mixed-use development sites would not be expected to overlap with construction of the transportation improvements and would generate lower amounts of exhaust emissions than construction of the transportation improvements on a daily basis. Thus, the corresponding MSAT/TAC emissions generated during construction would also be less.

The mixed-use development under Alternative B would generate more trips than the land uses being replaced (approximately 1,400–1,700 additional daily trips), which could lead to an increase in regional VMT. However, buildout of the Region in this manner was considered in the RTP EIR/EIS when VMT impacts were analyzed. All of the mixed-use development sites would occur within the City of South Lake Tahoe near the Tourist Core, which is one of the areas designated by the RTP as a Town Center/Regional Center. This is the type of development that was considered and accounted for under the RTP EIR/EIS and the TCAP, which would contribute to the overall benefit to regional VMT. That is, locating development within the Tourist Core with a variety of land uses in close proximity, would contribute to reducing VMT.

Based on the traffic study conducted, ADT increases from the mixed-use development sites combined with ADT increases from this alternative without the mixed-use development would be less than 40,000 ADT during the summer peak season for all affected roadway segments, with less than 3 percent truck trips. Therefore, the project is not anticipated to result in a significant health risk impact to sensitive receptors in the study area. This impact would be **less than significant** for the purposes of CEQA and TRPA.

The amount of MSAT emitted would be proportional to the VMT, assuming that other variables, such as fleet mix, remain the same as Alternative A (No Project). Alternative B, even with the mixed-use development, would result in an overall reduction in VMT. Therefore, higher levels of MSAT are not expected from Alternative B compared to Alternative A (No Project). Also, emissions would likely be lower than present levels in the design year as a result of the EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (FHWA 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations. Because of the reasons stated above, for the purposes of NEPA, the Alternative B mixed-use development sites would not expose sensitive receptors to air toxics, such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for exposure of sensitive receptors to air toxics as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential air toxics impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the exposure of sensitive receptors to air toxics.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development site as part of Alternative B would avoid exposure of sensitive receptors to air toxics such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

Construction activities, intensity, and duration associated with the transportation improvements under this alternative would be the same as described above for Alternative B. Implementation of this alternative would result in similar increases in traffic as Alternative B, but peak ADT would also be below FHWA-recommended volumes of 140,000 AADT and ARB-recommended volumes of 100,000 ADT. Impacts would be same as Alternative B. This impact would be **less than significant** for the purposes of CEQA and TRPA.

The amount of MSAT emitted would be proportional to the VMT, assuming that other variables such as fleet mix remains the same as compared to Alternative A (No Project). While the highway realignment in Alternative C would result in a small increase in VMT when through trips are analyzed on their own, this alternative would also provide similar regional VMT benefits as Alternative B and higher levels of MSAT are not expected. Also, emissions would likely be lower than present levels in the design year as a result of the EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (FHWA 2016). Because of the reasons stated above, for the purposes of NEPA, the Alternative C transportation improvements would not expose sensitive receptors to air toxics, such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

Construction activities, intensity, and duration associated with Alternative C mixed-use development, including replacement housing, under this alternative would be the same as described above for Alternative B.

The mixed-use development with Alternative C would generate more trips than the land uses being replaced (approximately 1,400 to 1,700 additional daily trips), which could lead to an increase in regional VMT. However, buildout of the Region in this manner was considered in the RTP EIR/EIS when VMT impacts were analyzed. All of the mixed-use development, including replacement housing, would occur within the City of South Lake Tahoe near the Tourist Core, which is one of the areas designated by the RTP as a Town Center/Regional Center. This is the type of development that was considered and accounted for under the RTP EIR/EIS and TCAP, which would contribute to the overall benefit to regional VMT. That is, locating development within the Tourist Core with a variety of land uses in close proximity, would contribute to reducing VMT.

The addition of the mixed-use development associated with Alternative C would result in similar increases in traffic as Alternative B, but peak ADT would also be below FHWA-recommended volumes of 140,000 AADT and ARB-recommended volumes of 100,000 ADT. Impacts would be same as Alternative B. This impact would be **less than significant** for the purposes of CEQA and TRPA.

The amount of MSAT emitted would be proportional to the VMT, assuming that other variables such as fleet mix remains the same as compared to Alternative A (No Project). While the additional mixed-use development in Alternative C would result in a small increase in VMT, potential development would contribute to the regional VMT benefit as discussed above for Alternative B. Therefore, similar to Alternative B, this alternative is consistent with the community revitalization objectives of the approved RTP Alternative 3, which results in a beneficial reduction in regional VMT, and higher levels of MSAT are not expected from Alternative C, even with the mixed-use development. Also, emissions would likely be lower than present levels in the design year as a result of the EPA's national control programs that are projected to

reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (FHWA 2016). Because of the reasons stated above, for the purposes of NEPA, the Alternative C mixed-use development, including replacement housing, would not expose sensitive receptors to air toxics such that additional mitigation measures are not needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for exposure of sensitive receptors to air toxics as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential air toxics impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the exposure of sensitive receptors to air toxics.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative C would avoid exposure of sensitive receptors to air toxics such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

Proposed construction activities and construction duration for Alternative D transportation improvements would be similar those for Alternative B. Implementation of Alternative D would result in similar increases in traffic as Alternative B, but peak ADT would also be below FHWA-recommended volumes of 140,000 AADT and ARB-recommended volumes of 100,000 ADT. Impacts would be same as Alternative B. This impact would be **less than significant** for the purposes of CEQA and TRPA.

The amount of MSAT emitted would be proportional to the VMT, assuming that other variables such as fleet mix remains the same as compared to Alternative A (No Project). While the highway realignment in Alternative D would result in a small increase in VMT when through trips are analyzed on their own, this Alternative would also provide similar regional VMT benefits as Alternative B and higher levels of MSAT are not expected. Also, emissions would likely be lower than present levels in the design year as a result of the EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (FHWA 2016). Because of the reasons stated above, for the purposes of NEPA, the Alternative D transportation improvements would not expose sensitive receptors to air toxics, such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

Proposed construction activities and construction duration would be similar for Alternative D mixed-use development, including replacement housing, as compared to Alternative B. The addition of the mixed-use development would result in similar increases in traffic as Alternative B, but peak ADT would also be below FHWA-recommended volumes of 140,000 AADT and ARB-recommended volumes of 100,000 ADT. Impacts would be same as Alternative B. This impact would be less than significant for the purposes of CEQA and TRPA.

The amount of MSAT emitted would be proportional to the VMT, assuming that other variables such as fleet mix remains the same as compared to Alternative A (No Project). While the additional mixed-use development in Alternative D would result in a small increase in VMT, potential development would contribute to the regional VMT benefit as discussed above for Alternative B. Therefore, similar to Alternative B, this alternative is consistent with the community revitalization objectives of the approved RTP Alternative 3, which results in a beneficial reduction in regional VMT, and higher levels of MSAT are not expected from Alternative D, even with the mixed-use development. Also, emissions would likely be lower than present levels in the design year as a result of the EPA's national control programs that are

projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (FHWA 2016). Because of the reasons stated above, for the purposes of NEPA, the Alternative D mixed-use development sites would not expose sensitive receptors to air toxics, such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for exposure of sensitive receptors to air toxics as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential air toxics impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact as it relates to the exposure of sensitive receptors to air toxics.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative D would avoid exposure of sensitive receptors to air toxics such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

Construction-related emissions of ROG and NO_x would be lower for Alternative E as compared to Alternative B. Implementation of Alternative E could result in minor increases in traffic, but peak ADT would also be below FHWA-recommended volumes of 140,000 AADT and ARB-recommended volumes of 100,000 ADT. Impacts would be same as Alternative B. This impact would be **less than significant** for the purposes of CEQA and TRPA.

The amount of MSAT emitted would be proportional to the VMT, assuming that other variables such as fleet mix remains the same as compared to Alternative A (No Project). This alternative would not include highway realignment or community revitalization elements and therefore would not provide similar VMT benefits as discussed under Alternative B. However, emissions would likely be lower than present levels in the design year as a result of the EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (FHWA 2016). Because of the reasons stated above, for the purposes of NEPA, Alternative E would not expose sensitive receptors to air toxics, such that no additional mitigation measures are needed or feasible to implement.

3.13.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure 3.13-1a: Reduce short-term construction-related NO_x emissions

This mitigation would apply to the Alternatives B, C, and D transportation improvements and mixed-use development sites for the purposes of NEPA, CEQA, and TRPA.

Measures that Apply to the Transportation Improvements

If the chosen alternative does not include development of the mixed-use sites, for all construction activities, the project proponent shall ensure that construction contractors comply with the following on-site construction measures to reduce emissions of NO_x:

- ▲ The prime construction contractor shall submit to EDCAQMD a comprehensive inventory (e.g., make, model, year, emission rating) of all the heavy-duty off-road equipment (50 horsepower or greater) that would be used for 40 or more hours, in aggregate, during a construction season. If any new equipment is added after submission of the inventory, the prime contractor shall contact EDCAQMD before the new equipment is used. At least three business days before the use of subject heavy-duty off-road equipment,

the project representative shall provide EDCAQMD with the anticipated construction timeline including start date, name, and phone number of the property owner, project manager, and onsite foreman.

- ▲ Before approval of Grading Permits, the construction contractor shall submit for EDCAQMD approval, a written calculation demonstrating that the heavy-duty (> 50 horsepower) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20 percent reduction in NO_x emissions as compared to ARB statewide fleet average emissions. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. The calculation shall be provided using EDCAQMD's Construction Mitigation Calculator.

Measures that Apply to the Mixed-Use Development Sites

If the chosen alternative would include development of the mixed-use sites and anticipated construction timing would not coincide with construction activities associated with US 50 transportation improvements, the project proponent shall ensure that construction contractors comply with the following on-site construction measures to reduce emissions of NO_x:

- ▲ All measures as discussed above for the transportation improvements, but shall achieve a project wide fleet average 25 percent reduction in NO_x emissions as compared to ARB statewide fleet average emissions.

If the chosen alternative would include development of the mixed-use sites and anticipated construction timing could potentially coincide with construction activities associated with US 50 transportation improvements, the project proponent shall ensure that construction contractors comply with the following on-site construction measures to reduce emissions of NO_x:

- ▲ All measures as discussed above for the scenario for the transportation improvements, but shall achieve a project wide fleet average 60 percent reduction in NO_x emissions as compared to ARB statewide fleet average emissions.
- ▲ To achieve a 60 percent reduction in NO_x emissions, the use of US EPA-approved Tier 3 and Tier 4 engines would be required. Any combination of said engines may be used so as the fleet average emissions are reduced by a minimum of 60 percent as compared to the ARB statewide fleet average.

Mitigation Measure 3.13-1b: Reduce short-term construction-related fugitive dust (PM₁₀ and PM_{2.5})

This mitigation would apply to the Alternatives B, C, and D transportation improvements and mixed-use development sites, and Alternative E for the purposes of NPEA, CEQA, and TRPA.

To reduce fugitive dust emissions during all construction activities involving earth-moving activities, the prime construction contractor shall implement all available fugitive dust control measures as indicated in Table C.4 and C.5 (Table 3.13-8) in Appendix C-1 of the El Dorado County Air Pollution Control District CEQA Guide (2002) and included below.

Table 3.13-8 Best Available Control Measures		
Source Category	Control Measure	Guidance
Backfilling	01-1 Stabilize backfill material when not actively handling; and 01-2 Stabilize backfill material during handling; and 01-3 Stabilize soil at completion of activity.	<ul style="list-style-type: none"> ▲ Mix backfill soil with water prior to moving. ▲ Dedicate water truck or high capacity hose to backfilling equipment. ▲ Empty loader bucket slowly so that no dust plumes are generated. ▲ Minimize drop height from loader bucket.

Table 3.13-8 Best Available Control Measures

Source Category	Control Measure	Guidance
Clearing and grubbing	02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and 02-2 Stabilize soil during clearing and grubbing activities; and 02-3 Stabilize soil immediately after clearing and grubbing activities.	<ul style="list-style-type: none"> ▲ Maintain live perennial vegetation where possible. ▲ Apply water in sufficient quantity to prevent generation of dust plumes.
Clearing forms	03-1 Use water spray to clear forms; or 03-2 Use sweeping and water spray to clear forms; or 03-3 Use vacuum system to clear forms.	<ul style="list-style-type: none"> ▲ Use of high pressure air to clear forms may cause exceedance of Rule requirements.
Crushing	04-1 Stabilize surface soils prior to operation of support equipment; and 04-2 Stabilize material after crushing.	<ul style="list-style-type: none"> ▲ Follow permit conditions for crushing equipment. ▲ Pre-water material prior to loading into crusher. ▲ Monitor crusher emissions opacity. ▲ Apply water to crushed material to prevent dust plumes.
Cut and fill	05-1 Pre-water soils prior to cut and fill activities; and 05-2 Stabilize soil during and after cut and fill activities.	<ul style="list-style-type: none"> ▲ For large sites, pre-water with sprinklers or water trucks and allow time for penetration. ▲ Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts.
Demolition-mechanical/manual	06-1 Stabilize wind erodible surfaces to reduce dust; and 06-2 Stabilize surface soil where support equipment and vehicles will operate; and 06-3 Stabilize loose soil and demolition debris.	<ul style="list-style-type: none"> ▲ Apply water in sufficient quantities to prevent the generation of visible dust plumes
Disturbed soil	07-1 Stabilize disturbed soil throughout the construction site; and 07-2 Stabilize disturbed soil between structures	<ul style="list-style-type: none"> ▲ Limit vehicular traffic and disturbances on soils where possible. ▲ If interior block walls are planned, install as early as possible. ▲ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes.
Earth-moving activities	08-1 Pre-apply water to depth of proposed cuts; and 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and 08-3 Stabilize soils once earth-moving activities are complete.	<ul style="list-style-type: none"> ▲ Grade each project phase separately, timed to coincide with construction phase. ▲ Upwind fencing can prevent material movement on site. ▲ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes.
Importing/exporting of bulk materials	09-1 Stabilize material while loading to reduce fugitive dust emissions; and 09-2 Maintain at least 6 inches of freeboard on haul vehicles; and 09-3 Stabilize material while transporting to reduce fugitive dust emissions; and 09-4 Stabilize material while unloading to reduce fugitive dust emissions; and 09-5 Comply with Vehicle Code Section 23114.	<ul style="list-style-type: none"> ▲ Use tarps or other suitable enclosures on haul trucks. ▲ Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage. ▲ Comply with track-out prevention/mitigation requirements. ▲ Provide water while loading and unloading to reduce visible dust plumes.
Landscaping	10-1 Stabilize soils, materials, slopes.	<ul style="list-style-type: none"> ▲ Apply water to materials to stabilize ▲ Maintain materials in a crusted condition ▲ Maintain effective cover over materials ▲ Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes ▲ Hydroseed prior to rainy season
Road shoulder maintenance	11-1 Apply water to unpaved shoulders prior to clearing; and	<ul style="list-style-type: none"> ▲ Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs.

Table 3.13-8 Best Available Control Measures

Source Category	Control Measure	Guidance
	11-2 Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	<ul style="list-style-type: none"> ▲ Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs.
Screening	12-1 Pre-water material prior to screening; and 12-2 Limit fugitive dust emissions to opacity and plume length standards; and 12-3 Stabilize material immediately after screening.	<ul style="list-style-type: none"> ▲ Dedicate water truck or high-capacity hose to screening operation. ▲ Drop material through the screen slowly and minimize drop height. ▲ Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point.
Staging areas	13-1 Stabilize staging areas during use; and 13-2 Stabilize staging area soils at project completion.	<ul style="list-style-type: none"> ▲ Limit size of staging area. ▲ Limit vehicle speeds to 15 mph. ▲ Limit number and size of staging area entrances/exits
Stockpiles/bulk material handling	14-1 Stabilize stockpiled materials. 14-2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than 8 feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	<ul style="list-style-type: none"> ▲ Add or remove material from the downwind portion of the storage pile. ▲ Maintain storage piles to avoid steep sides or faces.
Traffic areas for construction activities	15-1 Stabilize all off-road traffic and parking areas; and 15-2 Stabilize all haul routes; and 15-3 Direct construction traffic over established haul routes.	<ul style="list-style-type: none"> ▲ Apply gravel/paving to all haul routes as soon as possible to all future roadway areas ▲ Barriers can be used to ensure vehicles are only used on established parking areas/haul routes.
Trenching	16-1 Stabilize surface soils where trencher or excavator and support equipment will operate; and 16-2 Stabilize soils at the completion of trenching activities.	<ul style="list-style-type: none"> ▲ Pre-watering of soils prior to trenching is an effective preventive measure; for deep trenching activities, pre-trench to 18 inches, soak soils via the pre-trench, and resume trenching. ▲ Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment.
Truck loading	17-1 Pre-water material prior to loading; and 17-2 Ensure that freeboard exceeds 6 inches (CVC 23114)	<ul style="list-style-type: none"> ▲ Empty loader bucket such that no visible dust plumes are created ▲ Ensure that the loader bucket is close to the truck to minimize drop height while loading
Turf Overseeding	18-1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and 18-2 Cover haul vehicles prior to exiting the site.	<ul style="list-style-type: none"> ▲ Haul waste material off site immediately.
Unpaved roads/parking lots	19-1 Stabilize soils to meet the applicable performance standards; and 19-2 Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	<ul style="list-style-type: none"> ▲ Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements.
Vacant land	20-1 In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures.	

Notes: CVC = California Vehicle Code; mph = miles per hour

Source: South Coast Air Quality Management District, Rule 403, June 2005

Significance after Mitigation

Implementation of Mitigation Measure 3.13-1a would reduce NO_x emissions from off-road equipment by 20 percent, 25 percent, or 60 percent depending on the construction activities that take place and specific measures implemented, as outlined by the measure. Based on the modeling conducted for the Alternatives B, C, and D transportation improvements, a 20 percent NO_x reduction would result in maximum daily NO_x emissions of 71 lb/day. If mixed-use development occurs as proposed, and not elsewhere to meet the replacement housing needs, a 25 percent reduction in NO_x emissions would result in a maximum of 79 lb/day. If construction of the mixed-use development sites were to occur simultaneously with the transportation improvements, a 60 percent reduction would result in maximum daily NO_x emissions of 79 lb/day. With incorporation of this measure, all construction-related emissions would be reduced to below EDCAQMD's threshold of 82 lb/day. Because ROG emissions would not exceed applicable thresholds and NO_x emissions would be reduced to levels below the significance thresholds for all build alternatives, CO emissions would also be considered less than significant (EDCAQMD 2002). Further, implementation of Mitigation Measure 3.13-1b would require all alternatives and the potential mixed-use development sites to incorporate and adhere to all available dust control measures, thus minimizing fugitive dust emissions such that PM₁₀ and PM_{2.5} would not result in significant levels that could exceed ambient air quality standards. This impact would be reduced to a **less-than-significant** level for all build alternatives and associated mixed-use development, for purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, environmental consequences of implementing Alternatives B, C, D, and E with the implementation of Mitigation Measures 3.13-1a and 3.13-1b **would not be adverse**.

3.14 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

Greenhouse gas (GHG) emissions have the potential to adversely affect the environment, because they contribute, on a cumulative basis, to global climate change. In turn, global climate change has the potential to affect rain and snow fall, leading to changes in alpine hydrology and water supply; to affect habitat, leading to adverse effects on biological and other resources; and to change the frequency and duration of droughts, which can affect wildfire hazards and forest health.

Federal, state, and local regulations related to GHG emissions and climate change and potential impacts of the project alternatives are analyzed in this section. Because the nature of this issue is inherently cumulative, this section serves as the cumulative impact analysis related to GHGs and climate change. Therefore, the cumulative global climate change analysis presented in this section of the Draft EIR/EIS/EIS examines the GHG emissions associated with construction and operation-related activities of the US 50 South Shore Revitalization Project and its role in implementing statewide and regional plans that aim to reduce GHGs. The potential effects of global climate change on the project are also identified based on available scientific data.

The cumulative project list applicable to global climate comprises anthropogenic (i.e., human-made) GHG emission sources across the globe, and no project alone would reasonably be expected to contribute to a noticeable incremental change to the global climate. However, legislation and executive orders on the subject of climate change in California have established a statewide context and a process for developing an enforceable statewide cap on GHG emissions. Similarly, implementation of the applicable regional transportation plan and sustainable communities' strategy for the Tahoe Region established a regional context for addressing GHG emission associated with transportation and land use. Nevada follows the guidance of FHWA for climate change issues related to transportation projects. Given the nature of environmental consequences from GHGs and global climate change, Tahoe Regional Planning Agency's (TRPA) environmental review process, NEPA, and CEQA require that lead agencies consider evaluating the cumulative impacts of GHGs, even in relatively small additions. Small contributions to this cumulative impact (from which significant effects are occurring and are expected to worsen over time) may be potentially considerable and, therefore, significant.

3.14.1 Regulatory Setting

FEDERAL

The U.S. Environmental Protection Agency (EPA) is the federal agency responsible for implementing the federal Clean Air Act (CAA) and its amendments. The Supreme Court of the United States ruled on April 2, 2007 that carbon dioxide (CO₂) is an air pollutant as defined under the CAA, and that EPA has the authority to regulate emissions of GHGs. The ruling in this case resulted in EPA taking steps to regulate GHG emissions and lent support for state and local agencies' efforts to reduce GHG emissions.

However, neither the EPA nor the Federal Highway Administration (FHWA) has issued explicit guidance or methods to conduct project-level GHG analysis. FHWA supports the approach that climate change considerations should be integrated throughout the transportation decision-making process, from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will assist in decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision-making. Climate change considerations can be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

FHWA has outlined four strategies to lessen climate change impacts, which correlate with efforts that California and Nevada are undertaking to deal with transportation and climate change; these strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and a reduction in travel activity. Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the “National Clean Car Program,” as discussed below, and Executive Order 13514 - Federal Leadership in Environmental, Energy, and Economic Performance. This order is focused on reducing greenhouse gases internally in federal agency missions, programs, and operations, but also directs federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change.

National Program to Cut Greenhouse Gas Emissions and Improve Fuel Economy for Cars and Trucks

On August 28, 2014, EPA and the Department of Transportation’s National Highway Traffic Safety Administration (NHTSA) finalized a new national program that would reduce GHG emissions and improve fuel economy for all new cars and trucks sold in the U.S. (NHTSA 2012). EPA proposed the first-ever national GHG emissions standards under the CAA, and NHTSA proposed Corporate Average Fuel Economy standards under the Energy Policy and Conservation Act. This proposed national program allows automobile manufacturers to build a single light-duty national fleet that satisfies all requirements under both federal programs and the standards of California and other states. While this program will increase fuel economy to the equivalent of 54.5 miles per gallon for cars and light-duty trucks by Model Year 2025, additional phases are being developed by NHTSA and EPA that address GHG emission standards for new medium- and heavy-duty trucks (NHTSA 2014).

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons (MT) or more of CO₂ per year. This publicly available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial greenhouse gases along with vehicle and engine manufacturers will report at the corporate level. An estimated 85 percent of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

TAHOE REGIONAL PLANNING AGENCY

TRPA has not specifically identified any goals or Environmental Threshold Carrying Capacities related to GHG emissions or climate change at this time. The single policy in the Goals and Policies document pertaining to GHG emissions (Policy AQ-1.3) encourages the reduction of GHG emissions from motor vehicles and motorized machinery in the Tahoe Region. The TRPA Code of Ordinances includes a provision requiring that a GHG reduction strategy be incorporated into area plans adopted by local jurisdictions (TRPA Code Section 13.5.3.E) to reduce emissions of GHGs from the operation or construction of buildings. As part of the Lake Tahoe Sustainability Collaborative, TRPA participated in the preparation of the regional transportation plan for the Tahoe Region that includes strategies for reducing transportation-related GHGs (see below at *Mobility 2035: Lake Tahoe Regional Transportation Plan*) and the *Tahoe Sustainability Action Plan* (see below at *Tahoe Sustainability Action Plan*).

Mobility 2035: Lake Tahoe Regional Transportation Plan

The Tahoe Metropolitan Planning Organization (TMPO) serves as the metropolitan planning organization (MPO) for El Dorado County within the Lake Tahoe Air Basin (LTAB) and would be applicable to the project. In 2012, the TMPO prepared the Mobility 2035: Lake Tahoe Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), which seeks to improve mobility and safety for the commuting public while at the same time delivering environmental improvements throughout the transportation network in the Lake Tahoe Basin (Basin). Important directions of the plan are to reduce the overall environmental impact of transportation in the Tahoe Region, create walkable, vibrant communities, and provide real alternatives to driving. The RTP establishes a target to reduce GHG emissions by 7 percent per capita reduction of GHGs by 2020 and by 5

percent per capita by 2035. The Basin is currently meeting these targets. The plan also supported an update of the Transportation Element of the TRPA Regional Plan. The RTP update included a Sustainable Communities Strategy (SCS), in accordance with California Senate Bill 375 (Sustainable Communities and Climate Protection Act). The SCS demonstrates how integrated transportation, land use, and housing strategies will help the MPO Region meet environmental thresholds and greenhouse gas targets for cars and light trucks on the California side of the Basin by 2035. The RTP/SCS is integrated into TRPA's Regional Plan.

2017 Lake Tahoe Regional Transportation Plan Update

The 2017 Regional Transportation Plan (2017 RTP), which is an update to the 2012 RTP, and its joint CEQA/TRPA environmental document have been circulated for public review. The vision and goals of the 2017 RTP were based on the 2012 RTP. The projects listed in the 2017 RTP are substantially similar to those in the 2012 RTP, and the US 50/South Shore Community Revitalization Project is included in both documents.

Best Construction Practices Policy for Construction Emissions

TRPA coordinates implementation of its Best Construction Practices Policy for Construction Emissions through TRPA-approved plans, project-permitting, or projects/programs developed in coordination with local or other governments that require, as a condition of project approval, implementation of feasible measures and best management practices to reduce construction-generated emissions to the extent feasible (TRPA 2013). TRPA developed its Best Construction Practices Policy pursuant to Mitigation Measure 3.4-2 and Mitigation Measure 3.5-1 of the 2012 RTP/SCS Environmental Impact Report/Environmental Impact Statement (EIR/EIS), and Mitigation Measure 3.4-2 of the Regional Plan Update EIS. Included in these measures are limits on idling time and the use of clean-fuel generators rather than diesel, which would be required for this project and would help reduce GHG emissions related to the construction of the build alternatives.

STATE

California

California Executive Order S-3-05

Executive Order S-3-05, signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those problems, the Executive Order established total GHG emission targets for the State. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

As described below, legislation was passed in 2006 (Assembly Bill [AB] 32, the California Global Warming Solutions Act of 2006) to limit GHG emissions to 1990 levels by 2020 with continued "reductions in emissions" beyond 2020, but no specific additional reductions were enumerated in the legislation. Further, Senate Bill 375 (sustainable community strategies/transportation) established goals for emissions from light duty truck and automobiles for 2020 and 2035.

California Executive Order B-30-15

On April 20, 2015 Governor Edmund G. Brown Jr. signed Executive Order B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments such as the 28-nation European Union which adopted the same target in October 2014. California is on track to meet or exceed the current target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (Assembly Bill 32, discussed below). California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming below 2°C—the warming threshold at which there will likely be major climate disruptions such as super droughts and rising sea levels according to scientific consensus.

California Global Warming Solutions Act of 2006 (Assembly Bill 32)

In September 2006, Governor Schwarzenegger signed the California Global Warming Solutions Act of 2006 (AB 32). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 also requires that these reductions “...shall remain in effect unless otherwise amended or repealed. (b) It is the intent of the Legislature that the statewide greenhouse gas emissions limit continue in existence and be used to maintain and continue reductions in emissions of greenhouse gases beyond 2020. (c) The (Air Resources Board) shall make recommendations to the Governor and the Legislature on how to continue reductions of greenhouse gas emissions beyond 2020.” [California Health and Safety Code, Division 25.5, Part 3, Section 38551]

In December 2008, ARB adopted its Climate Change Scoping Plan, which contains the main strategies California will implement to achieve reduction of approximately 118 million metric tons (MMT) of CO₂-equivalent (CO₂e) emissions, or approximately 21.7 percent from the state’s projected 2020 emission level of 545 MMT of CO₂e under a business-as-usual scenario (this is a reduction of 47 MMT CO₂e, or almost 10 percent, from 2008 emissions). ARB’s original 2020 projection was 596 MMT CO₂e, but this revised 2020 projection takes into account the economic downturn that occurred in 2008 (ARB 2011). The Scoping Plan reapproved by ARB in August 2011 includes the Final Supplement to the Scoping Plan Functional Equivalent Document, which further examined various alternatives to Scoping Plan measures. The Scoping Plan also includes ARB-recommended GHG reductions for each emissions sector of the state’s GHG inventory. ARB estimates the largest reductions in GHG emissions to be achieved by 2020 will be by implementing the following measures and standards (ARB 2011):

- ▲ improved emissions standards for light-duty vehicles (estimated reductions of 26.1 MMT CO₂e),
- ▲ the Low-Carbon Fuel Standard (15.0 MMT CO₂e),
- ▲ energy efficiency measures in buildings and appliances (11.9 MMT CO₂e),
- ▲ a renewable portfolio and electricity standards for electricity production (23.4 MMT CO₂e), and
- ▲ the Cap-and-Trade Regulation for certain types of stationary emission sources (e.g., power plants).

In May 2014, ARB released and has since adopted the *First Update to the Climate Change Scoping Plan* to identify the next steps in reaching AB 32 goals and evaluate the progress that has been made between 2000 and 2012 (ARB 2014b:4 and 5). According to the update, California is on track to meet the near-term 2020 GHG limit and is well positioned to maintain and continue reductions beyond 2020 (ARB 2014b:ES-2). The update also reports the trends in GHG emissions from various emission sectors.

In 2016, SB 32 (discussed below) was passed, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels. Subsequently, in January 2017, ARB released the draft 2017 Climate Change Scoping Plan Update, which details California’s strategy for achieving 2030 greenhouse gas targets established under SB 32.

Senate Bill 32

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California’s GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize ARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State’s continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050.

California Senate Bill 375

Senate Bill [SB] 375, signed by the Governor in September 2008, aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires MPOs to develop an SCS or Alternative Planning Strategy, showing prescribed land use allocation in each MPO’s regional transportation plan. ARB, in consultation with the MPOs, is to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in their respective regions for 2020 and 2035.

As discussed above, the TMPO 2012 RTP/SCS is the applicable regional plan for the project. With the assistance of the Regional Targets Advisory Committee (RTAC) and in consultation with the MPOs, ARB provided each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every 8 years, but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets. ARB is also charged with reviewing each MPO's SCS consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012. The ARB-issued targets for the California portion of the Tahoe MPO are a 7 percent reduction in GHG emissions per capita by 2020 relative to 2005 per capita GHG emissions and a 5 percent reduction by 2035 (ARB 2011).

California Advanced Clean Cars Program

In January 2012, ARB approved the Advanced Clean Cars program which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles, into a single package of standards for vehicle model years 2017 through 2025. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions than the statewide fleet in 2016 (ARB [no date]).

California Renewable Energy Resources Act of 2011 (Senate Bill X1-2)

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 sets a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California. SB X1-2 mandates that renewables from these sources make up at least 50 percent of the total renewable energy for the 2011-2013 compliance period, at least 65 percent for the 2014-2016 compliance period, and at least 75 percent for 2016 and beyond.

California Building Efficiency Standards of 2013 and 2016 (Title 24, Part 6)

Buildings in California are required to comply with California's Energy Efficiency Standards for Residential and Nonresidential Buildings established by the CEC regarding energy conservation standards and found in Title 24, Part 6 of the California Code of Regulations. California's Energy Efficiency Standards for Residential and Nonresidential Buildings was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated on an approximately three-year cycle to allow consideration and possible incorporation of new energy efficient technologies and methods. All buildings for which an application for a building permit is submitted on or after July 1, 2014 must follow the 2013 standards (CEC 2012). Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The CEC Impact Analysis for California's 2013 Building Energy Efficiency Standards estimates that the 2013 Standards are 23.3 percent more efficient than the previous 2008 standards for multi-family residential construction and 21.8 percent more efficient for non-residential construction (CEC 2013:3).

In addition, all buildings for which an application for a building permit is submitted on or after January 1, 2017 must comply with the 2016 standards (CEC 2016). The CEC 2016 Building Energy Efficiency Standards Adoption Hearing presentation estimates that the 2016 Standards are 28 percent more efficient than the previous 2013 standards for single-family residential construction and 5 percent more efficient for non-residential construction (CEC 2015). Thus, all proposed residential and commercial land uses will be required to comply with the most current building codes applicable at the time the permit applications are sought.

Caltrans Guidance on Addressing Climate Change Adaptation in Regional Transportation Plans

In February 2013, Caltrans published a report called *Addressing Climate Change Adaptation in Regional Transportation Plans: A Guide for California MPOs and RTPAs* (Caltrans 2013). This guide was written to help MPOs and regional transportation planning agencies (RTPAs) better incorporate climate assessment and adaptation into the long-range planning process. It discusses potential climate change-related impacts to

transportation infrastructure in California and related adaptation strategies. Although there is no requirement to date to incorporate climate adaptation into regional transportation planning, this guide provides information and tools to help MPOs/RTPAs anticipate the incorporation of climate assessment and adaptation into future planning efforts.

NEVADA

The State of Nevada and its jurisdictions follow the air quality policies and regulations set forth by the FHWA and the EPA when evaluating the greenhouse gas emissions generated by the construction of road projects.

Since 1982, the TRPA, the California and Nevada bi-state regional environmental planning agency for the Lake Tahoe Region, has strived to meet two air quality threshold indicators: Vehicle Miles Traveled (VMT) and traffic counts. Both of these criteria should be reduced to 1981 levels. VMT have been decreasing in the Lake Tahoe Region over the last five years, and traffic counts, which, for the purposes of the threshold indicator, are measured at a location in South Lake Tahoe, are also trending downward.

At the statewide level, on April 10, 2007, Nevada Governor Jim Gibbons signed an executive order that created the Nevada Climate Change Advisory Committee (NCCAC). The executive order directed the Committee to develop recommendations for reducing Nevada's GHG emissions.

The NCCAC released its final report on May 31, 2008 in which it identified recommendations to reduce GHG emissions in sectors such as agriculture, energy, waste management, commercial and residential building, and transportation.

To assist in the reduction of GHG emissions within the transportation sector, the committee's recommendations are intended to further efforts to supplement and diversify Nevada's fuel supplies, and to reduce air pollutants and greenhouse gases. A few of the committee's recommendations include the creation of a clean fuels and clean vehicle incentive program, as well as incentive programs for ethanol fuels and biodiesel fuels. The committee also recommends the State of Nevada monitor the status of California motor vehicle emissions standards for GHG emissions from motor vehicles.

With regard to current road transportation projects, the Nevada Department of Transportation adheres to the policies and regulations of the PA and the FHWA for greenhouse gases.

LOCAL

El Dorado County Air Quality Management District

EDCAQMD currently recommends that lead agencies use thresholds of significance for evaluating construction- and operation-related GHG emissions developed by *Sacramento Metropolitan Air Quality Management District* (SMAQMD) and available in the SMAQMD CEQA Guide, last updated in November 2014 (Baughman, pers. comm., 2015). These thresholds were developed for the Sacramento metropolitan region and are intended to evaluate a project for consistency with GHG targets established in AB 32. Thresholds are included below in the Significance Criteria description.

Tahoe Sustainability Action Plan

The *Tahoe Sustainability Action Plan* was completed by the Lake Tahoe Sustainability Collaborative in December 2013 (Lake Tahoe Sustainability Collaborative 2013). The California Strategic Growth Council (SGC) funded the regional collaboration to develop sustainability tools for regional and local agencies, non-profits, the business community, and local residents to use in promoting greenhouse gas reduction, among other sustainability goals. The grant and planning effort was administered by the TMPO and was carried out by the Lake Tahoe Sustainability Collaborative, which is a public and private partnership that includes TRPA and was established to lead the development of sustainability tools and drive coordinated sustainability

efforts. The sustainability tools in the Tahoe Sustainability Plan are intended to support development of economic incentives, GHG reduction strategies, and climate change adaptation strategies.

South Lake Tahoe General Plan

The Natural and Cultural Resources Element of the *South Lake Tahoe General Plan* provides city-wide goals and policies aimed at reducing GHG emissions and promoting sustainable development (City of South Lake Tahoe 2011). Relevant goals and policies include incorporating bicycle and pedestrian facilities in city transportation planning and new development projects (Policy NCR-5.1), consideration of traffic-calming measures where needed (Policy NCR-5.5), encouraging interconnected bicycle, pedestrian, and bus transit circulation in development projects (NCR-5.8), supporting appropriately located mixed-use development sites within walking distance of each other (NCR-5.9), and mitigating carbon emissions during project-level CEQA review for individual projects (NCR-5.15). The General Plan also encourages conservation in new and existing development to reduce GHG emissions (Goal NCR-6); this goal is supported by policies that encourage use of “EPA Energy Star” certified appliances for new private development and public facilities (NCR-6.14), and a requirement to prepare a waste diversion plan to address the construction phase for certain projects (NCR-6.16). The full text of this goal and these policies, along with a discussion of the project’s consistency with this goal and policy, is included in Appendix E, “Goals and Policies Consistency Analysis.”

3.14.2 Affected Environment

EXISTING CLIMATE

Climate is the accumulation of daily and seasonal weather events over a long period of time, whereas weather is defined as the condition of the atmosphere at any particular time and place (Ahrens 2003). Lake Tahoe lies in a depression between the crests of the Sierra Nevada and Carson ranges on the California-Nevada border at a surface elevation of approximately 6,260 feet above sea level. The LTAB is defined by the 7,000-foot contour, which is continuous around the Lake, except near Tahoe City. The mountains surrounding Lake Tahoe are approximately 8,000 to 9,000 feet in height on average, with some reaching 10,000 feet.

ATTRIBUTING CLIMATE CHANGE—THE PHYSICAL SCIENTIFIC BASIS

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 earth’s atmosphere from space. A portion of the radiation is absorbed by the earth’s surface and a smaller portion of this radiation is reflected back toward space. This 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. Without the greenhouse effect, earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are CO₂, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed 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 anthropogenic increase in GHG concentrations and other anthropogenic factors together (IPCC 2014:3, 5).

Climate change is a global problem and GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric

lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, 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 is sequestered through ocean and land uptakes every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO₂ emissions remains stored in the atmosphere (IPCC 2013:467).

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say, the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or microclimates.

GREENHOUSE GAS EMISSION SOURCES

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural emissions sectors (ARB 2014a). In the United States, the main source of GHG emissions is electricity generation, followed by transportation. In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (ARB 2014a). According to the NCCAC, the transportation sector in Nevada contributes 32 percent of the greenhouse gas emissions in the state.

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 and landfills. Nitrous oxide is also 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.

EFFECTS OF CLIMATE CHANGE ON THE ENVIRONMENT

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme to provide the world with a scientific view on climate change and its potential effects. According to the IPCC global average temperature is expected to increase relative to the 1986–2005 period by 0.3 to 4.8 degrees Celsius (°C) (0.5 to 8.6 degrees Fahrenheit [°F]) by the end of the 21st century (2081–2100), depending on future GHG emission scenarios (IPCC 2014:SPM-8). According to the California Natural Resources Agency, temperatures in California are projected to increase 2.7 °F above 2000 averages by 2050 and, depending on emission levels, 4.1 to 8.6 °F by 2100 (CNRA 2012:2).

Physical conditions beyond average temperatures could be indirectly affected by the accumulation of GHG emissions. For example, changes in weather patterns resulting from increases in global average temperature are expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. Based upon historical data and modeling, the California Department of Water Resources projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050 (DWR 2008:4). An increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the Sierra Nevada until spring could flow into the Central Valley concurrently with winter storm events (CNRA 2012:5). This scenario would place more pressure on California's levee/flood control system.

Another outcome of global climate change is sea level rise. Sea level rose approximately 7 inches during the last century and, assuming that sea-level changes along the California coast continue to track global trends, sea level along the state's coastline in 2050 could be 10-18 inches higher than in 2000, and 31 to 55 inches higher by the end of this century (CNRA 2012:9).

Changes in precipitation patterns and increased temperatures are expected to alter the distribution and character of natural vegetation and associated moisture content of plants and soils. An increase in frequency of extreme heat events and drought are also expected. These changes are expected to lead to increased frequency and intensity of large wildfires (CNRA 2012:11).

3.14.3 Environmental Consequences

METHODS AND ASSUMPTIONS

Short-term, construction-related GHG emissions were calculated using the SMAQMD Roadway Construction Emissions Model (Version 8.1.0) for the transportation improvements and the California Emissions Estimator Model (CalEEMod) Version 2016.3.1 computer program (California Emissions Estimator Model [CAPCOA] 2016) for the mixed-use development sites, as recommended by EDCAQMD and other air districts in California. Modeling was based on project-specific information (e.g., length of road, area to be graded, area to be paved), where available; reasonable assumptions based on typical construction activities; and default values that are based on the project's location and land use type. The modeling conservatively assumed that project construction/grading phases could begin as early as 2017 for both the transportation improvements and mixed-use development sites. Transportation improvements are anticipated to take up to three years and each mixed-use site was assumed to take up to one year to construct. Construction emissions were evaluated for the transportation improvements alone and in combination with the mixed-use development sites. Actual construction phasing and timing for each mixed-use site is unknown and thus all construction activities were summed and amortized over 25 years to represent annual emissions over the life of the project, consistent with SMAQMD guidance. Note that SMAQMD guidance allows non-residential projects to amortize construction emissions over 40 years. However, for a conservative estimate (i.e., to avoid the risk of understating an impact), a 25-year life span for residential projects was applied to all emissions modeling. For a detailed description of model input and output parameters and assumptions, refer to Appendix J.

The potential for the project to result in an increase in operational GHG emissions is assessed qualitatively based on the VMT analysis provided in the traffic analysis prepared for the US 50/South Shore Revitalization Project (Wood Rodgers 2016) and the project is evaluated for its consistency with the RTP/SCS.

In addition, this EIR/EIS/EIS evaluates whether the US 50/South Shore Revitalization Project would be substantially affected by environmental impacts exacerbated by climate change. This analysis is largely informed by Caltrans guidance on *Addressing Climate Change Adaptation in Regional Transportation Plans* (Cambridge Systematics 2013) discussed earlier in this section.

SIGNIFICANCE CRITERIA

FHWA, TRPA, and EDCAQMD have not formally identified a significance threshold standard for analyzing GHG emissions generated by a project, or a methodology for analyzing impacts related to GHG emissions or global climate change.

NEPA Criteria

FHWA and EPA do not provide significance criteria for GHG emissions analysis in NEPA documents. The Council on Environmental Quality (CEQ) is the division of the Executive Office of the President that coordinates federal environmental efforts in the United States. CEQ finalized guidance for addressing GHG emissions in NEPA documents in 2016. The guidance does not include significance criteria, but directs federal agencies to disclose and carefully analyze emissions (CEQ 2016).

TRPA Criteria

TRPA's Initial Environmental Checklist does not contain any criteria that directly pertain to GHGs, climate change, or the adaptability of a project to climate change.

CEQA Criteria

Based on Appendix G of the State CEQA Guidelines, the GHG emissions generated by a proposed project would result in a cumulatively considerable contribution to climate change if the project would:

- ▲ generate greenhouse gas emissions, either directly or indirectly, that may have a significant adverse effect on the environment; or
- ▲ conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Thresholds of Significance

Based on the available guidance and criteria described above, GHG emissions generated by a proposed project would result in a cumulatively considerable contribution to climate change if the project would:

- ▲ result in construction-related GHG emissions that exceed SMAQMD recommended threshold of 1,100 MTCO₂e/year. To assess consistency with California's 2030 GHG target of 40 percent below 1990 levels, this threshold, established for the purpose of reducing 2020 statewide emission to 1990 levels, has been adjusted down by 40 percent to 660 MTCO₂e/year; and
- ▲ conflict with implementation of the adopted 2012 TRPA/TMPO RTP/SCS (i.e., Mobility 2035) or 2017 RTP, Senate Bill 375.

ENVIRONMENTAL EFFECTS OF THE PROJECT ALTERNATIVES

Impact 3.14-1: GHG emissions and consistency with the Regional Transportation Plan

Implementation of Alternatives B, C, and D would result in realignment of US 50 and community revitalization that would be consistent with implementation of the RTP/SCS, which aims to achieve regional VMT (and associated GHG emissions) reduction targets. Therefore, Alternatives B, C, and D would help implement the RTP's impact on regional VMT and related GHG emissions. There would be nominal construction-related GHG emissions of less than 1,100 MTCO₂e/year and 660 MTCO₂e/year (2030 adjusted threshold) for all the build alternatives. Implementation of Alternative A would not support the revitalization of the Tourist Core; it would retain the existing roadway system as is and existing traffic conditions, including existing levels of congestion and traffic flow but would not result in an increase in GHG emissions relative to existing conditions. For Alternative E, the existing roadway alignment would remain the same with separation of pedestrians on an elevated structure. It would not support revitalization in the Tourist Core as effectively as the realignment alternatives and the through-traffic trip length on US 50 would be unchanged as would VMT and related GHG emissions.

NEPA Environmental Consequences: The design features of Alternatives A, B, C, D, and E would avoid or minimize GHG emissions such that no additional mitigation measures are needed or feasible to implement

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives A, B, C, D, and E

Alternative A: No Build (No Project)

This alternative would retain existing traffic conditions, including existing levels of congestion and traffic flow, and therefore could potentially prevent full, effective implementation of the RTP/SCS, which was adopted to improve connectivity, reliability, travel times, and operations of public transportation, and increase mobility and safety of bicycles and pedestrians to achieve reduction targets for VMT (and associated mobile-source GHGs). While Alternative A could potentially conflict with implementation of the RTP/SCS, it also would not result in an increase in VMT or GHG emissions relative to existing conditions. Therefore, this would be a **less-than-significant** impact for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, Alternative A would avoid or minimize GHG emissions such that no additional mitigation measures are needed or feasible to implement.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

GHG emissions for transportation projects can be divided into those generated during construction and those generated during operations. Construction activities that would generate GHG emissions include the use of off-road construction equipment, trucks hauling materials to and from the construction site, and commute trips by workers.

GHG emissions generated by construction would be primarily in the form of CO₂. Emissions of other GHGs, such as methane and nitrous oxide, are also important with respect to global climate change; however, the emission levels of these other GHGs from on- and off-road vehicles used during construction are relatively small compared with the level of CO₂ emissions, even when factoring in the relatively larger global warming potential of methane and nitrous oxide.

Construction emissions were estimated using the Road Construction Emissions Model, Version 8.1.0, which is widely accepted by air districts in California, including EDCAQMD, for estimating emissions from linear construction projects, such as roadway widening and new roadway construction. Detailed modeling parameters are provided in Appendix J and modeling results are shown below in Table 3.14-1.

Table 3.14-1 Estimated Greenhouse Gas Emissions Associated with Construction of Alternatives B, C, and D

Construction Activities	GHG Emissions (MTCO ₂ e)
Total Demolition Phase Emission	53
Total Construction Phase Emissions	2,604
Total Construction Emissions over 3-year period	2,657
Annual Construction Emissions (amortized over 25 years)	106
EDCAQMD/SMAQMD Thresholds of Significance (MTCO ₂ e/year)	1,100
Exceed Applicable Thresholds of Significance?	NO
Notes:	
MTCO ₂ e = metric tons of carbon dioxide equivalents	
EDCAQMD = El Dorado County Air Quality Management District	
SMAQMD = Sacramento Metropolitan Air Quality Management District	
Source: Compiled by Ascent Environmental, Inc. in 2016	

Based on the modeling conducted, the total CO₂ emissions for construction of Alternative B would be approximately 2,657 metric tons. Assuming a project life of 25 years, this would result in an average of 106 MTCO₂e/year. These emission estimates do not account for any emission reductions that would result from implementation of TRPA's Best Construction Practices Policy for Construction Emissions (e.g., minimizing idling time of diesel-powered equipment, utilizing electricity or clean-fuel generators rather than diesel, where feasible) and therefore actual emissions may be less than reported here. Nonetheless, estimated construction-related GHG emissions would not exceed applicable thresholds of significance (i.e., 1,100 MTCO₂e/year for 2020 targets and 660 MTCO₂e/year for 2030).

Regarding project operations, implementation of Alternative B would result in realignment of US 50 and community revitalization that would be consistent with implementation of the RTP/SCS, which aims to achieve regional VMT (and associated GHG emissions) reduction targets. Moreover, VMT (and resultant GHG emissions) associated with the US 50/South Shore Community Revitalization Project were evaluated in the analysis of the 2012 RTP/SCS EIR/EIS that determined an overall reduction in region-wide VMT (TMPO and TRPA 2012). This is noteworthy given that the RTP/SCS demonstrates how integrated transportation, land use, and housing strategies will help Lake Tahoe meet GHG targets for cars and light trucks on the California

side of the Basin, as required by SB 375. In turn, because SB 375 is a component of the AB 32 Scoping Plan, Alternative B would also be consistent with the state's plan to achieve AB 32-mandated emission reductions. Implementation of Alternative B would not prevent the TRPA region from reaching its goal of reducing VMT below 1981 levels.

In summary, because construction-related GHG emissions would be below SMAQMD thresholds, Alternative B would not result in a long-term increase in VMT or GHG emissions, and Alternative B is identified as part of the 2016 RTP/SCS, which aims to achieve reduction targets for mobile-source GHGs, and the transportation improvements alone do not introduce any new trip-generating land uses, implementation of Alternative B would not result in a considerable contribution to the cumulative adverse effect of climate change. Conversely, Alternative B would help implement the RTP/SCS's beneficial impacts on regional VMT. Considering both construction and operation emissions, this impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the Alternative B transportation improvements would avoid or minimize GHG emissions such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

In addition to the proposed realignment of US 50 and associated improvements discussed above, three individual mixed-use development sites could be developed. Each site would include a mix of commercial and residential land uses as well as a combination of on-site parking structures and parking lots to support the mixed-use development sites.

The maximum allowable development that could occur on the three sites collectively includes up to 227 housing units, 46,250 square feet of commercial space, and 534 parking spaces. For purposes of evaluating GHG impacts, this maximum potential was assumed for emissions modeling. Emissions were estimated for construction of each site individually and combined with the transportation improvements to represent complete build out of the alternatives. Detailed modeling parameters are provided in Appendix J and modeling results are shown below in Table 3.14-2.

Table 3.14-2 Estimated Greenhouse Gas Emissions Associated with Construction of Mixed-Use Sites 1, 2, and 3

Construction Activities	GHG Emissions (MTCO _{2e})
Total Site 1 Construction Activities (assumed 1 year construction duration)	480
Total Site 2 Construction Activities (assumed 1 year construction duration)	424
Total Site 3 Construction Activities (assumed 1 year construction duration)	380
Total Mixed-Use Sites	1,284
Annual Construction Emissions Mixed-Use Sites Alone (amortized over 25 years)	51
Total Alternative B Transportation Improvements (From Table 3.14-1)	2,657
Annual Construction Emissions Mixed-Use + Roadway Alignments (amortized over 25 years)	157
EDCAQMD/SMAQMD Thresholds of Significance (MTCO _{2e} /year)	1,100
Exceed Applicable Thresholds of Significance?	NO

Notes:

MTCO_{2e} = metric tons of carbon dioxide equivalents
 EDCAQMD = El Dorado County Air Quality Management District
 SMAQMD = Sacramento Metropolitan Air Quality Management District
 CEQ = Council on Environmental Quality
 Source: Compiled by Ascent Environmental, Inc. in 2016

Based on the modeling conducted, the total CO₂ emissions for each site individually would not exceed applicable thresholds of 1,100 MTCO_{2e}/year (2020 target) or 660 MTCO_{2e}/year (2030 target). When combined with emissions associated with transportation improvements and amortized over the life of the

project, total CO₂ emissions would still not exceed applicable thresholds for target years 2020 or 2030. These emission estimates do not account for any emission reductions that would result from implementation of TRPA's Best Construction Practices Policy for Construction Emissions (e.g., minimizing idling time of diesel-powered equipment, utilizing electricity or clean-fuel generators rather than diesel, where feasible) and therefore actual emissions may be less than reported here. Nonetheless, construction-related GHG emissions would not exceed applicable threshold of significance.

Operational-related GHG emissions associated with the proposed mixed-use development sites would result from energy use (i.e., electricity and natural gas), area sources (i.e., fireplaces and landscape maintenance equipment), and vehicle use (i.e., trip generation and VMT).

The mixed-use development sites would replace all existing residences and develop additional residential and retail/commercial space, resulting in a net increase in development over existing conditions. However, new construction would be required to comply with current California Title 24 Building Codes, which have been requiring substantial increases in building energy efficiency over time. Considering current standards, residential building codes result in up to a 65 percent reduction in electricity consumption and 39 percent in natural gas use when compared to standards in place at the time existing structures were built. For non-residential land uses, efficiency may be improved by 29 percent for electricity and 33 percent for natural gas (See Appendix J for calculations). Thus, although a net increase in development would occur, energy consumption in new structures would be substantially more efficient compared to existing structures. In addition, new buildings would be required to comply with current TRPA Code of Ordinances 65.1.4 Combustion Appliances, that require EPA-certified clean-burning wood heaters be installed in all new construction.

Regarding mobile-source GHG emissions, the proposed mixed-use development sites would generate slightly more trips (locally) than the land uses they would replace (approximately 1,400 – 1,700 additional daily trips) (Wood Rodgers 2016). However, the type of compact mixed-use development that would occur at Sites 1, 2, and 3 are precisely the types of transit-oriented, urban infill development contemplated for this area in the Regional Plan and evaluated in the RPU EIS and 2012 RTP/SCS EIR/EIS, required to reduce region-wide VMT, by locating various land uses and amenities in close proximity to residences and existing development. Further, the mixed-use development sites are consistent with the compact development standards (e.g., density, height, and land coverage) in the TCAP and TRPA Code.

Although additional local VMT, and associated GHG emissions, may increase as a result of the mixed-use development sites, based on the VMT analysis for the entire region included in the RTP EIR/EIS, regional VMT targets would still be met. Further, new construction would be substantially more energy efficient than buildings that would be replaced. As the proposed mixed-use development sites would replace existing development and would be consistent with densities contemplated in the aforementioned planning documents and associated environmental analyses, the mixed-use development sites would not result in a net increase in operational GHG emissions that were not previously evaluated. Therefore, because similar land uses and development densities were accounted for in TRPA's regional emissions analysis, the addition of these mixed-use development sites would help implement the RTP/SCS's beneficial impact on regional VMT. Considering both construction and operation emissions, this impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the Alternative B mixed-use development sites would avoid or minimize GHG emissions such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar GHG emissions from construction and operation as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential GHG emissions would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development including replacement housing would result in a **less-than-significant** impact as it relates to GHG emissions.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative B would avoid creating substantial GHG emissions such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way**Transportation Improvements**

Impacts would be the same as described for Alternative B because the duration and type of construction activities with the Alternative C transportation improvements would generally be the same as with Alternative B (see Table 3.14-1 for emissions estimate). Long-term operational impacts of Alternative C would be the same as described for Alternative B because the design concept and scope of Alternative C would also be consistent with the description of the US 50/South Shore Community Revitalization Project in the 2017 RTP/SCS, and the assumptions in TMPO's regional emissions analysis. Implementation of this alternative would not conflict with applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of greenhouse gases. Conversely, Alternative C would help implement the RTP/SCS's beneficial impact on regional VMT. Considering both construction and operation emissions, this impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the Alternative C transportation improvements would avoid or minimize GHG emissions such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

Impacts would be the same as described for Alternative B because the duration and type of construction activities that would occur with Alternative C would generally be the same as with Alternative B (See Table 3.14-2 for emissions estimate). Operation of the mixed-use development would also be the same as Alternative B and therefore this alternative would not conflict with plans, policies, or regulations adopted for the purpose of reducing GHG emissions. Conversely, as with Alternative B, the mixed-use development sites associated with Alternative C would help implement the RTP/SCS's beneficial impact on regional VMT. Considering both construction and operation emissions, this impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the Alternative C mixed-use development sites would avoid or minimize GHG emissions such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar GHG emissions from construction and operation as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential GHG emissions would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development including replacement housing would result in a **less-than-significant** impact as it relates to GHG emissions.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative C would avoid creating substantial GHG emissions such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

Alternative D is similar to Alternative B in that it would construct a new alignment for US 50 to the southeast of existing US 50 from the Pioneer Trail intersection in California to Lake Parkway in Nevada. The relocated US 50/Pioneer Trail intersection would be further east than the Alternative B alignment, and would cut through the business triangle preserved by Alternative B. Proposed construction activities and construction duration would be similar with this alternative as compared to Alternative B (See Table 3.14-1 for emissions estimate). Long-term operational impacts of Alternative D would be the same as described for Alternative B because the design concept and scope of Alternative D would also be generally consistent with the description of the US 50/South Shore Community Revitalization Project in the 2017 RTP/SCS, and the assumptions in TMPO's regional emissions analysis. Implementation of this alternative would not conflict with applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of greenhouse gases. Considering both construction and operation emissions, this impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the Alternative D transportation improvements would avoid or minimize GHG emissions such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

Alternative D includes the redevelopment of three sites within the project site similar to Alternative B. Because the highway realignment differs from Alternative B, the configuration of Sites 1 and 2 are different for Alternative D. The maximum amount of development that could occur on these three sites with Alternative D would be the same as that described above for Alternative B. Therefore, maximum construction-related emissions and associated impacts would be the same (see Table 3.14-2 for emissions estimate). Operation of the mixed-use development would also be the same as Alternative B and therefore this alternative would not conflict with plans, policies, or regulations adopted for the purpose of reducing GHG emissions. Conversely, as with Alternative B, the mixed-use development sites associated with Alternative D would help implement the RTP/SCS's beneficial impact on regional VMT. Considering both construction and operation emissions, this impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the Alternative D mixed-use development sites would avoid or minimize GHG emissions such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar GHG emissions from construction and operation as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of potential GHG emissions would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development including replacement housing would result in a **less-than-significant** impact as it relates to GHG emissions.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative D would avoid creating substantial GHG emissions such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

Alternative E would feature a concrete deck over the entire width and length of existing US 50 within the Tourist Core between a location about 100 feet south of Stateline Avenue and a location near the northern end of the Montbleu Resort (about 450 feet south of Lake Parkway). The deck would serve as a pedestrian “skywalk” facility or raised pedestrian walkway along the casino core. The width would be approximately 75 feet. The skywalk would be constructed on 4-foot wide columns spaced approximately 20 feet on center running along both sides of the highway for the entire length of the bridge. Construction-related emissions associated with this alternative are shown below in Table 3.14-3.

Based on the modeling, the total CO₂ emissions for construction of Alternative E would be approximately 574 metric tons. Assuming a project life of 25 years, this would result in an average of 23 MTCO₂e/year. These emission estimates do not account for any emission reductions that would result from implementation of TRPA’s Best Construction Practices Policy for Construction Emissions (e.g., minimizing idling time of diesel-powered equipment, utilizing electricity or clean-fuel generators rather than diesel, where feasible) and therefore actual emissions may be less than reported here. Nonetheless, estimated construction-related GHG emissions would not exceed applicable thresholds of significance. Further, operation of Alternative E would not result in any increases in local or regional VMT. No mixed-use development is proposed with this alternative. Implementation of this alternative would not result in substantial GHG emissions or conflict with plans, policies, or regulations adopted for the purpose of reducing GHG emissions. This impact would be **less than significant** for the purposes of CEQA and TRPA.

Table 3.14-3 Estimated Greenhouse Gas Emissions Associated with Construction of Alternative E

Construction Activities	GHG Emissions (MTCO ₂ e)
Total Construction Emissions 3-year period	574
Emissions MTCO ₂ e/year	23
EDCAQMD/SMAQMD Thresholds of Significance (MTCO ₂ e/year)	1,100
Exceed Applicable Thresholds of Significance?	NO
Notes:	
MTCO ₂ e	= metric tons of carbon dioxide equivalents
EDCAQMD	= El Dorado County Air Quality Management District
SMAQMD	= Sacramento Metropolitan Air Quality Management District
Source: Compiled by Ascent Environmental, Inc. in 2016	

Because of the reasons stated above, for the purposes of NEPA, Alternative E would avoid or minimize GHG emissions such that no additional mitigation measures are needed or feasible to implement.

Impact 3.14-2: Vulnerability to climate change risks

Climate change is expected to result in a variety of effects in the study area including increased frequency and intensity of wildfires, changes to timing and intensity of precipitation resulting in increased risk from landslides associated with ground saturation, increased stormwater runoff, and increased intensity of storm events that result in increased snow loading and high winds. However, there are numerous programs and policies in place, as well as design measures that would protect against these climate change risks.

NEPA Environmental Consequences:	The design features of Alternatives B, C, D, and E would avoid or minimize vulnerability to climate change risks such that no additional mitigation measures are needed or feasible to implement
CEQA/TRPA Impact Determinations:	Less than Significant for Alternatives B, C, D, and E; No Impact for Alternative A.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels.

The project is located in an urbanized area where chances of wildland fire are typically reduced relative to a forested area and emergency response personnel are more readily available. Further, TRPA, El Dorado County, and Douglas County have adopted plans and policies to manage and plan for wildland fire. These include TRPA's Community Wildfire Protection Plan and TRPA's Fuel Reduction and Forest Restoration Plan; the California Department of Forestry and Fire Protection's (CALFIRE) Plans for El Dorado County; and the Nevada Hazard Mitigation Plan in Douglas County (see Section 3.12, "Hazards, Hazardous Materials, and Risk of Upset," for additional information on plans and policies related to wildland fire). Implementation of these plans would reduce the likelihood of wildland fire through management of fuels and implementation of best practices and would ensure that resources to respond to the occurrence of a wildland fire would be available. Therefore, it is not anticipated that the study area would be substantially affected by exposure to wildfire as a result of climate change impacts.

Potential impacts associated with changing storm and precipitation patterns are addressed below, for each alternative.

Alternative A: No Build (No Project)

With Alternative A there would be no improvements to existing US 50, Lake Parkway, or other roadways within the project site, and no new land use development. As no project would be implemented, there would be no new development or land uses that could be affected by climate change. There would be **no impact** for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Implementation of this alternative would result in slightly more roadway length (i.e., 0.4 mile) on US 50. However, travel lanes would be reduced on existing US 50 so overall surface area of impervious surfaces would remain relatively similar to existing conditions. The proposed pedestrian bridge would be elevated and would not be prone to flooding. In addition, landscaping improvements, such as the addition of street trees, decorative vegetation, and landscaped medians, would be included throughout the project site with this alternative. Further, the project would include various improvements that would help with storm water retention, such as sediment traps, infiltration basins, and sand traps (Wood Rogers 2016b). All of these improvements would help capture and reduce stormwater runoff.

As discussed in Section 3.11, "Geology, Soils, Land Capability, and Coverage," the project site is not located on sloping ground that is potentially subject to landslides, rock falls, and debris/earth flows, which could become more frequent or severe as storm patterns change. Also, the project would not place facilities in locations with increased avalanche risk relative to existing conditions. For these reasons, changes in local weather patterns as a result of climate change would not be expected to have a substantial impact on the project. This impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the design features of the Alternative B transportation improvements would avoid or minimize vulnerability to climate change risks such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

The addition of the mixed-use development would result in the replacement of existing residential land uses with a mix of residential and commercial/retail uses. Because these redevelopment sites would replace existing housing and would be designed to meet existing building standards, they would not result in substantial population growth in the area and therefore would not be exposing additional people to potential risks from climate change. The same design components described above would also be implemented. Therefore, impacts would be the same. This impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the design features of the Alternative B mixed-use development sites would avoid or minimize vulnerability to climate change risks such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar climate change risks as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of climate change risks would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development including replacement housing would result in a **less-than-significant** impact as it relates to vulnerability to climate change risks.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative B would avoid or minimize vulnerability to climate change risks such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

The alignment of Alternative C would be the same as Alternative B for the route along existing Montreal Road and Lake Parkway. However, Alternative C would involve one-way travel within the Tourist Core and on the realigned highway to the southeast. All improvements associated with landscaping and stormwater retention would also be included. Therefore, impacts would be the same as Alternative B. This impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the design features of the Alternative C transportation improvements would avoid or minimize vulnerability to climate change risks such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

Alternative C includes the redevelopment of the same three sites within the project site as Alternative B. Therefore, impacts would be the same. This impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the design features of the Alternative C mixed-use development sites would avoid or minimize vulnerability to climate change risks such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar climate change risks as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of climate change risks would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development including replacement housing would result in a **less-than-significant** impact as it relates to vulnerability to climate change risks.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative C would avoid or minimize vulnerability to climate change risks such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

Alternative D is similar to Alternative B in that it would construct a new alignment for US 50 to the southeast of existing US 50 from the Pioneer Trail intersection in California to Lake Parkway in Nevada. The relocated US 50/Pioneer Trail intersection would be further east than the Alternative B alignment, and would cut through the business triangle preserved by Alternative B. Nonetheless, similar improvements associated with landscaping and stormwater retention as alternative B would be included. Therefore, impacts would be the same as Alternative B. This impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the design features of the Alternative D transportation improvements would avoid or minimize vulnerability to climate change risks such that no additional mitigation measures are needed or feasible to implement.

Mixed-use Development including Replacement Housing

Alternative D would also include development of the same three sites, however different site configuration would be required because the highway alignment also differs with this alternative. Nonetheless, similar improvements associated with landscaping and stormwater retention as Alternative B would be included. Therefore, impacts would be the same as Alternative B. This impact would be **less than significant** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the design features of the Alternative D mixed-use development sites would avoid or minimize vulnerability to climate change risks such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar climate change risks as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of climate change risks would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development including replacement housing would result in a **less-than-significant** impact as it relates to vulnerability to climate change risks.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative D would avoid or minimize vulnerability to climate change risks such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

This alternative would not include any new roadway alignments or associated improvements. The new pedestrian bridge would be elevated and would not be susceptible to increased flooding. Impacts to this alternative from climate change would not be likely. This impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would avoid or minimize vulnerability to climate change risks such that no additional mitigation measures are needed or feasible to implement.

3.14.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required to reduce greenhouse gas and climate change effects such that there would not be an adverse effect for the purposes of NEPA or to a less-than-significant level for the purposes of CEQA and TRPA.

3.15 NOISE AND VIBRATION

This section includes definitions of common descriptions for noise and ground vibration; descriptions of applicable regulations, acoustic fundamentals, and existing ambient noise conditions; and an analysis of potential short- and long-term noise and vibration impacts associated with implementation of the project alternatives.

Comments received on the Notice of Preparation related to noise addressed the potential noise effects on wildlife. Potential effects of the project alternatives on wildlife are addressed in Section 3.16, “Biological Environment.”

None of the alternatives would locate noise-sensitive uses where they would be subject to single-event noise level concerns and none of the alternatives would be expected to affect the frequency or intensity of single-event noise incidences. None of the alternatives would affect the type or number of aircraft operations at Lake Tahoe Airport. Similarly, no changes to levels of activity by recreational watercraft, motorcycles, off-road vehicles, and over-snow vehicles are anticipated with any of the alternatives because they are not expected to result in additional recreational boating facilities, trails, or recreation areas for these types of vehicles. Furthermore, the types of recreational watercraft, motorcycles, off-road vehicles, and over-snow vehicles, as well as on-road vehicles, would not change as a result of any of the alternatives. TRPA single-event noise standards, shown in Table 3.15-4 below, would continue to apply to all of these noise sources. These issues are not addressed further.

The project site is not located in the planning area of the Lake Tahoe Airport Comprehensive Land Use Plan (City of South Lake Tahoe 2007), the land use plan of any other airport, or within the vicinity of an active private airstrip where people would be exposed to excessive aircraft-generated noise levels. This issue is not addressed further.

3.15.1 Regulatory Setting

Key federal, state, and local regulatory and conservation planning issues applicable to the project for noise-related impacts are discussed below. Prior to discussing these issues, background information on acoustical fundamentals is needed to place the regulatory and planning issues into perspective.

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 hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying 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 huge 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, SPL cannot be added or subtracted through ordinary arithmetic. With 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, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. With the decibel scale, three sources of equal loudness together produce a sound level 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 that range better than sounds of the same amplitude in higher or lower frequencies. 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. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with highway-traffic noise. Noise levels for traffic noise reports are typically reported in terms of A-weighted decibels. Table 3.15-1 describes typical A-weighted noise levels for various noise sources. All sound levels expressed as dB in this section are A-weighted sound levels.

Table 3.15-1 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		Food blender at 3 feet
	– 80 –	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	– 70 –	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	– 60 –	
		Large business office
Quite urban daytime	– 50 –	Dishwasher next room
Quite urban nighttime	– 40 –	Theater, large conference room (background)
Quite suburban nighttime		
	– 30 –	Library
Quite rural nighttime		Bedroom at night, concert
	– 20 –	
		Broadcast/recording studio
	– 10 –	
Lowest threshold of human hearing	– 0 –	Lowest threshold of human hearing

Notes: dB = A-weighted Noise Levels

Source: California Department of Transportation (Caltrans) 2013a:2-20

HUMAN RESPONSE TO CHANGES IN NOISE LEVELS

As discussed above, the doubling of sound energy results in a 3-dB increase in sound. 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 is able to 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 typical noisy environments, changes in noise of 1–2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a readily noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness. 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 perceptible (Caltrans 2013a:2-45).

VIBRATION

Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery or transient in nature, explosions). Vibration levels can be depicted in terms of amplitude and frequency, relative to displacement, velocity, or acceleration.

Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (Federal Transit Administration [FTA] 2006:7-3; Caltrans 2013b:6). PPV and RMS vibration velocity are normally described in inches per second (in/sec).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2006:7-3). This is based on a reference value of 1 micro inch per second ($\mu\text{in/sec}$).

The typical background vibration-velocity level in residential areas is approximately 50 VdB. Groundborne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA 2006:7-8).

Typical outdoor sources of perceptible ground vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction activities can generate ground vibrations, which can pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants.

Construction vibrations can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations result from vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment. Table 3.15-2 describes the general human response to different levels of ground vibration-velocity levels.

Table 3.15-2 Human Response to Different Levels of Ground Noise and Vibration

Vibration-Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Notes: VdB = vibration decibels referenced to 1 $\mu\text{in/sec}$ and based on the root mean square (RMS) velocity amplitude.

Source: FTA 2006:7-5

COMMON NOISE DESCRIPTORS

Noise in our daily environment fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others fluctuate slowly. Some noise levels vary widely, but others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in traffic noise analysis.

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 that actually occurs during the same period. The 1-hour A-weighted equivalent sound level ($L_{eq(h)}$) is the energy average of A-weighted sound levels occurring during a 1-hour period and is the basis for noise abatement criteria (NAC) used by Caltrans and Federal Highway Administration (FHWA).

Percentile-Exceeded Sound Level (L_{xx}): L_{xx} represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time).

Maximum Sound Level (L_{max}): L_{max} is the highest instantaneous sound level measured during a specified period.

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 A-weighted sound levels occurring during nighttime hours between 10:00 p.m. and 7:00 a.m.

Community Noise Equivalent Level (CNEL) or Day-Evening-Night Level (L_{den}): Similar to L_{dn} , CNEL or L_{den} is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10:00 p.m. and 7:00 a.m. and a 5-dB penalty applied to the A-weighted sound levels occurring during evening hours between 7:00 p.m. and 10:00 p.m.

SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces 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. 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. 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 highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess 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), an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 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. Sound levels can be increased at large distances (e.g., more than 500 feet) from the highway because of atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially 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. Walls are often constructed between a source and a receiver specifically to reduce noise. 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. Taller barriers provide increased noise reduction. Vegetation between the highway and receiver is rarely effective in reducing noise because it does not create a solid barrier.

FEDERAL

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to inform government decision-making regarding potential environmental impacts, alternatives, and mitigation measures, if needed. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA, TRPA regulations, and CEQA.

Highway Traffic Noise Regulation (23 CFR 772)

This regulation provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. Under 23 CFR 772.7, projects are categorized as Type 1, Type 2, or Type 3 projects. FHWA defines a Type 1 project as a proposed federal or federal-aid highway project for the construction of a highway on a new location, or the physical alteration of an existing highway where there is either substantial horizontal or substantial vertical alteration, or increases the number of through-traffic lanes. A Type 2 project is a noise barrier retrofit project that involves no changes to highway capacity or alignment. A Type 3 project is a project that does not meet the classifications of a Type 1 or Type 2 project. Type 3 projects do not require a noise analysis.

Type 1 projects include the addition of through traffic lanes that function as high-occupancy vehicle lanes, high-occupancy toll lanes, bus lanes, or truck climbing lanes. Type 1 projects include the addition of an auxiliary lane (except when an auxiliary lane is a turn lane); addition or relocation of interchange lanes or ramps; restriping existing pavement for the purpose of adding a through-traffic lane or auxiliary lane; and the addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot, or toll plaza. Projects unrelated to increased noise levels, such as striping, lighting, signing, and landscaping projects, are not considered Type 1 projects.

Alternatives B, C, and D include realignment of US 50 with substantial horizontal alteration. Therefore, the realignments of US 50 with Alternatives B, C, and D are considered to be Type 1 projects. Alternatives A and E are Type 3 projects. The mixed-use land uses, including replacement housing, at any of the three redevelopment sites identified as part of Alternatives B, C, and D are also considered Type 3 projects and, therefore, do not require a noise analysis for FHWA.

In accordance with 23 CFR 772.11, noise abatement must be considered for Type 1 projects that result in a traffic noise impact. In such cases, 23 CFR 772 requires that the project proponent “consider” noise abatement before adoption of the final NEPA document. This process involves identification of noise abatement measures that are reasonable, feasible, and likely to be incorporated into the project, and of noise impacts for which no apparent solution is available.

Traffic noise impacts, as defined in 23 CFR 772.5, occur when the predicted noise level in the design year approaches or exceeds the NAC specified in 23 CFR 772, or a predicted noise level substantially exceeds the existing noise level (i.e., a “substantial” noise increase). Design year is defined in 23 CFR 772.5 as “the future year used to estimate the probable traffic volume for which a highway is designed. A time, 10 to 20 years, from the start of construction is usually used” (CFR 772.5a). Year 2040 is the design year for this project (Wood Rodgers 2016:22).

The NAC shown in Table 3.15-3 correspond to various land use activity categories. The NAC use an $L_{eq[h]}$ metric, which is the average of sound levels occurring during a 1-hour period. Activity categories and related traffic noise impacts are determined based on the actual land use in a given area.

Table 3.15-3 Federal Highway Administration’s Activity Categories and Noise Abatement Criteria

Activity Category	Activity $L_{eq[h]}$	Evaluation Location	Description of Activities
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B ²	67	Exterior	Residential.
C ²	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A through D or F.
F	— ³		Agriculture, airports, bus Facilities, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail facilities, retail facilities, ship facilities, utilities (water resources, water treatment, electrical), and warehousing.
G	— ³		Undeveloped lands that are not permitted.

Notes: $L_{eq(h)}$ = 1-hour equivalent continuous sound level

¹ The $L_{eq(h)}$ activity criteria values are for impact determination only and are not design standards for noise abatement measures.

² Includes undeveloped lands permitted for this activity category.

³ FHWA has not established noise abatement criteria for Activity Categories F and G.

Source: FHWA 23 CFR 772

In identifying noise impacts, primary consideration is given to exterior areas of frequent human use. In situations where there are no exterior activities, or where the exterior activities are far from the roadway or physically shielded in a manner that prevents an impact on exterior activities, the interior criterion (Activity Category D) is used as the basis for determining a noise impact.

TAHOE REGIONAL PLANNING AGENCY

The elements of the Tahoe Regional Planning Agency (TRPA) Lake Tahoe Regional Plan related to noise include the following: Noise Subelement of the Goals and Policies of the Regional Plan (TRPA 2012a); Code of Ordinances (Code), Chapter 68, Noise Limitations (TRPA 2012b); plan area statements (PASs), community plans, and area plans; and detailed modeling parameters (TRPA 2012c).

Lake Tahoe Regional Plan

Goals and Policies

The Noise Subelement of the Goals and Policies includes a goal to attain and maintain CNEL standards that are relevant to the project (Goal N-2) (TRPA 2012a:2-26 to 2-28). The underlying policies intended to help

achieve that goal include: reducing noise from transportation corridors using a variety of approaches, including setbacks, earthen berms, and barriers (Policy N-2.1), and establishing CNEL values for certain transportation corridors (e.g., US 50 and SR 207 within the study area) (Policy N-2.3). The transportation corridor CNEL values override land use-based CNELs within 300 feet of the applicable roadway (TRPA 2012a:2-26). The full text of these goals and policies, along with a discussion of the project's consistency with the goals and policies, is included in Appendix E, "Goals and Policies Consistency Analysis."

Code of Ordinances

Chapter 68, "Noise Limitations," of the TRPA Code of Ordinances (Code) is intended to implement the Noise Subelement of the Goals and Policies and to attain and maintain the TRPA Environmental Threshold Carrying Capacities (shown below) (TRPA 2012b:68-1 to 68-5).

Section 68.4, "Community Noise Levels," states that TRPA shall use CNELs to measure community noise levels and that PASs shall set forth CNELs that shall not be exceeded by any one activity or combination of activities (see PASs below). The CNELs set forth in the PASs are based on the land use classification, the presence of transportation corridors, and the applicable threshold standard. Exhibit 3.15-1 shows applicable PASs and Area Plans within the study area and the designated CNEL standards.

Environmental Threshold Carrying Capacities

TRPA has established environmental thresholds for nine resources, including noise. There are two noise threshold indicators: single noise events and cumulative noise events. The Lake Tahoe Basin's status in 2015 was non-attainment for single noise events and for cumulative noise. However, TRPA's 2015 *Threshold Evaluation Report* (TRPA 2016) indicates that the feasibility of meeting the currently adopted single and cumulative noise events standards (maximum allowable ambient noise levels) should be evaluated to ensure the standards are protective and realistically achievable.

Single Noise Events

A single noise event can be defined as an unexpected, short-term increase in acoustic level. 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.

Cumulative Noise Events

TRPA adopted CNEL standards for different zones within the Region to account for expected levels of serenity. The standards, established in the Goals and Policies, apply to the entire Lake Tahoe Region. Table 3.15-4 summarizes thresholds for single events (L_{max}) and thresholds for community noise events.

The noise limitations established in Chapter 68 of the TRPA Code, including the noise standards of individual PASs, community plans, and area plans, do not apply to noise from TRPA-approved construction or maintenance projects, or the demolition of structures, provided that such activities are limited to the hours between 8:00 a.m. and 6:30 p.m. Further, the noise limitations of Chapter 68 shall not apply to emergency work to protect life or property.

As indicated in Note 4 of Table 3.15-4, TRPA's transportation corridor noise threshold for US 50 overrides TRPA's land use-based CNEL thresholds at all locations within 300 feet from the edge of the roadway.

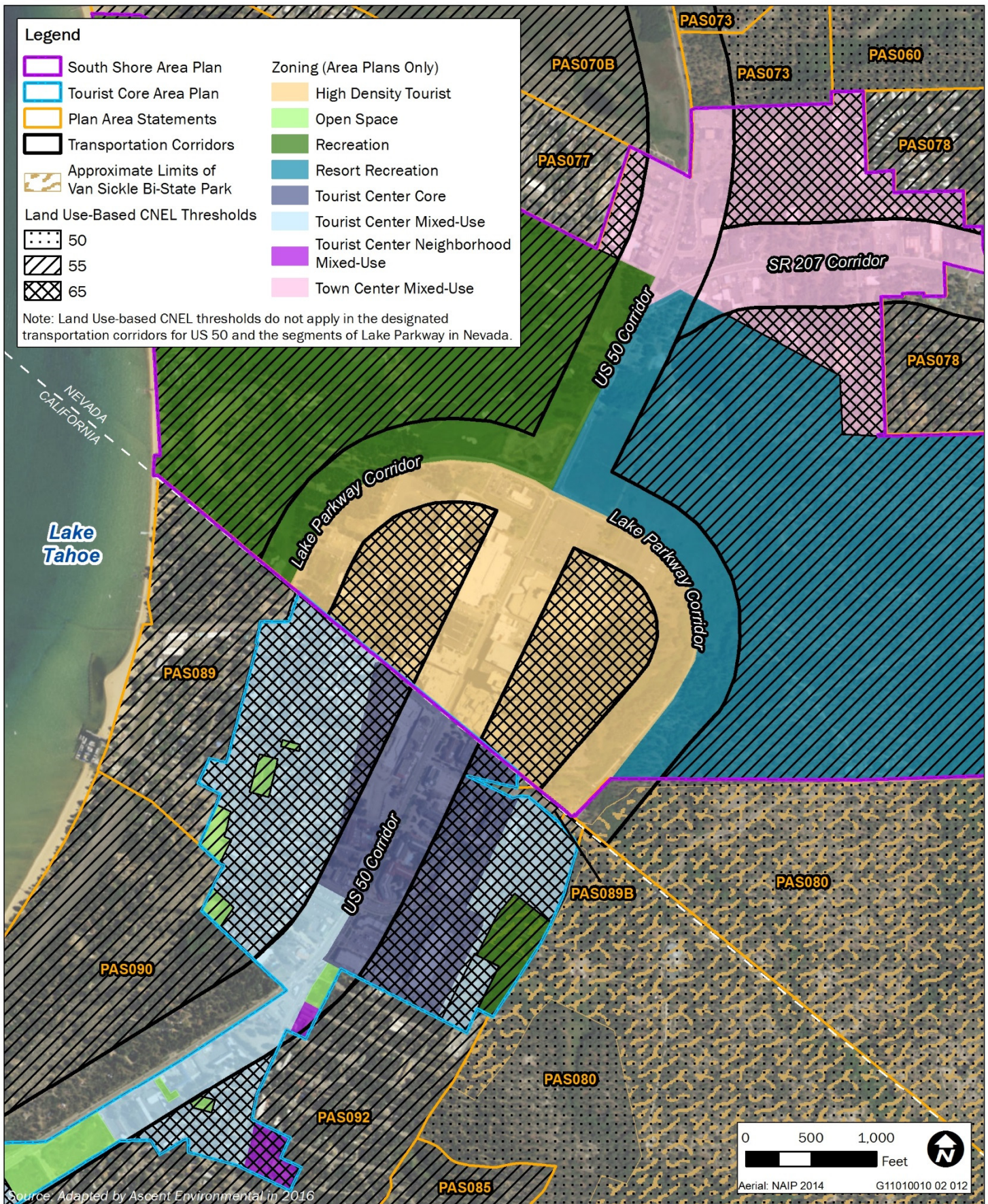


Exhibit 3.15-1

Applicable CNEL Noise Standards

Table 3.15-4 TRPA Noise Thresholds¹

Single Noise Events	Noise Measurement
Boats (not to exceed any of 3 tests)	82 dB measured at 50 feet with engine at 3,000 rpm
	SAE test J1970 or SAEJ1970, Shoreline Test, 75 dB (standard adopted 7/03)
	SAE Test J2005, Stationary Test, 88 dB if watercraft manufactured on or after 1/1/93 and 90 dB if watercraft manufactured before 1/1/93 (standard adopted 7/03)
Motor Vehicles (less than 6,000 pounds GVW)	76 dB running at <35/mph (82 dB running at >35/mph) measured at 50 feet
Motor Vehicles (greater than 6,000 pounds GVW)	82 dB running at <35/mph (86 dB running at >35/mph) measured at 50 feet
Motorcycles	77 dB running at <35/mph (86 dB running at >35/mph) measured at 50 feet
Off-road Vehicles	72 dB running at <35/mph (86 dB running at >35/mph) measured at 50 feet
Snowmobiles	82 dB running at <35/mph measured at 50 feet
[Land Use-Based] Community Noise Equivalent Levels: Background levels shall not exceed the following:²	
Land Use Category	CNEL, dB
High Density Residential	55
Low Density Residential	50
Hotel/motel facilities	55
Commercial area	65
Industrial	65
Urban Outdoor Recreation	55
Rural Outdoor Recreation	50
Wilderness and Roadless Areas	45
Critical Wildlife Areas	45
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]³	
US 50	65 ⁴ dB CNEL
State Routes 89, 207, 28, 267 and 431	55 ⁴ dB CNEL
South Lake Tahoe Airport	60 ⁵ dB CNEL
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 The title of this table used in the TRPA Code is "TRPA Regional Plan Cumulative Noise Levels."	
² For this analysis, these standards are referred to as "land use-based CNEL thresholds."	
³ For this analysis, these CNEL standards are referred to as "transportation corridor noise thresholds."	
⁴ This transportation corridor noise threshold overrides the land use CNEL thresholds and is limited to an area within 300 feet from the edge of the road.	
⁵ This threshold applies to those areas impacted by the approved flight paths.	
Source: TRPA Code of Ordinances, Chapter 68 (TRPA 2012b)	

A critical distinction exists between two of the types of TRPA noise thresholds presented in Table 3.15-4:

1. TRPA's CNEL thresholds for land use types, which are referred to in this EIR/EIS/EIS as land use-based noise thresholds; and
2. TRPA's noise threshold for transportation noise corridors.

TRPA's land use-based noise thresholds indicate maximum levels of noise exposure for specific types of land uses (e.g., High Density Residential, Low Density Residential, Hotel/Motel Facilities). TRPA's transportation corridor noise standards, including its threshold for the US 50 transportation corridor, are referred to as contour-based noise threshold. TRPA's transportation corridor noise standards indicate how loud traffic noise can be at a distance of 300 feet from the edge of the highway. The transportation corridor noise threshold for US 50 specifies that the 65 CNEL noise contour generated by traffic on US 50 shall not extend more than 300 feet from the highway's edge. Note that that if the 65 CNEL of a segment of US 50 extends

to 300 feet from the highway edge the traffic noise levels will be greater than 65 CNEL at locations closer to the highway (e.g., approximately 68-69.5 CNEL 150 feet from the highway and approximately 71-72 CNEL 75 feet from the highway, applying the standard attenuation rate for roadway noise) and this condition is considered to be in attainment of the noise threshold expressed for US 50 transportation corridor. Thus, the land use-based noise thresholds and contour-based transportation corridor noise thresholds established by TRPA are fundamentally different metrics.

This distinction was not made in the noise impact analysis for the *Regional Transportation Plan/Sustainable Communities Strategy Draft Environmental Impact Report/Environmental Impact Statement* (RTP/SCS EIR/EIS) (TMPO and TRPA 2012). The traffic noise impact analysis in the RTP/SCS EIR/EIS was a program-level analysis appropriate at a regional scale that focused primarily on the degree in which the RTP/SCS would result in noticeable traffic noise increases (i.e., increases of 3 dB or greater). The traffic noise levels presented in the RTP/SCS EIR/EIS are considered coarse estimates, because they did not take into account the noise-attenuating effects of topography or the presence of nearby stands of forest or man-made structures. As shown in Appendix E to the RTP/SCS EIR/EIS, traffic noise levels were estimated using spreadsheet calculations and the highway transportation corridors in the entire Tahoe Region were broken down into 24 highway segments. The summary of traffic noise level estimates presented in the program-level analysis of the RTP/SCS EIR/EIS were at a distance of 100 feet from the centerline of each highway segment (TMPO and TRPA 2012:3.6-22). In comparison, the more precise FHWA Traffic Noise Model, Version 2.5 was used to provide refined estimates of traffic noise levels at 167 different discrete receptors, taking into account the effects of nearby features (FHWA 2004, as cited in Caltrans 2015b).

The 2017 Regional Transportation Plan (2017 RTP), which is an update to the 2012 RTP, and its joint CEQA/TRPA environmental document have been circulated for public review. The projects listed in the 2017 RTP are substantially similar to those in the 2012 RTP, and the US 50/South Shore Community Revitalization Project is included in both documents. TRPA and TMPO have prepared a joint CEQA Initial Study/TRPA Initial Environmental Checklist (IS/IEC) for the 2017 plan as a supplement to the 2012 RTP EIS/EIR, that relies largely on that document's analysis of potential environmental impacts and mitigation measures. Because the IS/IEC has been prepared for the 2017 RTP as a supplement to the RTP/SCS EIR/EIS and does not result in new significant environmental impacts, the analysis herein continues to rely on the EIR/EIS.

The distinction between TRPA's land use-based noise thresholds and TRPA's contour-based transportation corridor noise thresholds is emphasized in this EIR/EIS/EIS. This distinction has already been applied in the *Placer County Tahoe Basin Area Plan and Tahoe City Lodge EIR/EIS* (Placer County and TRPA 2016:13-15 to 13-16, 13-19 to 13-22) and is discussed further under the "Methods and Assumptions" section below.

Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration

TRPA requires the following standard conditions for all project construction activity that involves grading; these conditions also apply to the construction of residential projects (TRPA [no date]a:6; TRPA [no date]b:4 to 5).

- ▲ Any normal construction activities creating noise in excess of the TRPA noise standards shall be considered exempt from said standards provided all such work is conducted between the hours of 8:00 a.m. and 6:30 p.m.
- ▲ Engine doors shall remain closed during periods of operation except during necessary engine maintenance.
- ▲ Stationary equipment (e.g. generators or pumps) shall be located as far as feasible from noise-sensitive receptors and residential areas. Stationary equipment near sensitive noise receptors or residential areas shall be equipped with temporary sound barriers.

- ▲ Sonic pile driving shall be utilized instead of impact pile driving, wherever feasible. Pile driving holes shall be predrilled to the extent feasible subject to design engineer's approval.

Plan Area Statements, Area Plans, and Community Plans

The study area includes lands addressed in the following documents:

- ▲ South Shore Area Plan (Douglas County and TRPA 2013:24)
- ▲ Tourist Core Area Plan (City of South Lake Tahoe and TRPA 2013:C-13)
- ▲ Stateline/Ski Run Community Plan (PAS 089B) (TRPA 1994)
- ▲ PAS 080 Kingsbury Drainage (TRPA 2002a)
- ▲ PAS 089 Lakeside Park (TRPA 2014)
- ▲ PAS 090 Tahoe Meadows (TRPA 2002b)
- ▲ PAS 092 Pioneer/Ski Run (TRPA 2002c)

Exhibit 3.15-1 shows the CNEL standards that have been established by these local plans.

South Shore Area Plan

The South Shore Area Plan, the boundaries of which are demarcated in Exhibit 3.15-1, reiterates the CNEL standards in Chapter 68 of the TRPA Code. In addition, the South Shore Area Plan designates a transportation noise corridor standard of 65 CNEL for the portions of Lake Parkway in Nevada that is limited to 300 feet from the edge of the right-of-way (Douglas County and TRPA 2013:24 [of the Douglas County Development Code, Title 20, Chapter 20.703]).

Tourist Core Area Plan

The Tourist Core Area Plan, the boundaries of which are also shown in Exhibit 3.15-1, includes land use-based CNEL standards of 55 CNEL for areas designated for Recreation, Open Space, and the Shorezone portion of Tourist Center Gateway; and 65 CNEL for areas designated as Tourist Center Core, Tourist Center Mixed-Use, Tourist Center Mixed-Use Corridor, and the non-Shorezone portion of Tourist Center Gateway (City of South Lake Tahoe and TRPA 2013:C-13). The Tourist Core Area Plan also mentions the 65 CNEL transportation corridor noise standard for US 50, which extends to 300 feet from the edge of the roadway.

Policies LU-7.1 and LU-7.2 of the Tourist Core Area Plan also reiterate the noise standards of the City of South Lake General Plan that are shown in Table 3.15-5 (City of South Lake Tahoe and TRPA 2013:5-3 to 5-4).

Local Plan Area Statements and Community Plans

A noise standard of 55 CNEL is established for areas in PAS 089 Lakeside Park, PAS 090 Tahoe Meadows, and within PAS 092 Pioneer/Ski Run (TRPA 2014:4; TRPA 2002b:3; TRPA 2002c:3). A noise standard of 50 CNEL is established for areas in PAS 080 Kingsbury Drainage that are not within 300 feet of the edge of US 50 or SR 207 (TRPA 2002a:4). Almost all of the area that was included in the Stateline/Ski Run Community Plan (PAS 089B) became part of the Tourist Core Area Plan and is now subject to the noise standards of that plan. However, a single California Tahoe Conservancy-owned parcel between the Forest Suites Resort and the Harrah's resort-casino parking lot is part of the Stateline/Ski Run Community Plan (PAS 089B), including portions of Special Areas 1B and 2A; these areas are subject to a noise standard of 65 CNEL (TRPA 1994:II-3, II-39).

STATE

California

California Environmental Quality Act

The CEQA involves an analysis of baseline versus build conditions to assess whether a project would have a noise impact. If a project is determined to have a significant noise impact under CEQA, then mitigation measures must be incorporated into the project to the extent feasible to reduce the noise impact. The rest of

this section includes NEPA 23 Code of Federal Regulations (CFR) 772 noise analysis and noise analysis under CEQA and evaluation of compliance with TRPA noise requirements.

California State Building Code Title 24

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, California Building Code. Title 24 is applied to new construction in California and states that interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. An acoustical analysis documenting compliance with the interior sound level standards shall be prepared for structures containing habitable rooms within the CNEL noise contours of 60-dB or greater.

California Department of Transportation Standard Specification 14-8.02

Caltrans Standard Specification 14-8.02, Noise Control, states that noise levels from construction activity between the hours of 9:00 p.m. and 6:00 a.m. shall not exceed 86 dB L_{max} at a distance of 50 feet from the construction site (Caltrans 2015a:215).

California Department of Transportation Traffic Noise Analysis Protocol

Caltrans published the Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects (Caltrans 2011). The protocol specifies the policies, procedures, and practices to be used by agencies that sponsor new construction or reconstruction of federal or federal-aid highway projects. The NAC specified in the protocol are the same as those specified in 23 CFR 772. The protocol defines a noise increase as substantial if the predicted noise level with project implementation in the design year would exceed the existing noise level by 12 dB. The protocol also states that a sound level is considered to approach an NAC level when the predicted sound level in the design year would be within 1 dB of the NAC identified in 23 CFR 772 (e.g., 66 dB is considered to approach the NAC of 67 dB, but 65 dB is not).

If it is determined that the project would have noise impacts, then potential noise abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

Caltrans Traffic Noise Analysis Protocol sets forth the criteria for determining when a noise abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 7 dB reduction (for projects using the 2011 Noise Protocol) in the future noise level must be achieved for a noise abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include: residents' acceptance and the cost per benefited residence.

Nevada

Nevada Department of Transportation

The Nevada Department of Transportation (NDOT) Traffic and Construction Noise Analysis and Abatement Policy defines how NDOT applies FHWA's Highway Traffic Noise Regulation contained in 23 CFR 772 and the FHWA Highway Traffic Noise: Analysis and Abatement Guidance (FHWA 2011). The NAC specified in the NDOT policy are the same as those specified in 23 CFR 772. NDOT's policy defines a noise increase as substantial when the predicted noise levels in the design year with project implementation would exceed existing noise levels by 15 dB. The policy also states that a sound level is considered to approach an NAC level when the sound level is 1 dB less than the NAC identified in 23 CFR 772.

LOCAL

Douglas County

The Environmental Resources and Conservation Element of the 2011 Douglas County Master Plan refers to the noise standards established in the Douglas County Code (Douglas County 2011:6); the following standards apply to the project:

- ▲ 20.702.180 Noise Standards.
 - Exterior noise levels must comply with the provisions in the PASs, Community Plans, or Sub-section N of Section 20.690.030, whichever is most restrictive.
 - Interior noise levels must comply with the provisions in sub-section N of section 20.690.030.
- ▲ 20.690.030 Section L, Hours of Construction.
 - The hours of operation for all building construction activities not within a dedicated road right-of-way are as follows: 7:00 a.m. to 7:00 p.m. Monday through Friday; 8:00 a.m. to 7:00 p.m. Saturday and Sunday.
- ▲ 20.690.030 Section N, Noise.

The following provisions shall apply:

1. No exterior noise level shall exceed 65 dB CNEL exterior and 45 dB CNEL interior in residential areas.
 2. All residential developments shall incorporate the following standards to mitigate noise levels:
 - a. Increase the distance between the noise source and receiver;
 - b. Locate land uses not sensitive to noise, which include but are not limited to parking lots, garages, maintenance facilities, and utility areas, between the noise source and the receiver;
 3. The minimum acceptable surface weight for a noise barrier is four pounds per square foot (equivalent to ¾-inch plywood). The barrier shall be of a continuous material which is resistant to sound including:
 - a. Masonry block;
 - b. Pre-cast concrete;
 - c. Earth berm or a combination of earth berm with block concrete.
 4. Noise barriers shall interrupt the line-of-sight between noise source and receiver.
- ▲ 20.690.030 Section X, Vibration.
 - No vibration associated with any use shall be permitted which is discernible beyond the boundary line of the property.

City of South Lake Tahoe

General Plan

The Health and Safety Element of the City of South Lake Tahoe General Plan contains the following goals and policies applicable to the project (City of South Lake Tahoe 2011:HS-9 to HS-13):

- ▲ **Policy HS-8.4: Annoying and Excessive Transportation Noise Protection.** The City shall not allow noise-sensitive land uses in areas exposed to existing or projected transportation noise levels that exceed the standards shown in Table HS-2 [Table 3.15-5 in this document], unless the project design includes

effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels at or below those shown in Table HS-2 [Table 3.15-5 in this document]. [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 3.15-5 and the land use-based CNEL standards of the Tourist Core Area Plan].

Table 3.15-5 Maximum Allowable Noise Exposure from Transportation Noise Sources in the City of South Lake Tahoe

Land Use	Outdoor Activity Areas ¹ L _{dn} /CNEL, dB		Interior Spaces	
	Roadways	Railroads/Aircraft	L _{dn} /CNEL, dB	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_{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.

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_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 70 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: City of South Lake Tahoe 2011:HS-11

- **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 [Table 3.15-5 in this document] at all outdoor activity areas and interior spaces of existing noise-sensitive land uses.
- **Policy HS-8.6: Acoustical Analysis Preparation.** The City shall require an acoustical analysis as part of the environmental review process when noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels shown in Table HS-1 [non-transportation noise standards are not included in this environmental review document] and Table HS-2 [Table 3.15-5 in this document], so noise mitigation may be included in the project design. All acoustical analysis shall:

 - A. Be the financial responsibility of the applicant;
 - B. Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics;
 - C. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources; and

- D. Estimate existing and projected cumulative (20 year) noise levels in terms of L_{dn} or CNEL and/or the standards shown in Table HS-1 [non-transportation noise standards, not included in this document], and compare those levels to the policies in this section;
- E. Recommend appropriate mitigation to achieve compliance with the adopted policies and standards in this section, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses;
- F. Estimate noise exposure after the prescribed mitigation measure(s) has been implemented; and
- G. Describe a post-project assessment program that could be used to evaluate the effectiveness of the proposed mitigation measures.

South Lake Tahoe City Code

Sections 5 through 8 of the City Code refer to TRPA's noise ordinance. The TRPA Code Section 68.9 states that the noise standards in Chapter 68 (in the TRPA Code) will not apply to 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. Activities conducted outside of these hours are subject to the noise standards set forth by PASs, community plans, and area plans (Caltrans 2015b:22 and 23).

El Dorado County

Small areas of unincorporated El Dorado County could be affected by changes in traffic noise levels with some action alternatives, such as parts of Van Sickle Bi-State Park near Lake Parkway. Although El Dorado County does not have authority over state lands, El Dorado County's policies and standards are relevant to the impact analysis.

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 zoning ordinance includes noise standards for outdoor activity areas of different types of land uses. The transportation noise standard established by the county that is most applicable to the unincorporated areas of the county that lie within the state park is 70 CNEL, which has been designated for playgrounds and neighborhood parks (El Dorado County 2015:71).

Section 130.37.20 of the zoning ordinance exempts construction noise from all of the county's standards during daylight hours provided that all construction equipment is fitted with factory-installed muffling devices and maintained in good working order.

3.15.2 Affected Environment

Noise is produced from various sources throughout the study area, but vehicle traffic on US 50 and local roadways is generally considered the dominant noise source. Other noise sources include aircraft, motorized watercraft, music from summer concerts, and machinery associated with refuse collection and snow removal. Less pronounced noise sources in the study area include those typical of urban and suburban environments, such as landscaping activities (e.g., grass cutting, leaf blowing, snow blowing), heating and air conditioning units, and conversation.

Traffic on US 50 and local roadways is the predominant noise source in the study area. The extent to which existing land uses in the study area are affected by existing traffic noise depends on their proximity to the roadways and sensitivity to noise.

Table 3.15-6 shows the modeled distance of the 65 CNEL traffic noise contour from the edge of various segments of US 50 that pass through the study area for existing conditions, as well as the segments of Lake Parkway on the Nevada side. These values were obtained from the traffic noise analysis prepared for the project (Caltrans 2015b:167). Existing traffic noise contours were modeled in accordance with the FHWA

Traffic Noise Model, Version 2.5 (FHWA 2004). The traffic noise modeling results presented in Table 3.15-6 are based on existing traffic volumes and speeds obtained from the *Traffic Operations Analysis Update, US 50/South Shore Community Revitalization Project* (Wood Rodgers 2013). Key inputs to the traffic noise model were the locations of roadways, shielding features (e.g., topography and buildings), noise barriers, ground type, and receptors. Three-dimensional representations of these inputs were developed using Computer-Aided Design drawings, aerials, and topographic contours provided by Wood Rodgers (Caltrans2015b:40). Twenty-eight sound level measurements were conducted in the study area, 19 of which were used to calibrate the traffic noise model with concurrent traffic volume counts; the other nine sound level measurements were not used for model calibration because traffic was not the predominant noise source at their locations (Caltrans2015b:vi). Four long-term measurement sites were recorded to capture the diurnal traffic noise level pattern in the study area (Caltrans 2015b:31, 39).

As shown in Table 3.15-6, the existing 65 CNEL contour along US 50 and Lake Parkway does not extend more than 300 feet from the roadway's edge. Thus, noise levels generated by traffic on US 50 and Lake Parkway in the study area are in attainment of TRPA's 65 CNEL contour threshold for US 50 and the portions of Lake Parkway in Nevada.

Table 3.15-6 Modeled Existing 65 CNEL Contours along Major Transportation Corridors within the Study Area

Major Transportation Corridor Segment	Distance to 65 CNEL Contour from Roadway Edge (ft)
US 50 South of Pioneer Trail	61
US 50 between Pioneer Trail and Park Avenue	62
US 50 between Park Avenue and Friday Avenue	58
US 50 between Friday Avenue and Stateline Avenue	56
US 50 North of Stateline Avenue	50
US 50 South of Loop Road/Lake Parkway	52
US 50 North of Loop Road/Lake Parkway	71
Lake Parkway between Park Avenue and Harrah's Road	<62
Lake Parkway between Harrah's Road and US 50	<62
Lake Parkway West of US 50	<68
Lake Parkway North of Stateline Avenue	<68

Notes: CNEL = community noise equivalent level, expressed in A-weighted decibels; ft = feet

Refer to Appendix K for detailed traffic noise modeling input data and output results.

Source: Caltrans 2015b:167

Table 3.15-7 summarizes the modeled existing traffic noise levels of local roadways in the study area. Table 3.15-7 shows the CNEL at a distance of 50 feet from the centerline of the near travel lane of each local roadway. These traffic noise levels were obtained from a traffic noise analysis prepared for the project (Caltrans 2015b:167), which also used traffic volumes and speeds from the traffic analysis prepared for the project (Wood Rodgers 2013). Short-term noise monitoring data was collected at the following times on several different days (Caltrans 2015b:47):

- ▲ between 7:25 a.m. and 12:00 p.m. on August 25, 2011;
- ▲ between 8:30 a.m. and 6:40 p.m. on July 14, 2014;
- ▲ between approximately 10:00 a.m. and 3:45 p.m. on July 15, 2014;
- ▲ at 9:10 a.m. on July 16, 2014; and
- ▲ between approximately 10:00 a.m. and 12:00 p.m. on September 9, 2014.

Table 3.15-7 Modeled Existing Traffic Noise Levels along Local Roadways

Local Roadway Segment	CNEL (dB) at 50 feet from the Centerline of the Closest Travel Lane
Pioneer Trail South of US 50	60.6
Park Avenue East of Pine Boulevard	58.0
Park Avenue West of US 50	59.0
Heavenly Village Way East of US 50	57.0
Heavenly Village Way West of Lake Parkway	56.4
Stateline Avenue West of Pine Boulevard	51.7
Stateline Avenue East of Pine Boulevard	52.7
Stateline Avenue West of US 50	57.2
Pine Boulevard South of Stateline Avenue	56.6
Pine Boulevard North of Park Avenue	56.9
Lake Parkway between Park Avenue and Harrah's Road ¹	60.1
Lake Parkway North of Stateline Avenue ¹	60.2

Notes: CNEL = community noise equivalent level; dB = A-weighted decibel

¹ The segments of Lake Parkway between Park Avenue in the table are located on the California side and therefore not subject to the 65 CNEL transportation corridor standard of the South Shore Area Plan.

Refer to Appendix K for detailed traffic noise modeling input data and output results.

Source: Caltrans 2015b:167

3.15.3 Environmental Consequences

METHODS AND ASSUMPTIONS

Construction-Related Noise and Vibration

The potential for construction activities to expose receptors to excessive noise levels was assessed based on the types of construction equipment that would be used, the noise levels typically generated by these types of equipment, the proximity of construction activity to existing receptors, and whether construction noise would be generated during noise-sensitive evening and nighttime hours. Referenced noise levels for typical construction equipment are from the FHWA's Roadway Construction Noise Model (FHWA 2006).

The potential for construction activities to expose receptors to excessive levels of noise or ground vibration was assessed based on the types of construction activity that would be performed, the levels of ground vibration they would produce, and the proximity of construction activity to existing nearby structures.

The analysis of exposure to construction-generated noise and vibration also considers the requirements of TRPA's Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration.

Traffic Noise Increases at Existing Receptors

Changes in traffic noise levels throughout the study area with each of the alternatives were modeled and presented in the Noise Study Report (Caltrans 2015b). Traffic noise modeling was conducted for all affected roadway segments using the FHWA Traffic Noise Model Version 2.5 (TNM2.5, FHWA 2006). This modeling estimated the traffic noise level at 167 different discrete modeling receptor sites (the locations of which are displayed in Figure 3 of the Noise Study Report incorporated by reference here; Caltrans 2015b:33). The discrete modeling receptor sites are often referred to as "receptors" in this EIR/EIS/EIS; however, a single discrete modeling receptor site may be representative of multiple other nearby receptors (e.g., surrounding

homes) that are equidistant or closer to the nearby source of roadway noise. Thus, this EIR/EIS/EIS recognizes that an exceedance of an applicable noise standard at a single modeled receptor site may indicate exposure that would be experienced by land uses equidistant or closer to the highway in that area. The traffic noise modeling was based on data from a project-specific traffic analysis prepared in 2013 (Wood Rodgers 2013). The traffic analysis has been revised since the Noise Study Report was prepared using the most recent set of traffic counts collected in the study area. The revised traffic analysis is presented in a Traffic Operations Analysis Update dated February 2016 (Wood Rodgers 2016) and discussed in Section 3.6, “Traffic and Transportation.” A comparison of the two sets of traffic volume estimates indicates that the traffic volume estimates used in the traffic noise modeling (i.e., from the earlier data set) are substantially higher than the updated estimates, particularly for the higher-volume roadway segments that are the predominant noise sources in the study area. Therefore, the traffic noise level estimates from the Noise Study Report may be somewhat overstated. The word “somewhat” is used here because of the logarithmic nature of adding and subtracting sound pressure levels when expressed in decibels. With the decibel scale, a halving of sound energy—such as a halving of a traffic volume—corresponds to a 3-dB decrease. Nonetheless, the traffic noise estimates used to conduct this impact analysis are conservative. Moreover, the traffic volumes used in the traffic noise modeling presented in the Noise Study Report (i.e., from the older traffic study) are also higher than the more accurate, revised traffic volumes even with the addition of trips associated with the three mixed-use development sites. Thus, the traffic noise estimates provided in the Noise Study Report are conservative enough (i.e., tending to somewhat overstate levels) such that they also adequately account for the noise generation from traffic related to development of the three mixed-use development sites.

The traffic noise modeling presented in the Noise Study Report is also based on short- and long-term noise measurements, the reference noise emission levels for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and ground attenuation factors. Truck usage and vehicle speeds on roadways in the study area were estimated from field observations and data developed in support of the preliminary traffic analysis (see Section 3.6, “Traffic and Transportation”). Another reason the noise modeling represents a conservative noise evaluation (i.e., tending to somewhat overstate impacts) is because it does not account for the potential noise attenuating character of any natural or human-made shielding (e.g., the presence of vegetation, berms, walls, or buildings). Thus, for those receptors located in heavily forested areas of Van Sickle Bi-State Park, adjustments were made to the modeled noise levels to account for the additional attenuation provided by stands of trees based on applicable guidance (Hoover & Keith Inc. 2000:6-9, as cited in Caltrans 2013a:7-8). Modeling and calculations in Appendix K presents results for both 2018 and 2038, which are representative of analysis years 2020 and 2040, the years evaluated in the Traffic Operations Analysis Update. For complete details on model inputs, outputs, and assumptions see the Noise Study Report conducted for the project alternatives incorporated here by reference (Caltrans 2015b). To evaluate impacts, noise and vibration effects were determined based on comparisons to applicable regulations, including FHWA and Caltrans criteria, TRPA thresholds, TRPA significance criteria, and the noise standards of local jurisdictions.

Because TRPA’s traffic noise threshold for US 50 overrides the land use-based CNEL thresholds at all locations within 300 feet of the highway’s edge, as shown in Table 3.15-4, analysis was conducted to determine whether the 65 CNEL noise contour of US 50 would extend more than 300 feet beyond the highway’s edge, which would indicate exceedance of the threshold. The same analysis was conducted for the segments of Lake Parkway in Nevada because these roadway segments also have a contour-based traffic noise threshold override, which was established by the South Shore Area Plan. The traffic noise contour-based analysis for both of these transportation corridors addresses whether the noise level at land uses located within 300 feet of these roadway segments are compliant with TRPA’s noise thresholds for these transportation corridors.

For those land uses located more than 300 feet from the edge of US 50 or the segments of Lake Parkway in Nevada, including noise-sensitive receptors (e.g., residences), a separate analysis was conducted to

determine whether these receptors would be exposed to noise levels that exceed the applicable TRPA land use-based CNEL threshold.

This analysis also recognizes that the realignment of US 50 with Alternatives B, C, and D would change which type of TRPA noise threshold, either the land use-based CNEL threshold or the transportation overlay CNEL threshold, would apply at a particular location. The transportation corridor overlay 65 CNEL threshold would move with any realignment of the US 50 transportation corridor to the proposed alignment. This means that the type of TRPA noise threshold (i.e., transportation corridor-contour-based or land use-based) and the applicable CNEL noise threshold level applicable at a discrete receptor location could change with Alternatives B, C, and D, if the distance between the realigned US 50 highway edge and the receptor is modified to be 300 feet or closer).

Noise-Land Use Compatibility of the Mixed-Use Development Sites

For the mixed-use development sites in the City of South Lake Tahoe with Alternatives B, C, and D, the analysis examines whether the replacement housing and residential land uses included at these redevelopment sites would be exposed to noise levels that exceed applicable TRPA thresholds and/or traffic noise standards established by the City of South Lake Tahoe. This analysis is based on the traffic noise contour distances reported in Tables D-10, D-11, and D-12 of the Noise Study Report (Caltrans 2015b).

SIGNIFICANCE CRITERIA

Significance criteria relevant to noise and vibration are summarized below. All significance criteria regard exterior noise levels unless otherwise noted.

NEPA Criteria

An environmental document prepared to comply with NEPA must consider the context and intensity of the environmental effects that would be caused by or result from the locally preferred action. Under NEPA, the significance of an effect is used solely to determine whether an EIS must be prepared. In accordance with FHWA, Caltrans, and NDOT criteria for traffic noise impacts, a project would cause a substantial increase in noise if:

- ▲ construction generated a noise level greater than 86 dB L_{max} at a distance of 50 feet from the construction site between the hours of 9:00 p.m. and 6:00 a.m.;
- ▲ the traffic noise levels at sensitive receptor locations during the design year (i.e., 2040) is predicted to approach or exceed the NAC for the corresponding activity category (as listed in Table 3.15-3). A sound level is considered to approach an NAC level if the sound level is 1 dB less than the NAC. For the purposes of this project the following significance criteria are applicable to the proposed project:
 - 66 dB at residential land uses (i.e., the level approaching the NAC for Activity Category B),
 - 66 dB at campgrounds, picnic areas, parks, or recreational areas (i.e., the level approaching the NAC for Activity Category C), or
 - 72 dB at hotels, motels, or other tourist accommodation units (i.e., the level approaching the NAC for Activity Category E); or
- ▲ the predicted worst-hour traffic noise level ($L_{eq[h]}$) would increase by 12 dB or more at a noise-sensitive receptor in California or by 15 dB at a noise-sensitive receptor in Nevada compared to the corresponding modeled existing worst-hour noise level.

TRPA Criteria

The noise and vibration criteria from the TRPA Initial Environmental Checklist were used to evaluate the noise and vibration impacts of the alternatives. In accordance with TRPA's checklist, a project would cause a significant effect if it would:

- ▲ increase existing CNELs beyond those permitted in the applicable Plan Area Statement, Community Plan or Master Plan (i.e., noise generated by construction or demolition activity that would exceed applicable TRPA noise standards outside of the hours of 8:00 a.m. to 6:30 p.m., for which construction noise is exempt from TRPA standards by Chapter 68 of the TRPA Code); or if traffic noise levels would exceed the applicable TRPA noise threshold standards, expressed in CNEL, including the land use-based TRPA Regional Plan Cumulative Noise Level thresholds shown in Table 3.15-4 or the transportation corridor noise thresholds in that same table);
- ▲ expose people to severe noise level increases (i.e., a long-term noise level increase of 3 dB or greater at a noise-sensitive receptor such as a residence, hotel, or tourist accommodation unit);
- ▲ expose existing structures to levels of ground vibration that could result in structural damage (i.e., exceedance of Caltrans's recommended level of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings or FTA's maximum acceptable level of 80 VdB with respect to human response for residential uses [i.e., annoyance] at nearby existing vibration-sensitive land uses, including residences, hotels, and tourist accommodation units);
- ▲ place residential or tourist accommodation uses in areas where the existing CNEL exceeds 60 dB or is otherwise incompatible; or
- ▲ place uses that would generate an incompatible noise level in close proximity to existing residential or tourist accommodation uses.

CEQA Criteria

In accordance with Appendix G of the State CEQA Guidelines, a project would cause a significant noise or vibration impact if it would:

- ▲ cause a substantial temporary (or periodic) increase in ambient noise levels in the project vicinity above levels existing without the project (i.e., construction noise levels that impact noise-sensitive receptors in the City of South Lake Tahoe outside the hours of 8:00 a.m. to 6:30 p.m., as established in Section 5-8 of the City of South Lake Tahoe Code; or construction noise levels that impact noise-sensitive receptors in El Dorado County during non-daylight hours, for which construction noise is not exempt from the County's noise standards by Section 130.37.20 of the El Dorado County zoning ordinance);
- ▲ expose persons to or generation of excessive ground vibration or ground noise levels (i.e., exceed Caltrans's recommended level of 0.2 in/sec PPV with respect to the prevention of structural damage for normal buildings or FTA's maximum acceptable level of 80 VdB with respect to human response for residential uses [i.e., annoyance] at nearby existing vibration-sensitive land uses, including residences, hotels, and tourist accommodation units);
- ▲ expose persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (i.e., exceed the maximum allowable noise exposure levels from transportation noise sources established by the City of South Lake Tahoe, as shown in Table 3.15-5, or the CNEL standards established in the El Dorado County zoning ordinance); or
- ▲ cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (i.e., a long-term noise level increase of 3 dB or greater at a noise-sensitive receptor).

ENVIRONMENTAL EFFECTS OF THE PROJECT ALTERNATIVES

Impact 3.15-1: Short-term construction noise levels

Alternative A would not include any noise-generating construction or demolition activity. Construction and demolition activity that would occur with the Alternatives B, C, and D transportation improvements and replacement housing at the mixed-use development sites would take place during the less noise-sensitive time of day and comply with the requirements of TRPA's Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration. Alternative E would include construction activity during noise-sensitive evening nighttime hours that could result in exceedances of applicable TRPA land use-based noise thresholds at noise sensitive receptors, as well as exceedances of interior noise standards at nearby hotels and residences.

NEPA Environmental Consequences:	The design features of Alternatives B, C, and D would avoid or minimize the impacts related to short-term construction noise such that no additional mitigation measures are needed or feasible to implement; Mitigation Measure 3.15-1 has been incorporated into Alternative E to further reduce to the extent feasible adverse construction-related noise; No Impact for Alternative A
CEQA/TRPA Impact Determinations:	Less than Significant for Alternatives B, C, and D; Significant and Unavoidable for Alternative E after implementation of Mitigation Measure 3.15-1; No Impact for Alternative A

Alternative A: No Build (No Project)

With Alternative A there would be no improvements to existing US 50, Lake Parkway, or other roadways; and no existing housing units or other buildings would undergo demolition within the project site boundaries. Therefore, there would be **no impact** pertaining to the exposure of noise-sensitive receptors to excessive noise levels generated by construction equipment with Alternative A for purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Alternative B would include the demolition of buildings that would be acquired for the right of way of New US 50; construction of realigned US 50 from just west of the Pioneer Trail in California to Lake Parkway in Nevada; corridor improvements and enhanced bicycle, transit, and pedestrian facilities as part of the conversion of the existing US 50 to a local or main street; multiple intersection improvements including construction of a roundabout at US 50/Lake Parkway; construction of a new pedestrian bridge over realigned US 50 and a new shared-use path to provide a connection between the tourist core and Van Sickle Bi-State Park; and realignment of utility lines and stormwater drainage improvements.

Construction activity would be expected to include standard equipment used in roadway and highway construction such as haul trucks and mixers, excavators, compactors, dozers, loaders, pavers, scrapers, and graders. Demolition activities associated with Alternative B would likely include use of cranes, excavators, bulldozers, and haul trucks to off-haul demolition material. Pile drivers may be used during construction of the pedestrian bridge over the realigned US 50 alignment. No blasting would be performed as part of construction or demolition activities.

Table 3.15-8 shows the maximum noise levels generated by the types of equipment and activities that are anticipated to be used for construction and demolition activities.

Table 3.15-8 Typical Construction Equipment Noise Levels

Type of Equipment	Noise Level (dB L _{max}) at 50 feet
Impact Pile Driver	101
Vibratory Pile Driver	101
Crane	85
Excavator	85
Dozer	85
Grader	85
Paver	85
Scraper	85
Concrete Mixer Truck	85
Dump Truck	84
Concrete Pump Truck	82
Generator	82
Backhoe	80
Compactor	80
Front End Loader	80

Notes: dB = decibels; L_{max} = maximum noise level

Source: FHWA 2006:3

As shown in Table 3.15-8, pile driving would generate the highest noise levels, emitting up to 101 dB L_{max} at a distance of 50 feet. Pile driving may be required during construction of the pedestrian bridge across realigned US 50, depending on final design of the footings. In addition to being loud, pile driving can be annoying due to the pulsating nature of the sound it produces. The loudest types of equipment that would be used at other locations do not produce a pulsating noise and generate noise levels as high as 85 dB L_{max} at a distance of 50 feet. Due to the linear nature of the project and the relatively short duration of construction activity in any one place, no single receptor location would be exposed to construction-related noise for an excessive period of time.

As stated in Chapter 2, “Proposed Project and Project Alternatives,” construction activities related to Alternatives B would occur between 8:00 a.m. and 6:30 p.m.; it is not anticipated that any construction activities would be required outside of these hours without specific noise-reduction requirements imposed by TRPA, the City of South Lake Tahoe and/or Douglas County, Caltrans, and NDOT. This is consistent with TRPA’s Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration (TRPA [no date]a:6; TRPA [no date]b:4 to 5); the City of South Lake Tahoe City Code (Caltrans2015b:22 and 23); and part 20.690.030 of the Environmental Resources and Conservation Element of the 2011 Douglas County Master Plan (Douglas County 2011:6). It would also be consistent with the requirements of Caltrans’s Standard Specification 14-8.02, which requires that construction noise levels not exceed 86 dB at a distance of 50 feet between the hours of 9:00 p.m. and 6:00 a.m. (Caltrans 2015a:215). All construction activity would be required to comply with other requirements of TRPA’s Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration, including locating stationary equipment (such as generators or pumps) as far as feasible from noise-sensitive receptors and residential areas, equipping stationary equipment near sensitive noise receptors or residential areas with temporary sound barriers, and using sonic pile driving instead of impact pile driving, wherever feasible. Construction noise would not be generated during the more noise-sensitive times of the day (i.e., outside the hours exempt by TRPA and the local jurisdiction) unless a site-specific analysis determines that the resultant noise levels would not exceed applicable standards or require specific noise reduction measures. For these reasons, construction-generated noise associated with the Alternative B transportation improvements would be **less than significant** for purposes of TRPA and CEQA.

For the purposes of NEPA, design features of the transportation improvements included in Alternative B would avoid or minimize short-term construction noise such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Alternative B includes the option to redevelop three multi-use development sites, which could provide replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Redevelopment of these sites would involve the full and partial acquisition of additional parcels. Thus, demolition and construction activity would occur on the redevelopment sites in addition to the construction activities that would occur without mixed use development. Because all construction activity would be required to comply with the requirements of TRPA's Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration, including the requirement to only take place during less-sensitive times of day, and be temporary in nature, construction-generated noise would be **less than significant** for purposes of TRPA and CEQA.

For the purposes of NEPA, design features of the mixed-use development sites, including replacement housing, included in Alternative B would avoid or minimize short-term construction noise such that no additional mitigation measures are needed or feasible to implement. Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential short-term construction noise impacts as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of short-term construction noise impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact related to short-term construction noise.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative B would minimize short-term construction noise such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

Alternative C would involve demolition and construction activity in the same locations as Alternative B and involve the same types of noise-generating construction equipment listed in Table 3.15-8.

Similar to Alternative B, construction activities for Alternative C would occur between 8:00 a.m. and 6:30 p.m. and it is not anticipated that any construction activities would be required outside of these hours without specific noise-reduction requirements imposed by TRPA, the City of South Lake Tahoe and/or Douglas County, Caltrans, and NDOT. Also similar to Alternative B, no single receptor would be exposed to construction-related noise for an excessive period of time due to the linear nature of the project; all construction activity would occur during less noise-sensitive times of day pursuant to the requirements of TRPA, local jurisdictions, and Caltrans; and all construction activity would be required to comply with TRPA's Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration. Therefore, the impact of construction-generated noise associated with the Alternative C transportation improvements would be **less than significant** for purposes of TRPA and CEQA.

For the purposes of NEPA, design features of the transportation improvements included in Alternative C would avoid or minimize short-term construction noise such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Alternative C would include the option to demolish additional existing buildings and construct new mixed-use land uses on the same redevelopment sites as Alternative B. Redevelopment of these sites would involve the full and partial acquisition of additional parcels. Thus, demolition and construction activity would occur on the redevelopment sites in addition to all the construction activities that would occur without the mixed-use development. Because all construction activity would be required to comply with the requirements of TRPA's Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration, including the requirement to only take place during less-sensitive times of day, and be temporary in nature, the impact of construction-generated noise associated the Alternative C mixed-use development, including replacement housing, would be **less than significant** for purposes of TRPA and CEQA.

For the purposes of NEPA, design features of the mixed-use development sites, including replacement housing, included in Alternative C would avoid or minimize short-term construction noise such that no additional mitigation measures are needed or feasible to implement. Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for short-term construction noise impacts as described above for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of short-term construction noise impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact related to short-term construction noise.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative C would minimize short-term construction noise such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

Alternative D would involve demolition and construction activity in the same general locations as Alternative B and involve the same types of noise-generating construction equipment listed in Table 3.15-8.

Similar to Alternative B, construction activities with Alternatives D would occur between 8:00 a.m. and 6:30 p.m. and it is not anticipated that any construction activities would be required outside of these hours without specific noise-reduction requirements imposed by TRPA, the City of South Lake Tahoe and/or Douglas County, Caltrans, and NDOT. Also similar to Alternative B, no single receptor would be exposed to construction-related noise for an excessive period of time due to the linear nature of the project; all construction activity would occur during less noise-sensitive times of day pursuant to the requirements of TRPA, local jurisdictions, and Caltrans; and all construction activity would be required to comply with TRPA's Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration. Therefore, the impact of construction-generated noise associated with the Alternative D transportation improvements would be **less than significant** for purposes of TRPA and CEQA.

For the purposes of NEPA, design features of the transportation improvements included in Alternative D would avoid or minimize short-term construction noise such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

Alternative D also includes the option to demolish additional existing buildings and construct new mixed-use land uses; however, one of the redevelopment sites would be different from Alternative B, as shown in Exhibit 2-11. Redevelopment of these sites would involve the full and partial acquisition of additional

parcels. Thus, demolition and construction activity would occur on the redevelopment sites in addition to the construction activities that would occur with the transportation improvements. Because all construction activity would be required to comply with the requirements of TRPA's Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration, including the requirement to only take place during less-sensitive times of day, and be temporary in nature, the impact of construction-generated noise associated with Alternative D with mixed-use development, including replacement housing, would be **less than significant** for purposes of TRPA and CEQA.

For the purposes of NEPA, design features of the mixed-use development sites, including replacement housing, included in Alternative D would avoid or minimize short-term construction noise such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for short-term construction noise impacts as described above for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of short-term construction noise impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact related to short-term construction noise.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative D would minimize short-term construction noise such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

Alternative E would include the construction of a concrete deck in the tourist core, called a skywalk, as shown in Exhibit 2-13. Pile driving would be performed during construction of the skywalk. The types of construction equipment that would be used for Alternative E, and their reference noise levels, are shown in Table 3.15-8. While pile driving would only occur during daytime hours, it is likely that Alternative E would require some construction activity to be performed outside of the daytime hours between 8:00 a.m. and 6:30 p.m. to minimize traffic conflicts. Nighttime construction activity could involve the use of multiple types of equipment at the same time, adversely affecting existing nearby visitor-serving land uses. Land uses around the California end of the Alternative E pedestrian platform are zoned as Tourist Center by the Tourist Core Area Plan with a TRPA land use-based noise threshold of 65 CNEL (City of South Lake Tahoe and TRPA 2013:5-7 and C-13). Land uses around the Nevada end of the pedestrian deck are zoned as Tourist and are also subject to a TRPA land use-based noise threshold of 65 CNEL (Douglas County and TRPA 2013:24 and 50).

Erection of the skywalk, for instance, could involve operation of a crane, a heavy-duty forklift (e.g., Gradall), a concrete mixing truck, and a concrete pump in close proximity to each other. Some equipment may even be operated on portions of the skywalk that are already built. Applying the reference noise levels for these equipment types listed in Table 3.15-8, as well as usage factors provided by FHWA (FHWA 2006:3), the combined 24-hour noise level generated by pile driving activity would be 92 CNEL at 50 feet, even if no construction noise were generated during daytime hours. With any intervening barriers the 65 CNEL contour of nighttime construction activity would extend as far as 1,110 feet from the site. Thus, land uses located within this distance of the pedestrian deck could be exposed to noise levels that exceed TRPA's land use-based noise threshold of 65 CNEL. Also, assuming a standard exterior-to-interior noise reduction of 24 dB (EPA 1978:11), buildings located within 700 feet of construction activity could experience interior noise levels that exceed the interior noise standard of 45 CNEL, including the neighboring resort-casinos and hotels, where visitors could experience sleep disturbance. (See detailed noise calculations in Appendix K.) Estimated noise contour distances do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type; or a tunneling effect that may be generated by the tall buildings

that surround the skywalk site. As a result, the impact of construction-generated noise associated with Alternative E would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the construction of Alternative E to further reduce to the extent feasible the environmental consequences related to short-term construction noise.

Impact 3.15-2: Ground vibration during construction

Alternative A would not include any construction or demolition activity that generates ground vibration. Pile driving activity performed during construction of the pedestrian bridge associated with the Alternative B, C, and D transportation improvements along with construction of the mixed-use development sites could expose nearby buildings to ground vibration levels that exceed FTA's vibration 80-VdB standard for human response at residential land uses. Pile driving activity performed during construction of the Skywalk under Alternative E could expose nearby buildings and structures to ground vibration levels that exceed FTA's vibration standard of 0.20 in/sec PPV for structural damage and FTA's vibration standard of 80 VdB for human response at residential land uses.

NEPA Environmental Consequences: Mitigation Measure 3.15-2a has been incorporated into Alternatives B, C, and D, and Mitigation Measure 3.15-2b has been incorporated into Alternative E to further reduce to the extent feasible adverse construction-related ground vibration; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, and D after implementation of Mitigation Measure 3.15-2a; Significant and Unavoidable for Alternative E after implementation of Mitigation Measure 3.15-2b; No Impact for Alternative A

None of the alternatives would include the development of any new major permanent stationary sources of ground vibration. The type of ground vibration that would be generated during construction activity under each alternative is discussed separately below.

Alternative A: No Build (No Project)

With Alternative A there would be no improvements to existing US 50, Lake Parkway, or other roadways; and no existing housing units or other buildings would undergo demolition within the project site boundaries. Therefore, there would be **no impact** pertaining to the exposure of buildings or structures to levels of construction-generated ground vibration that could result in structural damage or human annoyance generated by construction equipment for purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

As described above under Impact 3.15-1, demolition and construction activities performed for Alternative B would involve the use of heavy-duty trucks and off-road construction equipment. The use of these equipment could generate ground vibration in close proximity to existing structures and buildings, including residential buildings and tourist accommodation units. Operation of heavy construction equipment, particularly pile driving, create seismic waves that radiate along the surface of the earth and downward into the earth. These surface waves can be felt as ground vibration. Vibration from operation of this equipment can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes decrease with increasing distance.

Construction activities generate varying degrees of temporary ground vibration, depending on the specific construction equipment used and activities involved. Ground vibration generated by construction equipment

spreads through the ground and diminishes in magnitude with increases in distance. Construction-related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks. Blasting activities also generate relatively high levels of ground vibration but demolition and construction activities are not anticipated to include blasting. The effects of ground vibration may be imperceptible at the lowest levels, result in low rumbling sounds and detectable vibrations at moderate levels, and high levels of vibration can cause sleep disturbance in places where people normally sleep or annoyance in buildings that are primarily used for daytime functions and sleeping. Ground vibration can also potentially damage the foundations and exteriors of existing structures even if it does not result in a negative human response. Table 3.15-9 shows ground vibration levels for typical construction equipment.

Pile driving produces the highest levels of ground vibration and can result in structural damage to existing buildings. Impact pile drivers produce a high level of vibration for short periods (0.2 seconds) with sufficient time between impacts to allow the resonant effects on a building to decay before the next vibration event (FTA 2006:12 to 14). As shown in Table 3.15-9, impact pile driving can produce vibration levels up to 1.518 in/sec PPV or 112 VdB at 25 feet. Assuming normal propagation conditions, this level would propagate to less than FTA's vibration standard of 0.20 in/sec PPV for structural damage at a distance of 100 feet and to levels less than FTA's vibration standard of 80 VdB for human response at residential land uses at a distance of 300 feet. Ground vibration levels from sonic pile driving would propagate to less than FTA's vibration standard of 0.20 in/sec PPV for structural damage at a distance of 60 feet and to levels less than FTA's vibration standard of 80 VdB for human response at residential land uses at a distance of 175 feet. All propagation adjustment calculations are included in Appendix F of the Lake Tahoe Regional Transportation Plan/Sustainable Communities Strategy Draft EIR/EIS and incorporated here by reference (Tahoe Metropolitan Planning Organization [TMPO] and TRPA 2012).

Table 3.15-9 Representative Ground Vibration and Noise Levels for Construction Equipment

Type of Equipment	PPV at 25 feet (in/sec)	Approximate Lv (VdB) at 25 feet
Pile Driver (impact) upper range	1.518	112
<i>typical</i>	0.644	104
Pile Driver (sonic) upper range	0.734	105
<i>typical</i>	0.170	93
Blasting ¹	1.13	109
Large Dozer	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks	0.076	86
Rock Breaker	0.059	83
Jackhammer	0.035	79
Small Dozer	0.003	58

Notes: PPV = peak particle velocity; LV = the root mean square velocity expressed in vibration decibels (VdB), assuming a crest factor of 4.

¹ Blasting would not take place with Alternatives A, B, C, D, and E.

Source: FTA 2006:12-6 and 12-8.

Pile driving would only be performed during construction of the pedestrian bridge over the realigned US 50 alignment. The closest building to the site of the proposed pedestrian bridge is part of the Forest Suites Resort and is approximately 200 feet from where the nearest location where pile driving could occur. Because this building is more than 100 feet from where pile driving could occur it would not be exposed to levels of ground vibration that exceed FTA's vibration standard of 0.20 in/sec PPV for structural damage. However, because this building is located within 300 feet of where the pedestrian bridge would be

constructed, it would be exposed to ground vibration levels that exceed FTA's vibration 80-VdB standard for human response at residential land uses. Therefore, this would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative B to further reduce to the extent feasible the environmental consequences related to ground vibration during construction.

Mixed-Use Development including Replacement Housing

In addition to the vibration impacts discussed above, demolition and construction of new mixed-use development on the three redevelopment sites (shown in Exhibit 2-9) to include replacement housing would involve more vibration-generating construction activity at these locations. However, it is assumed that no pile driving, blasting, or other high ground vibration-generating activity would occur at these sites. It is not anticipated that the other types of heavy-duty equipment that would be used would expose any nearby buildings to ground vibration levels greater than FTA's vibration standard of 0.20 in/sec PPV for structural damage or expose any nearby housing units or tourist accommodations to ground vibration levels greater than FTA's vibration standard of 80 VdB for human response at residential land uses. For these reasons, the impact related to construction of the mixed-use development sites, including replacement housing, would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the replacement housing at the mixed-use development sites as part of Alternative B would avoid or minimize the environmental consequences related to ground vibration during construction such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential impacts related to ground vibration during construction as described above for the replacement housing for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the impacts of ground vibration during construction would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **significant** impact related to ground vibration during construction.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements and the mixed-use development sites included in Alternative B to further reduce to the extent feasible the environmental consequences related to ground vibration during construction.

Alternative C: Triangle One-Way

Transportation Improvements

Alternative C would involve demolition and construction activity in the same locations as Alternative B and using the same types of ground vibration-generating construction equipment listed in Table 3.15-9. Similar to Alternative B, pile driving performed during construction of the pedestrian bridge over realigned US 50, if required, could expose buildings at the Forest Suites Resort to ground vibration levels that exceed FTA's vibration standard of 80 VdB for human response at residential land uses. This would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative C to further reduce to the extent feasible the environmental consequences related to ground vibration during construction.

Mixed-Use Development including Replacement Housing

Alternative C would include the demolition of existing buildings and construction of new mixed-use land uses, including replacement housing, on the same redevelopment sites as Alternative B shown in Exhibit 2-9. However, it is assumed that the types of activity that would occur on these sites would not include pile driving, blasting, or other high ground vibration-generating activity. Similar to Alternative B, it is not anticipated that the other types of heavy-duty equipment that would be used would expose any nearby buildings to ground vibration levels greater than FTA's vibration standard of 0.20 in/sec PPV for structural damage or expose any nearby housing units or tourist accommodations to ground vibration levels greater than FTA's vibration standard of 80 VdB for human response at residential land uses. For these reasons, the impact related to construction of the mixed-use development sites, including replacement housing, would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the replacement housing at the mixed-use development sites as part of Alternative C would avoid or minimize the environmental consequences related to ground vibration during construction such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential impacts related to ground vibration during construction as described above for the replacement housing for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the impacts of ground vibration during construction would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **significant** impact related to ground vibration during construction.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements and the mixed-use development sites included in Alternative C to further reduce to the extent feasible the environmental consequences related to ground vibration during construction.

Alternative D: Project Study Report Alternative 2**Transportation Improvements**

Alternative D would involve demolition and construction activity in generally the same locations as Alternative B and using the same types of ground vibration-generating construction equipment listed in Table 3.15-9. Similar to Alternative B, pile driving performed during construction of the pedestrian bridge over realigned US 50 could expose buildings at the Forest Suites Resort to ground vibration levels that exceed FTA's vibration standard of 80 VdB for human response at residential land uses. This would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative D to further reduce to the extent feasible the environmental consequences related to ground vibration during construction.

Mixed-Use Development including Replacement Housing

Alternative D would include the demolition of existing buildings and construction of new mixed-use land uses, including replacement housing, at the redevelopment sites shown in Exhibit 2-11. However, it is assumed that the types of activity that would occur on these sites would not include pile driving, blasting, or other high ground vibration-generating activity. Similar to Alternative B, it is not anticipated that the other types of heavy-duty equipment that would be used would expose any nearby buildings to ground vibration levels greater than FTA's vibration standard of 0.20 in/sec PPV for structural damage or expose any nearby

housing units or tourist accommodations to ground vibration levels greater than FTA's vibration standard of 80 VdB for human response at residential land uses. For these reasons, the impact related to construction of the mixed-use development sites, including replacement housing, would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the replacement housing at the mixed-use development sites as part of Alternative D would avoid or minimize the environmental consequences related to ground vibration during construction such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential impacts related to ground vibration during construction as described above for the replacement housing for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the impacts of ground vibration during construction would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **significant** impact related to ground vibration during construction.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements and the mixed-use development sites included in Alternative D to further reduce to the extent feasible the environmental consequences related to ground vibration during construction.

Alternative E: Skywalk

The types of ground vibration-generating construction equipment that would be used for construction of the skywalk with Alternative E, and the levels of ground vibration they typically generate, are listed in Table 3.15-9. Pile driving would produce the highest levels of ground vibration during construction. As explained for Alternative B above, ground vibration generated by impact pile drivers would propagate to less than FTA's vibration standard of 0.20 in/sec PPV for structural damage at a distance of 100 feet and to levels less than FTA's vibration standard of 80 VdB for human response at residential land uses at a distance of 300 feet assuming normal propagation conditions. Ground vibration levels from sonic pile driving would propagate to less than FTA's vibration standard of 0.20 in/sec PPV for structural damage at a distance of 60 feet and to levels less than FTA's vibration standard of 80 VdB for human response at residential land uses at a distance of 175 feet assuming normal propagation conditions. All propagation adjustment calculations are included in Appendix F of the *Lake Tahoe Regional Transportation Plan/Sustainable Communities Strategy Draft EIR/EIS* (TMPO and TRPA 2012).

The skywalk construction site would be located between buildings along both sides of US 50 and the distance between the buildings on each side of US 50 is approximately 80 feet. Thus, pile driving activity could expose these buildings to levels of ground vibration that exceed FTA's vibration standard of 0.20 in/sec PPV for structural damage and FTA's vibration standard of 80 VdB for human response at residential land uses. Therefore, this would be a **significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative E to further reduce to the extent feasible the environmental consequences related to ground vibration during construction.

Impact 3.15-3: Traffic noise exposure at existing receptors

Alternative A would not result in changes to traffic noise levels along US 50 or local roadways.

With Alternatives B, C, and D the 65 CNEL contours along the realigned segments of US 50 would not extend more than 300 feet from the roadway edge for any of the alternatives. Therefore, the Environmental Threshold Carrying Capacity established by TRPA for the transportation corridor would not be exceeded with Alternatives B, C, and D.

With Alternatives B, C, and D one or more noise-sensitive receptors would be exposed to noise levels greater than the applicable FHWA noise abatement criteria by the design year (i.e., 2040).

With Alternatives B, C, and D multiple existing noise-sensitive receptors in California would experience increases in traffic noise that are considered substantial by 23 CFR 772 criteria (i.e., increase of 12 dB or more).

With Alternatives B, C, D, and E one or more existing noise-sensitive receptors located outside of a TRPA transportation corridor would be exposed to noise levels that exceed TRPA's applicable land use-based CNEL threshold.

With Alternatives B, C, D, and E multiple noise-sensitive receptors would be exposed to traffic noise levels that exceed the applicable traffic noise standard established by the City of South Lake Tahoe.

With Alternatives B, C, and D multiple noise-sensitive receptors would experience a CNEL increase equal to or greater than 3 dB, which is a TRPA significance criterion and a CEQA significance criterion for receptors located in California.

With Alternatives B, C, D, and E one or more existing hotels would be exposed to interior noise levels that exceed the interior noise standard of 45 CNEL.

These exceedances would occur under existing-plus-project conditions (2020) and/or under cumulative-plus-project conditions (2040) with a considerable contribution of the exceedance directly resulting from the implementation of the selected alternative. The intensity of these impacts would not be substantially different with development of the replacement housing at the mixed-use redevelopment sites with Alternatives B, C, and D.

NEPA Environmental Consequences: Mitigation Measures 3.15-3a, 3.15-3b, and 3.15-3c have been incorporated into Alternatives B, C, and D, and Mitigation Measure 3.15-3d has been incorporated into Alternative E, to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Significant and Unavoidable for Alternatives B, C, and D after implementation of Mitigation Measures 3.15-3a, 3.15-3b, and 3.15-3c; Less Than Significant for Alternative E after implementation of Mitigation Measure 3.15-3d; No Impact for Alternative A

The level of traffic noise at receptors in the study area is primarily affected by their proximity to US 50, the volume of traffic and speed of travel along the highway, and the degree to which surrounding buildings, other structures, and trees and vegetation reflect and/or absorb noise.

With Alternatives B, C, and D, US 50 would be realigned, as shown in Exhibits 2-2, 2-3, and 2-4, respectively. This would include the modification of local roadways, widening of existing roadways, construction of a

pedestrian path and modifications to the existing US 50 to become a local street, and the realignment of neighborhood streets to connect with the highway. With these alternatives, vehicle activity on US 50 would be moved closer to some noise-sensitive receptors, resulting in increased levels of noise exposure at those receptors. However, this noise source would also be moved further away from other noise-sensitive receptors in the tourist core, resulting in decreased levels of noise exposure at those receptors. No realignment of US 50 or other roadways would occur under Alternatives A and E.

Traffic noise modeling was conducted for all affected roadway segments under all the alternatives using the FHWA Traffic Noise Model Version 2.5 and data from a project-specific traffic analysis prepared in 2013 (Caltrans 2015b:55).

Table 3.15-10 summarizes changes that would occur to the 65 CNEL traffic contour along US 50 under all the alternatives.

As shown in Table 3.15-10, the 65 CNEL contours along the affected segments of US 50 and the affected portions of Lake Parkway in Nevada would not extend more than 300 feet from the roadway edge for any of the alternatives. Therefore, the Environmental Threshold Carrying Capacity established by TRPA for these transportation corridors would not be exceeded.

Table 3.15-10 Noise Contour Distances along Major Transportation Corridors under Cumulative Conditions

Roadway Segments with Contour-Based Noise Thresholds ¹	Distance from Edge of Roadway to 65 CNEL Contour (feet) under Cumulative Conditions (2040) ²				
	Existing Conditions/Alt. A ³	Alt. B ⁴	Alt. C ⁴	Alt. D ⁴	Alt. E ³
US 50 South of Pioneer Trail	97	97	97	97	97
US 50 between Pioneer Trail and Park Avenue	97	46	84	46	97
US 50 between Park Avenue and Friday Avenue	73	<18	52	<18	73
US 50 between Friday Avenue and Stateline Avenue	71	<18	50	<18	71
US 50 North of Stateline Avenue	66	<18	45	<18	66
US 50 South of Loop Road/Lake Parkway	70	<20	42	<20	70
US 50 North of Loop Road/Lake Parkway	97	98	99	98	97
Realigned US 50/Lake Parkway between Heavenly Village Way and Harrah's Road	<38	132	86	132	<38
Realigned US 50/Lake Parkway between Harrah's Road and existing US 50	<38	120	79	120	<38
Lake Parkway West of US 50 (to Golf Course Entrance Road)	<32	<32	<32	<32	<32
Lake Parkway North of Stateline Avenue (to Golf Course Entrance Road)	<32	<32	<32	<32	<32

Notes: CNEL = community noise equivalent level

¹ The contour-based threshold of 65 CNEL at 300 feet from the edge of US 50 is contained in TRPA's Regional Plan (TRPA 2012a:2-26). The contour-based threshold of 65 CNEL at 300 feet from the edge of the segments of Lake Parkway in Nevada was established by the South Shore Area Plan (Douglas County and TRPA 2013:24).

² Contour distances would be closer under existing-plus-Alternative B conditions.

³ Alternatives A and E would not include new mixed-use development to provide new housing because no housing units would be removed under these alternatives.

⁴ With Alternatives B, C, and D, new mixed-use development may occur to replace housing units that are removed to accommodate the realignment of US 50. However, traffic noise levels would not be substantially different with or without the addition of new mixed-use development.

Detailed modeling parameters are provided in the Noise Study Report and are incorporated by reference here (Caltrans2015b).

Source: Modeling by LSA Associates in Caltrans 2015b; Post-processing by Ascent Environmental in 2016

Nonetheless, because the location of the TRPA transportation corridor would move with the realigned segments of US 50 under Alternatives B, C, and D, the applicable TRPA noise threshold would change for some receptors. This is due to the relationship between TRPA's land use-based noise thresholds and TRPA's contour-based noise threshold for the US 50 transportation corridor. As explained in Table 3.15-4 in the

regulatory setting and in the “Methods and Assumptions” sections above, TRPA’s traffic noise threshold for the US 50 transportation corridor is a contour-based noise threshold that overrides the land use-based CNEL thresholds within 300 feet of the highway’s edge. This means that some receptors currently subject to a TRPA land use-based noise standard (because they are beyond 300 feet from the existing alignment of US 50) would instead become subject to the contour-based noise threshold of US 50 because the realigned highway would move to within 300 feet of them. For instance, under existing conditions Receptor 63 is subject to the land use-based noise standard of 55 CNEL established in PAS 092 Pioneer Ski/Run (TRPA 2002c:3). However, implementation of Alternative B would result in Receptor 63 being subject to the TRPA contour-based noise standard for US 50, because Receptor 63 would be within 300 feet of the realigned segment of US 50. The opposite change occurs at other receptors; that is, some receptors currently subject to TRPA’s contour-based noise threshold for US 50 would become subject to one of TRPA’s land use-based noise thresholds. For example, receptors located within 300 feet of the existing segment of US 50 between Pioneer Trail and Lake Parkway are currently subject to the TRPA’s contour-based threshold for US 50; however, they would be subject to the applicable land use-based threshold after US 50 is realigned under Alternatives B, C, and D. Additional analysis of the noise impacts to discrete receptors located inside and outside of the US 50 transportation corridor is provided below.

Alternative A: No Build (No Project)

There would be no change in traffic noise levels as a result of Alternative A because this alternative would not result in realignment of any segments of US 50, or changes in the traffic volumes or travel speeds of various segments of US 50, Lake Parkway, or other local roads. For this reason, there would be **no impact** related to traffic noise under Alternative A for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Table 3.15-11 summarizes the predicted noise levels that would be experienced at those noise-sensitive receptors that would be most affected by Alternative B (but would not be acquired through the right-of-way acquisition process). Exhibit 3.15-2 shows the locations of these receptors and the type of impact(s) they would experience.

As shown in Table 3.15-11, one receptor, Receptor 136, would experience noise levels greater than the applicable FHWA noise abatement criteria by the design year (i.e., 2040) and 15 receptors would experience increases in traffic noise that are considered substantial by Caltrans criteria (i.e., 12 dB or more)—all of these receptors are located in California. Six receptors would be exposed to noise levels that exceed TRPA’s applicable land use-based CNEL threshold, 18 receptors would be exposed to noise levels that exceed the transportation noise standards established by the City of South Lake Tahoe, and 30 receptors would experience a CNEL increase equal to or greater than 3 dB, which is a TRPA significance criterion (and a CEQA significance criterion for receptors located in California). Also, Receptor 55, which is a motel called the South Shore Inn, could be exposed to interior noise levels that exceed 45 CNEL. These exceedances would occur under existing-plus-Alternative B conditions and/or under cumulative-plus-Alternative B conditions with a considerable contribution of the exceedance directly resulting from the implementation of Alternative B. As shown in Exhibit 3.15-2, the locations of these receptors would be closer to the realigned segment of US 50 that would exist under Alternative B than the existing alignment of US 50. Fundamentally, Alternative B would move a segment of US 50 (both west- and east-bound traffic), which is the predominant noise source in the area, closer to these receptors. Most of the receptors that would be impacted are located in the Rocky Point neighborhood southwest of the Heavenly Village Center along Fern Road, Echo Road, Moss Road, Primrose Road, Rocky Point Road, and Chonokis Road. Receptors 1, 4, and 5 are residential land uses located along a segment of US 50 that would not be realigned but these receptors would be exposed to traffic noise levels in 2040 that exceed the City of South Lake Tahoe’s noise standard of 60 CNEL with a considerable contribution by Alternative B. Receptor 136 is a motel called the Cedar Inn & Suites located on the corner of Stateline Avenue and Pine Boulevard that would be exposed to a noise level greater than 65 CNEL, which is the threshold established by TRPA in the Tourist Core Area Plan (City of South Lake Tahoe and TRPA 2013:C-13). For these reasons this impact for the Alternative B transportation improvements would be **significant** for purposes of TRPA and CEQA.

Table 3.15-11 Summary of Traffic Noise Impacts at Discrete Noise-Sensitive Receptors under Alternative B

Receptor No. ³	Modeled Traffic Noise Levels ¹ (Leq(h), CNEL) ²							NEPA Impact Analysis			TRPA Impact Analysis			CEQA Impact Analysis ⁹			
	Existing	Existing-Plus-Alternative B	Change from Existing to Existing-Plus-Alternative B	2038-No-Project	2038-Plus-Alternative B	Change from 2038-No-Project to 2038-Plus-Alternative B	Change from Existing to 2038-Plus-Alternative B	FHWA Noise Abatement Criteria, Leq(h) ⁴	Noise Abatement Criterion Exceeded or Approached? ⁵	NEPA Incremental Increase Criterion Exceeded? ⁶	TRPA Land Use-Based Noise Threshold Under Alternative B (CNEL) ⁷	Exceed (or Contribute to an Exceedance of) TRPA Land Use-Based Noise Standard?	TRPA Incremental Increase Criterion Exceeded? ⁸	Local Jurisdiction	Noise Standard of Local Jurisdiction (CNEL) ¹⁰	Exceed (or Contribute to an Exceedance of) Local Noise Standard?	CEQA Incremental Increase Criterion Exceeded? ⁸
1	59	60	1	61	62	1	3	67	No	No	NA	NA	No	CSLT	60	No	No
4	59	60	1	61	62	1	3	67	No	No	NA	NA	No	CSLT	60	No	No
5	57	59	2	60	61	1	4	67	No	No	NA	NA	No	CSLT	60	No	No
31	44	54	10	46	55	9	11	67	No	No	55	No	Yes	CSLT	60	Yes	No
32	44	53	9	46	54	8	10	67	No	No	55	No	Yes	CSLT	60	Yes	No
33	43	52	9	45	53	8	10	67	No	No	55	No	Yes	CSLT	60	Yes	No
34	61	66	5	63	67	4	6	72	No	No	NA	NA	No	CSLT	65	No	No
37	43	56	13	45	57	12	14	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
38	43	56	13	45	57	12	14	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
39	43	56	13	44	57	13	14	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
43	44	58	14	46	59	13	15	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
49	45	64	19	47	65	18	20	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
50	45	63	18	47	64	17	19	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
51	44	61	17	46	62	16	18	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
52	44	60	16	46	61	15	17	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
53	36	40	4	37	41	4	5	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
54	37	48	11	38	48	10	11	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
55	64	69	5	66	71	5	7	72	No	No	NA	NA	No	CSLT	65	No	No
63	48	59	11	50	60	10	12	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
64	49	56	7	50	57	7	8	67	NA	No	NA	NA	Yes	CSLT	60	Yes	No
65	62	65	3	64	67	3	5	72	No	No	NA	NA	No	CSLT	65	No	No
67	48	60	12	50	61	11	13	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
68	50	60	10	52	60	8	10	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
69	50	60	10	52	61	9	11	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
70	48	63	15	50	64	14	16	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
71	49	62	13	51	62	11	13	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
72	47	65	18	49	66	17	19	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
73	47	67	20	48	68	20	21	67	Yes	Yes	NA	NA	Yes	CSLT	60	Yes	No
80	54	57	3	56	58	2	4	67	No	No	55	Yes	Yes	CSLT	60	Yes	No
81	50	58	8	52	59	7	9	67	No	No	NA	NA	Yes	CSLT	60	Yes	No

Table 3.15-11 Summary of Traffic Noise Impacts at Discrete Noise-Sensitive Receptors under Alternative B

Receptor No. ³	Modeled Traffic Noise Levels ¹ (Leq(h), CNEL) ²							NEPA Impact Analysis			TRPA Impact Analysis			CEQA Impact Analysis ⁹			
	Existing	Existing-Plus-Alternative B	Change from Existing to Existing-Plus-Alternative B	2038-No-Project	2038-Plus-Alternative B	Change from 2038-No-Project to 2038-Plus-Alternative B	Change from Existing to 2038-Plus-Alternative B	FHWA Noise Abatement Criteria, Leq(h) ⁴	Noise Abatement Criterion Exceeded or Approached? ⁵	NEPA Incremental Increase Criterion Exceeded? ⁶	TRPA Land Use-Based Noise Threshold Under Alternative B (CNEL) ⁷	Exceed (or Contribute to an Exceedance of) TRPA Land Use-Based Noise Standard? ⁸	TRPA Incremental Increase Criterion Exceeded? ⁸	Local Jurisdiction	Noise Standard of Local Jurisdiction (CNEL) ¹⁰	Exceed (or Contribute to an Exceedance of) Local Noise Standard? ⁸	CEQA Incremental Increase Criterion Exceeded? ⁸
82	50	59	9	51	59	8	9	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
83	48	58	10	50	58	8	10	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
84	47	60	13	49	61	12	14	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
88	54	56	2	56	57	1	3	67	No	No	55	Yes	No	CSLT	60	No	No
89	54	56	2	56	57	1	3	67	No	No	55	Yes	No	CSLT	60	No	No
90	53	56	3	55	56	1	3	67	No	No	55	Yes	Yes	CSLT	60	Yes	No
91	51	56	5	53	57	4	6	67	No	No	55	Yes	Yes	CSLT	60	Yes	No
92	49	57	8	51	58	7	9	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
136	65	66	1	67	68	1	3	72	No	No	65	Yes	No	CSLT	65	No	No

Notes: dB = decibel, Leq(h) = peak-hour noise level, FHWA = Federal Highway Administration, CNEL = Community Noise Equivalent Level, CSLT = City of South Lake Tahoe, California, EDC = El Dorado County, NA = not applicable

¹ Detailed traffic noise modeling inputs and results are provided in the Noise Study Report (Caltrans2015b); relevant excerpts from the Noise Study Report are included in Appendix K.

² All noise modeling estimated the hourly average noise level during the peak traffic hour (Leq(h)) for a summer day and the Noise Study Report determined that the CNEL values would be similar to the (Leq(h)) values based on a 24-hour noise level measurement conducted in the project area (Caltrans2015b:40 and 238). All noise levels are expressed in A-weighted decibels.

³ This table only includes discrete modeling receptor sites where one or more NEPA, TRPA, CEQA significance criteria and/or a TRPA land use-based CNEL threshold would be exceeded. No significance criteria or TRPA thresholds were predicted to be exceeded at all other modeled discrete receptors. The discrete modeling receptor sites are often referred to as "receptors" in this table and in this EIR/EIS/EIS; however, a single discrete modeling receptor site may be representative of multiple nearby receptors that are equidistant or closer to the nearby roadway that is the predominant source of noise at those receptors. Thus, this EIR/EIS/EIS recognizes that an exceedance of an applicable noise standard at a single modeled receptor site may indicate exposure that would be experienced by land uses equidistant or closer to the highway in that area. Receptor 142, which is located on the sidewalk next to the entrance driveway to Van Sickle Bi-State Park, was not included in this table because it does not represent an outdoor activity area or distinct destination where people gather or otherwise spend time.

⁴ This significance criterion for the NEPA impact analysis is equivalent to the Noise Abatement Criterion (NAC) for the applicable activity category listed in Table 3.15-3. The NAC have been adopted as significance standards by both Caltrans and NDOT.

⁵ The applicable NAC is compared to the predicted noise level for the design year (i.e., 2040) at a noise-sensitive receptor. This comparison is used for both the project-level and cumulative impact analysis. A sound level is considered to "approach" an NAC level if the sound level is 1 dB less than the NAC.

⁶ The NEPA incremental increase criteria are compared to the change in the traffic noise level between existing conditions and the design year (i.e., 2040). This comparison is also used for both the project-level and cumulative impact analysis.

⁷ TRPA's land use-based noise thresholds are listed in Table 3.15-4 and do not apply to receptors located within 300 feet of the edge of US 50 or the edge of the segments of Lake Parkway in Nevada. These receptors are marked with "NA"

⁸ For the TRPA and CEQA analyses, an incremental increase significance criterion of 3 dB is compared to the difference between existing noise levels and existing-plus-alternative noise levels.

⁹ The CEQA impact analysis only applies to receptors located in California.

¹⁰ For receptors located in the City of South Lake Tahoe the applicable noises standard is based on the standards in Table 3.15-5. As explained in Table 3.15-5, for hotels, motels, and other transient lodging facilities that do not have an outdoor activity area such as a pool, the city's exterior noise standard of 65 CNEL does not apply. For receptors located in the unincorporated area of El Dorado County, the transportation noise standard from Chapter 130.37 of the County's zoning ordinance is applied.

Source: Traffic noise levels modeled by LSA (Caltrans2015b); Impact analysis conducted by Ascent Environmental 2016

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative B to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Mixed-Use Development including Replacement Housing

Alternative B includes the redevelopment of three multi-use development sites, which would provide replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Redevelopment of these sites would involve the full and partial acquisition of additional parcels including, as shown in Exhibit 3.15-2, full acquisition of Receptors 55, 56, 65, and 67. Thus, these receptors would not experience the noise impacts listed in Table 3.15-11 after they are removed.

Operation of the land uses constructed on the three multi-use development sites would add additional noise-generating vehicles to the local roadway network. As explained in the “Methods and Assumptions” section above, the traffic volumes used to estimate traffic noise levels in the Noise Study Report were conservatively high such that they also account for the additional vehicle trips that would be generated by operation of the three mixed-use development sites. Also explained above is that the difference in traffic volumes with the transportation improvements and the mixed-use development sites is not substantial given the logarithmic nature of adding and subtracting noise levels (i.e., it takes a doubling of the noise-generating activity, in this case the traffic volume, to result in a 3-dB noise increase). Therefore, there would be no measurable difference in traffic noise levels generated under Alternative B with or without the mixed-use development. As shown in Table 3.15-11, the 65 CNEL contour along the affected segments of US 50 and the affected portions of Lake Parkway in Nevada would not extend more than 300 feet from the roadway edge and, thus, the Environmental Threshold Carrying Capacity established by TRPA for these transportation corridors would not be exceeded. Similarly, there would be no measurable difference in the traffic noise levels predicted at existing discrete sensitive receptors, which are summarized in Table 3.15-11. Therefore, the traffic noise impacts in Alternative B with the mixed-use development at existing discrete receptors would be the same as those with the transportation improvements and this impact would be **significant** for purposes of TRPA and CEQA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative B to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels. Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential impacts related to the exposure of sensitive receptors to increased traffic noise levels as described above for the replacement housing for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the exposure of sensitive receptors at another location to increased traffic noise levels would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **significant** impact related to the exposure of sensitive receptors to increased traffic noise levels.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements and the mixed-use development sites included in Alternative B to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Alternative C: Triangle One-Way

Transportation Improvements

Table 3.15-12 summarizes the predicted noise levels that would be experienced at those noise-sensitive receptors that would be most affected under Alternative C (but would not be acquired). Exhibit 3.15-3 shows the locations of these receptors and the type of impact(s) they would experience.

As shown in Table 3.15-12, one receptor, Receptor 55, would experience noise levels greater than the applicable FHWA noise abatement criteria by the design year (i.e., 2040) and 10 receptors would experience increases in traffic noise that are considered substantial by Caltrans criteria (i.e., 12 dB or more)—all of these receptors are located in California. One receptor would be exposed to noise levels that exceed TRPA's applicable land use-based CNEL threshold. Receptor 136, a motel called the Cedar Inn & Suites located on the corner of Stateline Avenue and Pine Boulevard, would be exposed to a noise levels greater than 65 CNEL, which is the threshold established by TRPA in the Tourist Core Area Plan (City of South Lake Tahoe and TRPA 2013:C-13). Ten receptors would be exposed to noise levels that exceed the transportation noise standards established by the City of South Lake Tahoe, and 27 receptors would experience a CNEL increase equal to or greater than 3 dB, which is a TRPA significance criterion (and a CEQA significance criterion for receptors located in California). Receptor 55, which is a motel called the South Shore Inn, could also be exposed to interior noise levels that exceed 45 CNEL. These exceedances would occur under existing-plus-Alternative C conditions and/or under cumulative-plus-Alternative C conditions with a considerable contribution of the exceedance directly resulting from the implementation of Alternative C. As shown in Exhibit 3.15-3, the locations of these receptors would be closer to the realigned segment of east bound US 50 than the existing alignment of US 50. Essentially, Alternative C would move the east-bound segment of US 50, thereby moving a portion of the predominant noise source in the area closer to these receptors. Most of the receptors that would be impacted are located in the Rocky Point neighborhood along Echo Road, Moss Road, Primrose Road, Rocky Point Road, and Chonokis Road. For these reasons, this impact would be **significant** for purposes of TRPA and CEQA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative C to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Mixed-Use Development including Replacement Housing

Alternative C includes the redevelopment of three multi-use development sites, which would provide replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Redevelopment of these sites would involve the full and partial acquisition of additional parcels including, as shown in Exhibit 3.15-3, full acquisition of Receptors 23, 55, 65, and 67. Thus, these receptors would not experience the noise impacts listed in Table 3.15-12 after they are removed.

Similar to Alternative B, operation of the land uses constructed on the three multi-use development sites with Alternative C would add additional noise-generating vehicles to the local roadway network. As explained in the "Methods and Assumptions" section above, the traffic volumes used to estimate traffic noise levels in the Noise Study Report were conservatively high such that they also account for the additional vehicle trips that would be generated by operation of the three mixed-use development sites. Also explained above is that the difference in traffic volumes with the transportation improvements and the mixed-use development sites is not substantial given the logarithmic nature of adding and subtracting noise levels (i.e., it takes a doubling of the noise-generating activity, in this case the traffic volume, to result in a 3-dB noise increase). Therefore, there would be no measurable difference in traffic noise levels generated under Alternative C with or without the mixed-use development. As shown in Table 3.15-12, the 65 CNEL contour along the affected segments of US 50 and the affected portions of Lake Parkway in Nevada would not extend more than 300 feet from the roadway edge and, thus, the Environmental Threshold Carrying Capacity established by TRPA for these transportation corridors would not be exceeded. Similarly, there would be no measurable difference in the traffic noise levels predicted at existing discrete sensitive receptors, which are summarized in Table 3.15-12. Therefore, the traffic noise impacts with the mixed-use development at existing discrete receptors would be the same as those with the transportation improvements and this impact would be **significant** for purposes of TRPA and CEQA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative C to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Table 3.15-12 Summary of Traffic Noise Impacts at Discrete Noise-Sensitive Receptors under Alternative C

Receptor No. ³	Modeled Traffic Noise Levels ¹ (Leq[h], CNEL) ²							NEPA Impact Analysis			TRPA Impact Analysis			CEQA Impact Analysis ⁹			
	Existing	Existing-Plus-Alternative C	Change from Existing to Existing-Plus-Alternative C	2038-No-Project	2038-Plus-Alternative C	Change from 2038-No-Project to 2038-Plus-Alternative C	Change from Existing to 2038-Plus-Alternative C	FHWA Noise Abatement Criteria, Leq[h] ⁴	Noise Abatement Criterion Exceeded or Approached? ⁵	NEPA Incremental Increase Criterion Exceeded? ⁶	TRPA Land Use-Based Noise Threshold Under Alternative C (CNEL) ⁷	Exceed (or Contribute to an Exceedance of) TRPA Land Use-Based Noise Standard?	TRPA Incremental Increase Criterion Exceeded? ⁸	Local Jurisdiction	Noise Standard of Local Jurisdiction (CNEL) ¹⁰	Exceed (or Contribute to an Exceedance of) Local Noise Standard?	CEQA Incremental Increase Criterion Exceeded? ⁸
31	44	53	9	46	54	8	10	67	No	No	55	No	Yes	CSLT	60	Yes	No
32	44	51	7	46	53	7	9	67	No	No	55	No	Yes	CSLT	60	Yes	No
33	43	50	7	45	51	6	8	67	No	No	55	No	Yes	CSLT	60	Yes	No
34	61	66	5	63	67	4	6	72	No	No	NA	NA	No	CSLT	65	No	No
36	53	62	9	54	64	10	11	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
37	43	55	12	45	56	11	13	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
38	43	55	12	45	56	11	13	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
39	43	54	11	44	55	11	12	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
43	44	52	8	46	54	8	10	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
49	45	59	14	47	61	14	16	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
50	45	58	13	47	59	12	14	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
51	44	56	12	46	57	11	13	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
52	44	55	11	46	56	10	12	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
54	37	44	7	38	45	7	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
55	64	72	8	66	73	7	9	72	Yes	No	NA	NA	No	CSLT	65	No	No
63	48	55	7	50	56	6	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
65	62	67	5	64	69	5	7	72	No	No	NA	NA	No	CSLT	65	No	No
67	48	57	9	50	59	9	11	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
68	50	57	7	52	58	6	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
69	50	57	7	52	58	6	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
70	48	59	11	50	61	11	13	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
71	49	58	9	51	59	8	10	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
72	47	62	15	49	63	14	16	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
73	47	63	16	48	65	17	18	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
78	50	55	5	52	56	4	6	67	No	No	NA	NA	Yes	CSLT	60	Yes	No

Table 3.15-12 Summary of Traffic Noise Impacts at Discrete Noise-Sensitive Receptors under Alternative C

Receptor No. ³	Modeled Traffic Noise Levels ¹ (Leq(h), CNEL) ²							NEPA Impact Analysis			TRPA Impact Analysis			CEQA Impact Analysis ⁹			
	Existing	Existing-Plus-Alternative C	Change from Existing to Existing-Plus-Alternative C	2038-No-Project	2038-Plus-Alternative C	Change from 2038-No-Project to 2038-Plus-Alternative C	Change from Existing to 2038-Plus-Alternative C	FHWA Noise Abatement Criteria, Leq(h) ⁴	Noise Abatement Criterion Exceeded or Approached? ⁵	NEPA Incremental Increase Criterion Exceeded? ⁶	TRPA Land Use-Based Noise Threshold Under Alternative C (CNEL) ⁷	Exceed (or Contribute to an Exceedance of) TRPA Land Use-Based Noise Standard? ⁸	TRPA Incremental Increase Criterion Exceeded? ⁸	Local Jurisdiction	Noise Standard of Local Jurisdiction (CNEL) ¹⁰	Exceed (or Contribute to an Exceedance of) Local Noise Standard? ⁸	CEQA Incremental Increase Criterion Exceeded? ⁸
79	58	60	2	60	62	2	4	67	No	No	NA	NA	No	CSLT	60	No	No
81	50	55	5	52	56	4	6	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
82	50	55	5	51	56	5	6	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
83	48	54	6	50	55	5	7	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
84	47	56	9	49	58	9	11	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
92	49	54	5	51	55	4	6	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
136	65	66	1	67	67	0	2	72	No	No	65	Yes	No	CSLT	65	No	No

Notes: dB = decibel, Leq(h) = peak-hour noise level, FHWA = Federal Highway Administration, CNEL = Community Noise Equivalent Level, CSLT = City of South Lake Tahoe, California, EDC = El Dorado County, NA = not applicable

¹ Detailed traffic noise modeling inputs and results are provided in the Noise Study Report (Caltrans2015b); relevant excerpts from the Noise Study Report are included in Appendix K.

² All noise modeling estimated the hourly average noise level during the peak traffic hour (Leq(h)) for a summer day and the Noise Study Report determined that the CNEL values would be similar to the (Leq(h)) values based on a 24-hour noise level measurement conducted in the project area (Caltrans2015b:40 and 238). All noise levels are expressed in A-weighted decibels.

³ This table only includes discrete modeling receptor sites where one or more NEPA, TRPA, CEQA significance criteria and/or a TRPA land use-based CNEL threshold would be exceeded. No significance criteria or TRPA thresholds were predicted to be exceeded at all other modeled discrete receptors. The discrete modeling receptor sites are often referred to as "receptors" in this table and in this EIR/EIS/EIS; however, a single discrete modeling receptor site may be representative of multiple nearby receptors that are equidistant or closer to the nearby roadway that is the predominant source of noise at those receptors. Thus, this EIR/EIS/EIS recognizes that an exceedance of an applicable noise standard at a single modeled receptor site may indicate exposure that would be experienced by land uses equidistant or closer to the highway in that area. Receptor 142, which is located on the sidewalk next to the entrance driveway to Van Sickle Bi-State Park, was not included in this table because it does not represent an outdoor activity area or distinct destination where people gather or otherwise spend time.

⁴ This significance criterion for the NEPA impact analysis is equivalent to the Noise Abatement Criterion (NAC) for the applicable activity category listed in Table 3.15-3. The NAC have been adopted as significance standards by both Caltrans and NDOT.

⁵ The applicable NAC is compared to the predicted noise level for the design year (i.e., 2040) at a noise-sensitive receptor. This comparison is used for both the project-level and cumulative impact analysis. A sound level is considered to "approach" an NAC level if the sound level is 1 dB less than the NAC.

⁶ The NEPA incremental increase criteria are compared to the change in the traffic noise level between existing conditions and the design year (i.e., 2040). This comparison is also used for both the project-level and cumulative impact analysis.

⁷ TRPA's land use-based noise thresholds are listed in Table 3.15-4 and do not apply to receptors located within 300 feet of the edge of US 50 or the edge of the segments of Lake Parkway in Nevada. These receptors are marked with "NA"

⁸ For the TRPA and CEQA analyses, an incremental increase significance criterion of 3 dB is compared to the difference between existing noise levels and existing-plus-alternative noise levels.

⁹ The CEQA impact analysis only applies to receptors located in California.

¹⁰ For receptors located in the City of South Lake Tahoe the applicable noises standard is based on the standards in Table 3.15-5. As explained in Table 3.15-5, for hotels, motels, and other transient lodging facilities that do not have an outdoor activity area such as a pool, the City's exterior noise standard of 65 CNEL does not apply. For receptors located in the unincorporated area of El Dorado County, the transportation noise standard from Chapter 130.37 of the County's zoning ordinance is applied.

Source: Traffic noise levels modeled by LSA (Caltrans2015b); Impact analysis conducted by Ascent Environmental 2016

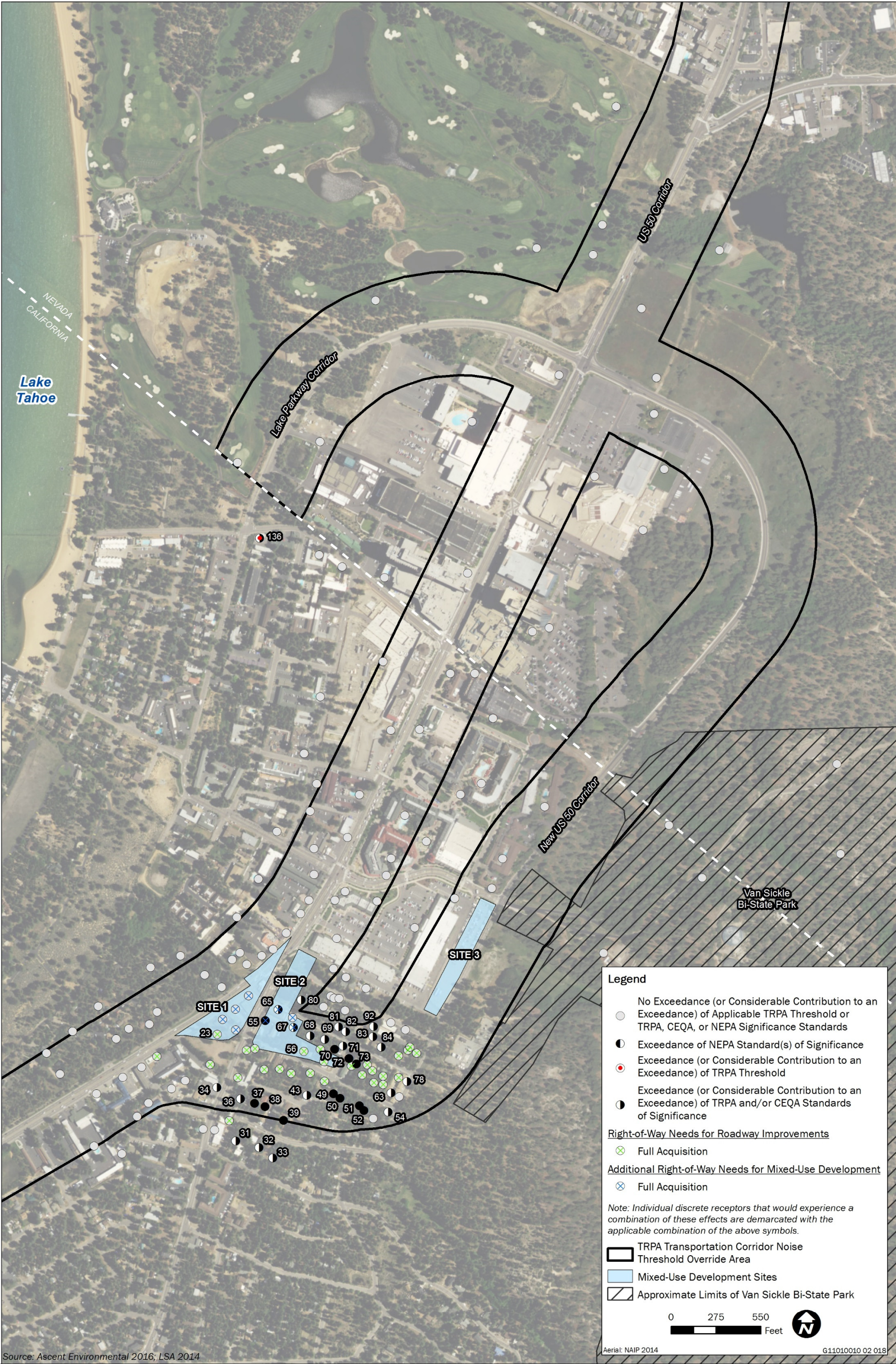


Exhibit 3.15-3

Alternative C Noise Receptors and Impacts

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential impacts related to the exposure of sensitive receptors to increased traffic noise levels as described above for the replacement housing for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the exposure of sensitive receptors at another location to increased traffic noise levels would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **significant** impact related to the exposure of sensitive receptors to increased traffic noise levels.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements and the mixed-use development sites included in Alternative C to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

Table 3.15-13 summarizes the predicted noise levels that would be experienced at those noise-sensitive receptors that would be most affected by Alternative D (but would not be acquired). Exhibit 3.15-4 shows the locations of these receptors and the type of impact(s) they would experience.

As shown in Table 3.15-13, no receptors would experience noise levels greater than the applicable FHWA noise abatement criteria by the design year (i.e., 2040).

Receptors 42, 68, 71, 83, and 84 would experience increases in traffic noise that are considered substantial by Caltrans criteria (i.e., 12 dB or more) by the design year. All of these receptors are located in California.

Receptors 30, 97, and 98 are single-family homes that would become exposed to noise levels that exceed the TRPA land use-based noise threshold of 55 CNEL established in PAS 092 Pioneer/Ski Run (TRPA 2002c:3).

Receptor 136, a motel called the Cedar Inn & Suites located on the corner of Stateline Avenue and Pine Boulevard, would become exposed to a noise level greater than 65 CNEL, which is the threshold established by TRPA in the Tourist Core Area Plan (City of South Lake Tahoe and TRPA 2013:C-13).

Receptor 29, a multi-family residence on the east side of Pioneer Trail, has an existing noise level of 64 CNEL that already exceeds the TRPA land use-based noise threshold of 55 CNEL established in PAS 092 Pioneer/Ski Run (TRPA 2002c:3). Receptor 29 would experience a noise level of 67 CNEL under existing-plus-Alternative D conditions and 68 CNEL under cumulative-plus-Alternative D conditions. Thus, implementation of Alternative D would increase the degree to which Receptor 29 would experience traffic noise levels that exceed the applicable TRPA threshold.

Receptors 1, 5, and 8, which are single-family homes along a segment of US 50 that would not be realigned, would be exposed to traffic noise levels in 2040 that exceed the City of South Lake Tahoe's noise standard of 60 CNEL with a measurable contribution from Alternative D.

Table 3.15-13 Summary of Traffic Noise Impacts at Discrete Noise-Sensitive Receptors under Alternative D

Receptor No. ³	Modeled Traffic Noise Levels ¹ (Leq[h], CNEL) ²							NEPA Impact Analysis			TRPA Impact Analysis			CEQA Impact Analysis ⁹			
	Existing	Existing-Plus-Alternative D	Change from Existing to Existing-Plus-Alternative D	2038-No-Project	2038-Plus-Alternative D	Change from 2038-No-Project to 2038-Plus-Alternative D	Change from Existing to 2038-Plus-Alternative D	FHWA Noise Abatement Criteria, Leq[h] ⁴	Noise Abatement Criterion Exceeded or Approached? ⁵	NEPA Incremental Increase Criterion Exceeded? ⁶	TRPA Land Use-Based Noise Threshold Under Alternative D (CNEL) ⁷	Exceed (or Contribute to an Exceedance of) TRPA Land Use-Based Noise Standard?	TRPA Incremental Increase Criterion Exceeded? ⁸	Local Jurisdiction	Noise Standard of Local Jurisdiction (CNEL) ¹⁰	Exceed (or Contribute to an Exceedance of) Local Noise Standard?	CEQA Incremental Increase Criterion Exceeded? ⁸
1	59	60	1	61	62	1	3	67	No	No	NA	NA	No	CSLT	60	No	No
5	57	59	2	60	61	1	4	67	No	No	NA	NA	No	CSLT	60	No	No
8	58	60	2	60	61	1	3	67	No	No	NA	NA	No	CSLT	60	No	No
20	67	68	1	70	70	0	3	72	No	No	NA	NA	No	CSLT	65	No	Yes
29	64	67	3	65	68	3	4	72	No	No	55	Yes	No	CSLT	65	No	No
30	52	56	4	54	58	4	6	67	No	No	55	Yes	Yes	CSLT	60	Yes	No
31	44	48	4	46	50	4	6	67	No	No	55	No	Yes	CSLT	60	Yes	No
32	44	47	3	46	49	3	5	67	No	No	55	No	Yes	CSLT	60	Yes	No
33	43	47	4	45	49	4	6	67	No	No	55	No	Yes	CSLT	60	Yes	No
34	61	65	4	63	66	3	5	72	No	No	NA	NA	No	CSLT	65	No	No
35	62	65	3	64	67	3	5	72	No	No	NA	NA	No	CSLT	65	No	No
36	53	57	4	54	58	4	5	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
37	43	47	4	45	50	5	7	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
38	43	46	3	45	49	4	6	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
39	43	47	4	44	50	6	7	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
42	43	47	4	45	58	13	15	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
43	44	50	6	46	52	6	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
44	60	64	4	62	66	4	6	72	No	No	NA	NA	No	CSLT	65	No	No
45	46	51	5	48	53	5	7	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
46	46	51	5	48	53	5	7	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
47	47	54	7	49	55	6	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
48	46	53	7	48	55	7	9	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
49	45	52	7	47	53	6	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
50	45	51	6	47	53	6	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No

Table 3.15-13 Summary of Traffic Noise Impacts at Discrete Noise-Sensitive Receptors under Alternative D

Receptor No. ³	Modeled Traffic Noise Levels ¹ (Leq[h], CNEL) ²							NEPA Impact Analysis			TRPA Impact Analysis			CEQA Impact Analysis ⁹			
	Existing	Existing-Plus-Alternative D	Change from Existing to Existing-Plus-Alternative D	2038-No-Project	2038-Plus-Alternative D	Change from 2038-No-Project to 2038-Plus-Alternative D	Change from Existing to 2038-Plus-Alternative D	FHWA Noise Abatement Criteria, Leq[h] ⁴	Noise Abatement Criterion Exceeded or Approached? ⁵	NEPA Incremental Increase Criterion Exceeded? ⁶	TRPA Land Use-Based Noise Threshold Under Alternative D (CNEL) ⁷	Exceed (or Contribute to an Exceedance of) TRPA Land Use-Based Noise Standard?	TRPA Incremental Increase Criterion Exceeded? ⁸	Local Jurisdiction	Noise Standard of Local Jurisdiction (CNEL) ¹⁰	Exceed (or Contribute to an Exceedance of) Local Noise Standard?	CEQA Incremental Increase Criterion Exceeded? ⁸
51	44	50	6	46	52	6	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
52	44	50	6	46	51	5	7	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
54	37	40	3	38	42	4	5	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
57	49	58	9	51	59	8	10	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
58	46	52	6	48	54	6	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
59	47	55	8	49	56	7	9	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
60	46	53	7	48	55	7	9	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
61	45	52	7	47	54	7	9	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
62	45	52	7	47	54	7	9	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
63	48	53	5	50	55	5	7	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
64	49	53	4	50	55	5	6	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
68	50	60	10	52	62	10	12	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
69	50	59	9	52	61	9	11	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
70	48	58	10	50	59	9	11	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
71	49	59	10	51	61	10	12	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
72	47	57	10	49	58	9	11	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
73	47	54	7	48	55	7	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
74	44	51	7	46	53	7	9	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
75	45	52	7	47	54	7	9	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
76	44	53	9	46	55	9	11	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
78	50	55	5	52	56	4	6	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
83	48	64	16	50	66	16	18	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
84	47	59	12	49	60	11	13	67	No	Yes	NA	NA	Yes	CSLT	60	Yes	No
85	47	54	7	48	55	7	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No

Table 3.15-13 Summary of Traffic Noise Impacts at Discrete Noise-Sensitive Receptors under Alternative D

Receptor No. ³	Modeled Traffic Noise Levels ¹ (Leq(h), CNEL) ²							NEPA Impact Analysis			TRPA Impact Analysis			CEQA Impact Analysis ⁹			
	Existing	Existing-Plus-Alternative D	Change from Existing to Existing-Plus-Alternative D	2038-No-Project	2038-Plus-Alternative D	Change from 2038-No-Project to 2038-Plus-Alternative D	Change from Existing to 2038-Plus-Alternative D	FHWA Noise Abatement Criteria, Leq(h) ⁴	Noise Abatement Criterion Exceeded or Approached? ⁵	NEPA Incremental Increase Criterion Exceeded? ⁶	TRPA Land Use-Based Noise Threshold Under Alternative D (CNEL) ⁷	Exceed (or Contribute to an Exceedance of) TRPA Land Use-Based Noise Standard?	TRPA Incremental Increase Criterion Exceeded? ⁸	Local Jurisdiction	Noise Standard of Local Jurisdiction (CNEL) ¹⁰	Exceed (or Contribute to an Exceedance of) Local Noise Standard?	CEQA Incremental Increase Criterion Exceeded? ⁸
86	48	55	7	50	57	7	9	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
87	47	52	5	48	54	6	7	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
95	49	56	7	50	57	7	8	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
96	55	59	4	57	60	3	5	67	No	No	NA	NA	Yes	CSLT	60	Yes	No
97	52	57	5	54	59	5	7	67	No	No	55	Yes	Yes	CSLT	60	Yes	No
98	50	59	9	51	60	9	10	67	No	No	55	Yes	Yes	CSLT	60	Yes	No
136	65	66	1	67	68	1	3	72	No	No	65	Yes	No	CSLT	65	No	No

Notes: dB = decibel, Leq(h) = peak-hour noise level, FHWA = Federal Highway Administration, CNEL = Community Noise Equivalent Level, CSLT = City of South Lake Tahoe, California, EDC = El Dorado County, NA = not applicable

¹ Detailed traffic noise modeling inputs and results are provided in the Noise Study Report (Caltrans2015b); relevant excerpts from the Noise Study Report are included in Appendix K.

² All noise modeling estimated the hourly average noise level during the peak traffic hour (Leq(h)) for a summer day and the Noise Study Report determined that the CNEL values would be similar to the (Leq(h)) values based on a 24-hour noise level measurement conducted in the project area (Caltrans2015b:40 and 238). All noise levels are expressed in A-weighted decibels.

³ This table only includes discrete modeling receptor sites where one or more NEPA, TRPA, CEQA significance criteria and/or a TRPA land use-based CNEL threshold would be exceeded. No significance criteria or TRPA thresholds were predicted to be exceeded at all other modeled discrete receptors. The discrete modeling receptor sites are often referred to as "receptors" in this table and in this EIR/EIS/EIS; however, a single discrete modeling receptor site may be representative of multiple nearby receptors that are equidistant or closer to the nearby roadway that is the predominant source of noise at those receptors. Thus, this EIR/EIS/EIS recognizes that an exceedance of an applicable noise standard at a single modeled receptor site may indicate exposure that would be experienced by land uses (e.g., other surrounding homes) equidistant or closer to the highway in that area. Receptor 142, which is located on the sidewalk next to the edge of pavement at the entrance driveway to Van Sickle Bi-State Park, was not included in this table because it does not represent an outdoor activity area or distinct destination where people gather or otherwise spend time.

⁴ This significance criterion for the NEPA impact analysis is equivalent to the Noise Abatement Criterion (NAC) for the applicable activity category listed in Table 3.15-3. The NAC have been adopted as significance standards by both Caltrans and NDOT.

⁵ The applicable NAC is compared to the predicted noise level for the design year (i.e., 2040) at a noise-sensitive receptor. This comparison is used for both the project-level and cumulative impact analysis. A sound level is considered to "approach" an NAC level if the sound level is 1 dB less than the NAC.

⁶ The NEPA incremental increase criteria are compared to the change in the traffic noise level between existing conditions and the design year (i.e., 2040). This comparison is also used for both the project-level and cumulative impact analysis.

⁷ TRPA's land use-based noise thresholds are listed in Table 3.15-4 and do not apply to receptors located within 300 feet of the edge of US 50 or the edge of the segments of Lake Parkway in Nevada. These receptors are marked with "NA"

⁸ For the TRPA and CEQA analyses, an incremental increase significance criterion of 3 dB is compared to the difference between existing noise levels and existing-plus-alternative noise levels.

⁹ The CEQA impact analysis only applies to receptors located in California.

¹⁰ For receptors located in the City of South Lake Tahoe the applicable noises standard is based on the standards in Table 3.15-5. As explained in Table 3.15-5, for hotels, motels, and other transient lodging facilities that do not have an outdoor activity area such as a pool, the City's exterior noise standard of 65 CNEL does not apply. For receptors located in the unincorporated area of El Dorado County, the transportation noise standard from Chapter 130.37 of the County's zoning ordinance is applied.

Source: Traffic noise levels modelled by LSA (Caltrans2015b). Impact analysis conducted by Ascent Environmental 2016.

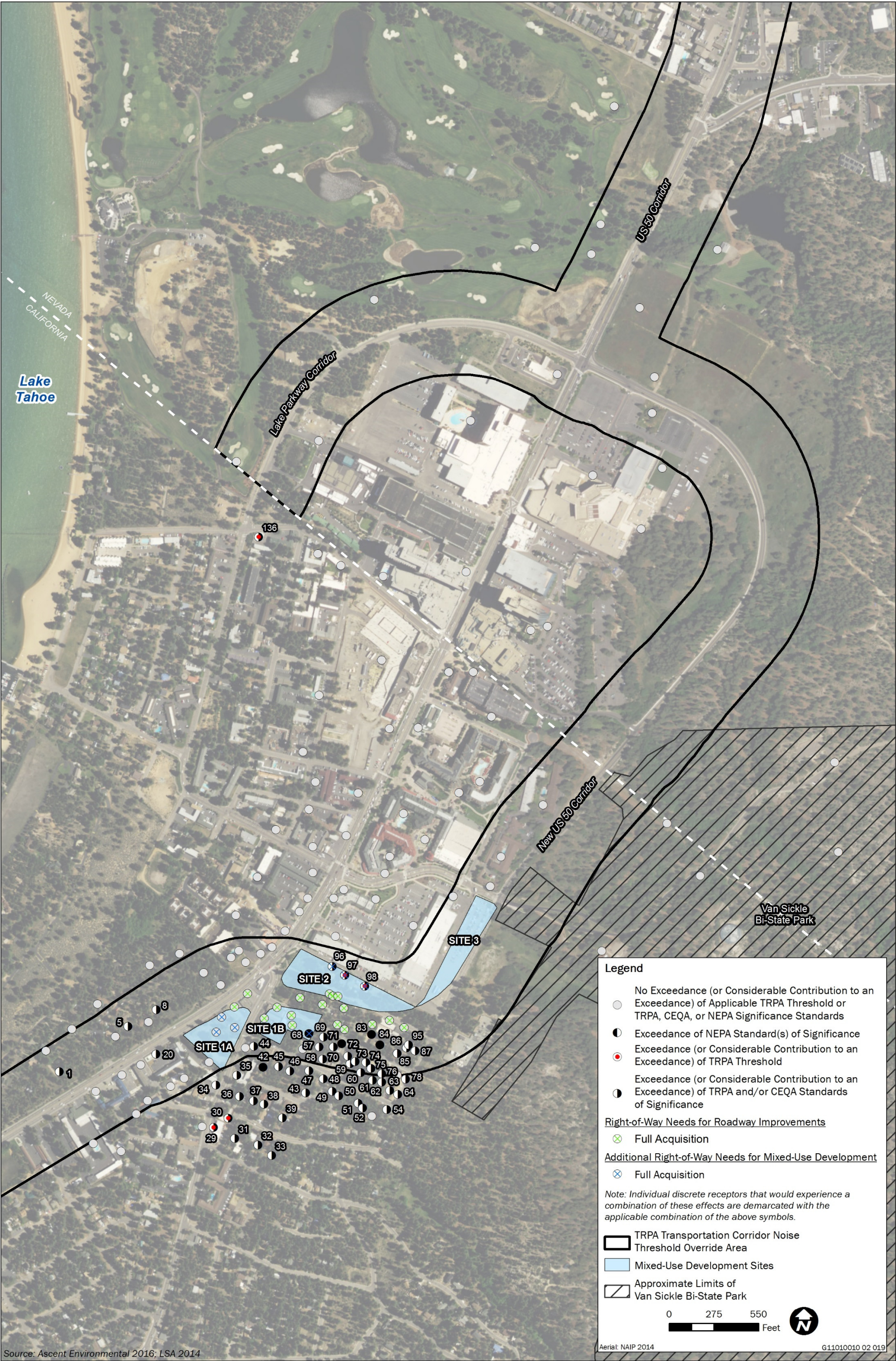


Exhibit 3.15-4

Alternative D Noise Receptors and Noise Impacts

Thirteen receptors would be exposed to noise levels that exceed the transportation noise standards established by the City of South Lake Tahoe, and 46 receptors would experience a CNEL increase equal to or greater than 3 dB, which is a TRPA significance criterion (and a CEQA significance criterion for receptors located in California). These exceedances would occur under existing-plus-Alternative D conditions and/or under cumulative-plus-Alternative D conditions with a considerable contribution of the exceedance directly resulting from the implementation of Alternative D.

As shown in Exhibit 3.15-4, many of these receptors would be closer to the realigned segment of US 50 that would occur with Alternative D than the highway's existing alignment. Fundamentally, Alternative D would move a segment of US 50 (both west- and east-bound lanes), which is the predominant noise source in the area, closer to these receptors. Most of the receptors that would be impacted are located in the Rocky Point neighborhood along Fern Road, Echo Road, Moss Road, Primrose Road, Rocky Point Road, and Chonokis Road.

Receptor 20, which is a motel called the Trailhead Motel located along the east side of US 50 that would not be realigned, could be exposed to interior noise levels that exceed 45 CNEL.

For these reasons this impact would be **significant** for purposes TRPA and CEQA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative D to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Mixed-Use Development including Replacement Housing

Alternative D includes the redevelopment of three multi-use development sites, which would provide replacement housing for displaced residents as well as other commercial uses (e.g., retail, restaurant). Redevelopment of these sites would involve the full and partial acquisition of additional parcels including, as shown in Exhibit 3.15-4, full acquisition of Receptors 68, 96, 97, and 98. Thus, these receptors would not experience the noise impacts listed in Table 3.15-13 after they are removed.

Operation of the land uses constructed on the three multi-use development sites would add additional noise-generating vehicles to the local roadway network. As explained in the "Methods and Assumptions" section above, the traffic volumes used to estimate traffic noise levels in the Noise Study Report were conservatively high such that they also account for the additional vehicle trips that would be generated by operation of the three mixed-use development sites. Also explained above is that the difference in traffic volumes with the transportation improvements and the mixed-use development sites is not substantial given the logarithmic nature of adding and subtracting noise levels (i.e., it takes a doubling of the noise-generating activity, in this case the traffic volume, to result in a 3-dB noise increase). Therefore, there would be no measurable difference in traffic noise levels generated under Alternative D with or without the mixed-use development. As shown in Table 3.15-13, the 65 CNEL contour along the affected segments of US 50 and the affected portions of Lake Parkway in Nevada would not extend more than 300 feet from the roadway edge and, thus, the Environmental Threshold Carrying Capacity established by TRPA for these transportation corridors would not be exceeded. Similarly, there would be no measurable difference in the traffic noise levels predicted at existing discrete sensitive receptors, which are summarized in Table 3.15-13. Therefore, the traffic noise impacts with the mixed-use development sites at existing discrete receptors would be the same as those with the transportation improvements and this impact would be **significant** for purposes of TRPA and CEQA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative D to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential impacts related to the exposure of sensitive receptors to increased traffic noise levels as described above for the replacement housing for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the exposure of sensitive

receptors at another location to increased traffic noise levels would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **significant** impact related to the exposure of sensitive receptors to increased traffic noise levels.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements and the mixed-use development sites included in Alternative D to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Alternative E: Skywalk

Alternative E would not include the realignment of US 50. Alternative E would feature a concrete deck over the entire width and length of existing US 50 within the tourist core between a location about 100 feet south of Stateline Avenue and a location near the northern end of the Montbleu Resort (about 450 feet south of Lake Parkway). None of the existing receptors would be acquired because there would not be any realignment of the US 50 right of way.

Table 3.15-14 summarizes the predicted noise levels that would be experienced at the noise-sensitive receptors that would be most affected by Alternative E. The receptors listed in Table 3.15-14 are those that would experience exceedance of applicable thresholds or significance criteria under existing-plus-Alternative E conditions and/or under cumulative-plus-Alternative E conditions with a considerable contribution of the exceedance directly resulting from the implementation of Alternative E. The locations of all the impacted receptors and the type of noise impact they would experience (i.e., NEPA, TRPA, and/or CEQA) are shown in Exhibit 3.15-5.

With Alternative E, none of the receptors would be exposed to noise levels greater than the applicable FHWA noise abatement criteria or experience increases in traffic noise that are considered substantial by Caltrans or NDOT by the design year (i.e., 2040). Therefore, the environmental consequences from traffic noise exposure of implementing Alternative E would **not be adverse** for purposes of NEPA.

Receptor 136, which is a motel called the Cedar Suites & Inn located on the corner of Stateline Avenue and Pine Boulevard, would be exposed to a noise level greater than the 65 CNEL threshold established in the Tourist Core Area Plan (City of South Lake Tahoe and TRPA 2013:C-13). This exceedance would occur under the cumulative-plus-Alternative E condition with a 1 dB contribution by Alternative E. See the discussion below regarding the 3-dB increase significance standard TRPA uses for environmental compliance.

None of the modeled receptors would experience a CNEL increase equal to or greater than 3 dB, which is both a TRPA significance criterion and a CEQA significance criterion for receptors located in California. Alternative E, however, would result in or contribute to an exceedance of exceed the applicable transportation noise standards established by the City of South Lake Tahoe, including Receptors 20, 99, 102, 107, 135, and 136. Receptor 20, which is a motel called the Trailhead Motel, and Receptor 107, which is a motel called the Park Tahoe Aspen Court, could also potentially experience interior noise levels that exceed 45 CNEL under cumulative conditions, with a measurable contribution from Alternative E. Therefore, this impact would be **significant** for purposes of TRPA and CEQA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative E to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Table 3.15-14 Summary of Traffic Noise Impacts at Discrete Noise-Sensitive Receptors under Alternative E

Receptor No. ³	Modeled Traffic Noise Levels ¹ ($L_{eq(h)}$, CNEL) ²							NEPA Impact Analysis			TRPA Impact Analysis			CEQA Impact Analysis ⁹			
	Existing	Existing-Plus-Alternative E	Change from Existing to Existing-Plus-Alternative E	2038-No-Project	2038-Plus-Alternative E	Change from 2038-No-Project to 2038-Plus-Alternative	Change from Existing to 2038-Plus-Alternative E	FHWA Noise Abatement Criteria, $L_{eq(h)}$ ⁴	Noise Abatement Criterion Exceeded or Approached? ⁵	NEPA Incremental Increase Criterion Exceeded? ⁶	TRPA Land Use-Based Noise Threshold Under Alternative E (CNEL) ⁷	Exceed (or Contribute to an Exceedance of) TRPA Land Use-Based Noise Standard?	TRPA Incremental Increase Criterion Exceeded? ⁸	Local Jurisdiction	Noise Standard of Local Jurisdiction (CNEL) ¹⁰	Exceed (or Contribute to an Exceedance of) Local Noise Standard?	CEQA Incremental Increase Criterion Exceeded? ⁸
20	67	68	1	70	70	0	3	72	No	No	NA	NA	No	CSLT	65	Yes	No
99	65	66	1	67	67	0	2	72	No	No	NA	NA	No	CSLT	65	Yes	No
102	67	68	1	69	69	0	2	72	No	No	NA	NA	No	CSLT	65	Yes	No
107	69	70	1	71	71	0	2	72	No	No	NA	NA	No	CSLT	65	Yes	No
135	66	67	1	68	68	0	2	72	No	No	NA	NA	No	CSLT	65	Yes	No
136	65	64	-1	67	68	1	3	72	No	No	65	Yes	No	CSLT	65	Yes	No

Notes: dB = decibel, $L_{eq(h)}$ = peak-hour noise level, FHWA = Federal Highway Administration. CNEL = Community Noise Equivalent Level, CSLT = City of South Lake Tahoe, California, EDC = El Dorado County, NA = not applicable

¹ Detailed traffic noise modeling inputs and results are provided in the Noise Study Report (Caltrans2015b); relevant excerpts from the Noise Study Report are included in Appendix K.

² All noise modeling estimated the hourly average noise level during the peak traffic hour ($L_{eq(h)}$) for a summer day and the Noise Study Report determined that the CNEL values would be similar to the ($L_{eq(h)}$) values based on a 24-hour noise level measurement conducted in the project area (Caltrans2015b:40 and 238). All noise levels are expressed in A-weighted decibels.

³ This table only includes discrete modeling receptor sites where one or more NEPA, TRPA, CEQA significance criteria and/or a TRPA land use-based CNEL threshold would be exceeded. No significance criteria or TRPA thresholds were predicted to be exceeded at all other modeled discrete receptors. A single discrete modeling receptor site may be representative of multiple nearby receptors (e.g., surrounding homes) that are equidistant or closer to the nearby roadway noise source. Thus, this EIR/EIS/EIS recognizes that and exceedance of an applicable noise standard at a single modeled receptor site may indicate exposure that would be experienced by land uses equidistant or closer to the highway in that area.

⁴ This significance criterion for the NEPA impact analysis is equivalent to the Noise Abatement Criterion (NAC) for the applicable activity category listed in Table 3.15-3. The NAC have been adopted as significance standards by both Caltrans and NDOT.

⁵ The applicable NAC is compared to the predicted noise level for the design year (i.e., 2040) at a noise-sensitive receptor. This comparison is used for both the project-level and cumulative impact analysis. A sound level is considered to "approach" an NAC level if the sound level is 1 dB less than the NAC.

⁶ The NEPA incremental increase criteria are compared to the change in the traffic noise level between existing conditions and the design year (i.e., 2040). This comparison is also used for both the project-level and cumulative impact analysis.

⁷ TRPA's land use-based noise thresholds are listed in Table 3.15-4 and do not apply to receptors located within 300 feet of the edge of US 50 or the edge of the segments of Lake Parkway in Nevada. These receptors are marked with "NA"

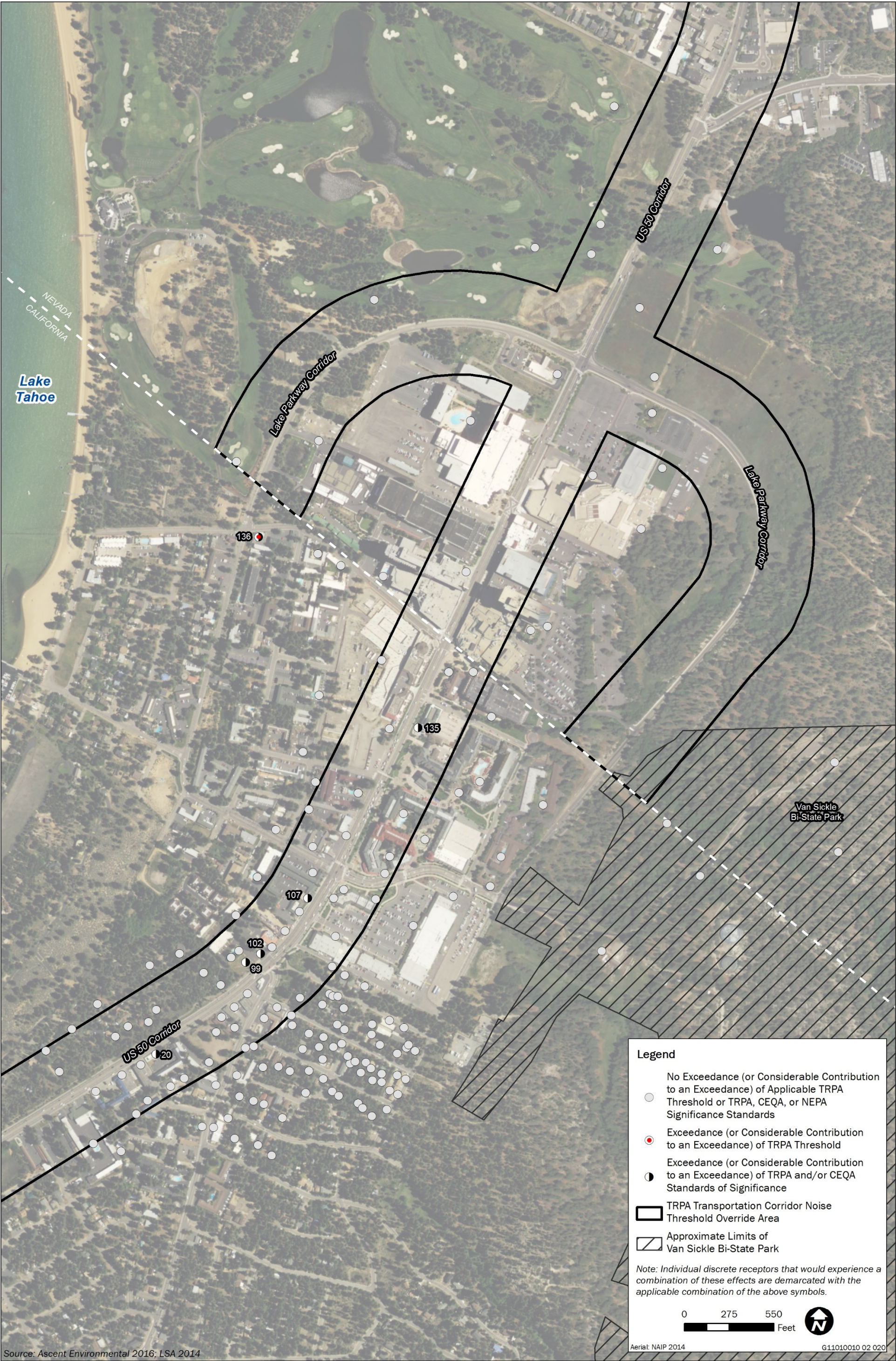
⁸ For the TRPA and CEQA analyses, an incremental increase significance criterion of 3 dB is compared to the difference between existing noise levels and existing-plus-alternative noise levels.

⁹ The CEQA impact analysis only applies to receptors located in California.

¹⁰ For receptors located in the City of South Lake Tahoe the applicable noises standard is based on the standards in Table 3.15-5. As explained in Table 3.15-5, for hotels, motels, and other transient lodging facilities that do not have an outdoor activity area such as a pool, the City's exterior noise standard of 65 CNEL does not apply. For receptors located in the unincorporated area of El Dorado County, the transportation noise standard from Chapter 130.37 of the County's zoning ordinance is applied.

Source: Traffic noise levels modelled by LSA (Caltrans2015b). Impact analysis conducted by Ascent Environmental 2016.

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Source: Ascent Environmental 2016; LSA 2014

Impact 3.15-4: Noise/land use compatibility of mixed-use redevelopment sites

Alternatives A and E would not include the redevelopment of any areas within the project site that would expose new land uses to excessive noise levels.

With Alternatives B, C, and D, the mixed-use redevelopment sites would not be located where they would be exposed to noise levels that exceed TRPA transportation corridor contour-based noise thresholds or TRPA land-use based noise thresholds. Therefore, this impact would be less than significant for purposes of TRPA threshold compliance.

Common outdoor activity areas could be included on the mixed-use redevelopment sites that would potentially be developed under Alternatives B, C, and D. These common outdoor activity areas could be exposed to traffic noise levels that exceed the City of South Lake Tahoe's 60 CNEL standard.

NEPA Environmental Consequences: Mitigation Measure 3.15-4 has been incorporated into Alternatives B, C, and D to further reduce to the extent feasible the potential to expose land uses to an incompatible noise environment; No Impact for Alternatives A and E

CEQA/TRPA Impact Determinations: Less than Significant for Alternatives B, C, and D after implementation of Mitigation Measure 3.15-4; No Impact for Alternatives A and E

Alternative A: No Build (No Project)

Alternative A does not include the redevelopment of any areas within the project site. Therefore, Alternative A would not locate new noise-sensitive receptors where they would be exposed to noise levels that exceed applicable federal noises standards, TRPA noise thresholds or standards, or noise standards established by the local City or County. There would be **no impact** pertaining to the exposure of new land uses to excessive noise levels for NEPA, CEQA, and TRPA purposes.

Alternative B: Triangle (Locally Preferred Action)

Alternative B would include the redevelopment of three sites with a mix of residential and commercial uses. Details about design of these mixed-use redevelopment sites are not known at this time. The purpose of the redevelopment sites would be to provide relocation opportunities for dislocated residents and business owners in the immediate vicinity. The location and potential mix of uses that could be developed at these sites are shown in Exhibit 3.15-2, as well as Exhibits 2-9 and 2-10. Multi-family housing units would be the most noise-sensitive of the land uses located on these sites.

Site 1 and Site 3 are part of the Tourist Core Area Plan and are zoned as Tourist Center Mixed-Use and Tourist Center Core, respectively, both with a TRPA land use-based noise threshold of 65 CNEL (City of South Lake Tahoe and TRPA 2013:5-7 and C-13). However, as shown in Exhibit 3.15-2, the southern portion of Site 1 and all of Site 3 would be located within 300 feet of the edge of the realigned US 50 where TRPA's land use-based 65 CNEL threshold would not apply. Instead, TRPA's contour-based highway standard for US 50 would apply.

Site 2 currently includes areas with three separate land use designations. One portion of Site 2 is part of the Tourist Core Area Plan and zoned as Tourist Center Neighborhood Mixed-Use with a TRPA noise threshold of 65 CNEL (City of South Lake Tahoe and TRPA 2013:5-7 and C-13). Another portion of Site 2 is also part of the Tourist Core Area Plan but is zoned as Open Space with a TRPA noise threshold of 55 CNEL (City of South Lake Tahoe and TRPA 2013:5-7 and C-13). A third portion of Site 2 is currently part of PAS 092 Pioneer/Ski Run with a TRPA noise threshold of 55 CNEL (TRPA 2002c:3). It is assumed that the portion of Site 2 that is currently zoned as Open Space would be rezoned and assigned a TRPA noise threshold of 65 CNEL that would be consistent with other areas zoned for mixed-use. Similar to the southern portion of Site 1, the

southern portion of Site 2, including the portion in the PAS 092 Pioneer/Ski Run, would be located within 300 feet of the edge of the realigned US 50 where TRPA's contour-based highway standard for US 50 would apply in place of TRPA's land use-based CNEL thresholds. This is also shown in Exhibit 3.15-2.

As shown in Table 3.15-10, the 65 CNEL contour along the nearest segment of realigned US 50 would not extend more than 300 feet from the edge of the highway under cumulative-plus-Alternative B conditions. Therefore, no portions of Sites 1, 2, and 3 would be exposed to noise levels that exceed TRPA noise thresholds. This impact would be less than significant for purposes of TRPA threshold compliance.

Interior noise levels of these developments would be required to meet interior noise level standards pursuant to Title 24 of the California Code of Regulations.

Common outdoor activity areas on these development sites, particularly those associated with residential use, would be subject to the City of South Lake Tahoe's 60 CNEL standard presented in Table 3.15-5. According to the Noise Study Report, the 60 CNEL traffic noise contour would extend 304 feet from the centerline of the nearby segment of realigned US 50 (Caltrans 2015b:173). Thus, some areas of Site 1 and Site 2 and all of Site 3 would be located within the 60 CNEL traffic noise contour. If any outdoor activity areas were located within this distance without any intervening buildings or structures to provide noise protection, then they would be exposed to noise levels that exceed the noise standard established by the City of South Lake Tahoe under cumulative-plus-Alternative B conditions. Moreover, traffic on local roadways could also contribute to noise on the sites (i.e., Lake Tahoe Boulevard west of Site 1, Pioneer Trail between Sites 1 and 2, Heavenly Village Way north of Site 3). As a result, this would be a **potentially significant** impact for purposes of CEQA and TRPA.

Conclusion

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative B to further reduce to the extent feasible the environmental consequences related to the potential to expose land uses to an incompatible noise environment.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential impacts related to the exposure of land uses to an incompatible noise environment as described above for the replacement housing for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the noise/land use compatibility impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Alternative C: Triangle One-Way

Alternative C would also include the redevelopment of three sites with a mix of residential and commercial uses. The location of the three development sites would be the same as with Alternative B and shown in Exhibit 3.15-3, as well as Exhibits 2-9 and 2-10. The new realigned portion of US 50 would only carry east-bound traffic and the existing US 50 alignment would continue to carry west-bound traffic. Thus, as shown in Exhibit 3.15-3, all of Sites 1, 2, and 3 would be located within 300 feet of the edge of east-bound US 50 and/or west-bound US 50 where TRPA's contour-based highway standard for US 50 would apply in place of TRPA's land use-based CNEL thresholds.

As shown in Table 3.15-10, the 65 CNEL contour along the nearest segment of both the east- and west-bound segments of US 50 would not extend more than 300 feet from the edge of the highway under cumulative-plus-Alternative C conditions. Therefore, no portions of Sites 1, 2, and 3 would be exposed to noise levels that exceed TRPA noise thresholds. This impact would be less than significant for purposes of TRPA threshold compliance.

As with Alternative B, interior noise levels of these developments would be required to meet interior noise level standards pursuant to Title 24 of the California Code of Regulations.

Common outdoor activity areas on these development sites, particularly those associated with residential use, would be subject to the City of South Lake Tahoe's 60 CNEL standard presented in Table 3.15-5. According to the Noise Study Report, the 60 CNEL traffic noise contour along nearby east-bound US 50 would extend 190 feet from the centerline of the nearby segment of east-bound US 50 and the 263 feet from the centerline of the nearby segment of west-bound US 50 (Caltrans 2015b:174). Thus, most of Site 1 and Site 2 and all of Site 3 would be located within the 60 CNEL traffic noise contour. If any outdoor activity areas were located within this distance without any intervening buildings or structures to provide noise protection, then they would be exposed to noise levels that exceed the noise standard established by the City of South Lake Tahoe. Moreover, traffic on local roadways could also contribute to noise on the sites (i.e., Pioneer Trail between Sites 1 and 2, Heavenly Village Way north of Site 3). As a result, this would be a **potentially significant** impact for purposes of CEQA and TRPA.

Conclusion

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative C to further reduce to the extent feasible the environmental consequences related to the potential to expose land uses to an incompatible noise environment.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential impacts related to the exposure of land uses to an incompatible noise environment as described above for the replacement housing for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the noise/land use compatibility impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Alternative D: Project Study Report Alternative 2

Alternative D would include the redevelopment of three sites with a mix of residential and commercial uses. The locations of the three development sites are shown in Exhibit 3.15-4, as well as Exhibits 2-11 and 2-12.

As shown in Exhibit 3.15-4, all of the redevelopment sites would be located within 300 feet of the edge of the realigned portion of US 50. Thus, TRPA's contour-based highway standard of for US 50 would apply to all the redevelopment sites.

As shown in Table 3.15-10, the 65 CNEL contour along the nearest segment of realigned US 50 would not extend more than 300 feet from the edge of the highway under cumulative-plus-Alternative D conditions. Therefore, no portions of the redevelopment sites would be exposed to noise levels that exceed TRPA noise thresholds. This impact would be less than significant for purposes of TRPA threshold compliance.

Interior noise levels of these developments would be required to meet interior noise level standards pursuant to Title 24 of the California Code of Regulations.

Common outdoor activity areas and outdoor activity areas of single family homes on these development sites would be subject to the City of South Lake Tahoe's 60 CNEL standard presented in Table 3.15-5. According to the Noise Study Report, the 60 CNEL traffic noise contour would extend 304 feet from the centerline of the nearby segment of realigned US 50 (Caltrans 2015b:175). Thus, all of the sites would be located within the 60 CNEL traffic noise contour. If any outdoor activity areas were located within this distance without any intervening buildings or structures to provide noise protection, then they would be exposed to noise levels that exceed the noise standard established by the City of South Lake Tahoe. Moreover, traffic on local roadways could also contribute to noise on the sites (e.g., Lake Tahoe Boulevard west of Site 1A, Pioneer Trail that splits between Sites 1A and 1B, Heavenly Village Way north of Site 3). As a result, this would be a **potentially significant** impact for purposes of TRPA and CEQA.

Conclusion

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative D to further reduce to the extent feasible the environmental consequences related to the potential to expose land uses to an incompatible noise environment.

Construction of replacement housing at a location other than the three mixed-use development sites could result in similar potential impacts related to the exposure of land uses to an incompatible noise environment as described above for the replacement housing for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the noise/land use compatibility impacts would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Alternative E: Skywalk

Alternative E does not include the redevelopment of any areas within the project site. Therefore, Alternative E would not locate new noise-sensitive receptors where they would be exposed to noise levels that exceed applicable federal noises standards, TRPA noise thresholds or standards, or noise standards established by the local City or County. There would be **no impact** pertaining to the exposure of new land uses to excessive noise levels for purposes of NEPA, CEQA, and TRPA.

3.15.4 Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure 3.15-1: Implement measures to reduce exposure of sensitive receptors to noise generated by nighttime construction activity

The following noise abatement measures would apply for Alternative E only for the purposes of NEPA, CEQA, and TRPA.

The project proponent shall implement the following measures to reduce the level of construction noise exposure during the evening and nighttime hours between 6:30 p.m. and 8:00 a.m. The measures are in addition to the measures already required by TRPA's Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration (TRPA [no date]a:6; TRPA [no date]b:4 to 5).

- ▲ No noise-generating construction activity shall be performed at night unless necessary to minimize traffic conflicts.
- ▲ Designate a disturbance coordinator and post that person's telephone number conspicuously around all construction sites and provide to nearby residences. The disturbance coordinator shall receive all public complaints and be responsible for determining the cause of the complaint and implementing any feasible measures to alleviate the problem.
- ▲ Provide advanced notice to owners of all residential land uses, tourist accommodations, and commercial land uses located within 1,110 feet where nighttime construction activity would take place. This noticing shall inform the recipients of when and where nighttime construction would occur and the types of measures being implemented to lessen the impact at potentially affected receptors. This noticing shall also provide the contact information for the designated disturbance coordinator.
- ▲ Place temporary noise barriers or noise curtains as close to the noise source or receptor as possible such that it will break the line of sight between the source and receptor.
- ▲ Coordinating with owners of all tourist accommodation units within this distance to limit nighttime construction activity during those times of year and days of the week when tourist occupancy is the lowest, to the extent feasible.

- ▲ At equipment staging areas used to support nighttime construction activity, locate all equipment as far as possible from nearby noise-sensitive receptors. Temporary noise barriers shall be placed at these equipment staging areas to shield nearby noise-sensitive receptors from excessive noise generated at staging areas.
- ▲ Prohibit backup alarms on all trucks and equipment used during nighttime activity and provide an alternate warning system, such as a flagman or radar-based alarm, which is compliant with state regulations. Alternatively, use back up alarms that are programed to generate noise levels no more than 10 dB louder than background noise levels.
- ▲ Arrival of trucks hauling construction materials and equipment to staging areas and construction sites shall occur only between the hours of between 8:00 a.m. and 6:30 p.m. Departure of trucks hauling away debris from staging areas and construction sites shall also occur only between the hours of between 8:00 a.m. and 6:30 p.m. This requirement shall be provided to all haulers at the time of the initial hauling request.
- ▲ Offer hotel accommodations to residents who would temporarily be exposed to interior noise levels that exceed the interior noise standard of 45 CNEL. Alternative overnight accommodations should be in a location that is not impacted by construction noise.

Significance after Mitigation

Implementation of Mitigation Measure 3.15-1 would reduce the level of noise exposure at receptors located near locations where nighttime construction activity would occur with Alternative E. However, it's not certain that noise exposure levels would be reduced to less than the TRPA applicable land use-based CNEL thresholds. Because residents may refuse the offer of alternative overnight accommodations, they could still experience noise levels that would result in sleep disturbance. Therefore, this impact would be **significant and unavoidable** for Alternative E for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the construction of Alternative E to further reduce to the extend feasible the environmental consequences related to short-term construction noise.

Mitigation Measure 3.15-2a: Implement measures to reduce levels of ground vibration to limit the level of human annoyance

The following noise abatement measures would apply to the Alternative B, C, and D transportation improvements for the purposes of NEPA, CEQA, and TRPA.

The project proponent shall require the following measures be implemented for all pile driving activity, if required, related to construction of the pedestrian bridge:

- ▲ All necessary piles shall be driven with sonic pile drivers instead of impact pile drivers;
- ▲ To further reduce pile-driving ground vibration impacts, holes shall be predrilled to the maximum feasible depth. This would reduce the number of blows and/or the amount of time required to seat the pile, and would concentrate the pile-driving activity closer to the ground where noise can be attenuated more effectively;
- ▲ Pile driving, earth moving, and ground-disturbance activities shall be phased so as not to occur simultaneously in areas close to off-site sensitive receptors. The total vibration level produced could be substantially less when each vibration source is operated separately; and
- ▲ Designate a disturbance coordinator and post that person's telephone number conspicuously around the locations where pile driving would be performed. The disturbance coordinator shall receive all public complaints and be responsible for determining the cause of the complaint and implementing any feasible

measures to alleviate the problem. The contact information of the disturbance coordinator shall also be provided to the owners of all properties for which a pre-inspection survey is performed.

Mitigation Measure 3.15-2b: Implement measures to reduce exposure of buildings and other structures to levels of ground vibration that could result in structural damage and to limit the level of human annoyance

The following noise abatement measures would apply for Alternative E only for the purposes of NEPA, CEQA, and TRPA.

The project proponent shall hire a qualified Nevada- and California-registered geotechnical engineer to perform site-specific study of the geotechnical conditions at the proposed skywalk site. The study shall determine the propagation rate of ground vibration in the area, taking into account local soil conditions, the age of the nearby buildings, and other factors. The study shall determine whether nearby structures and buildings could experience structural damage from pile driving activity at the skywalk site. The study shall also determine whether nearby residential dwellings, tourist accommodation units, and/or commercial land uses would experience levels of ground vibration that exceed FTA's vibration standard of 80 VdB for human response.

The study shall also include a geotechnical inspection of all buildings and structures located within 100 feet of locations where impact pile driving would occur or within 60 feet where sonic pile driving would occur. The inspection shall document pre-existing conditions, including any pre-existing structural damage. The pre-inspection survey of the buildings shall be completed with the use of photographs, videotape, or visual inventory, and shall include inside and outside locations. All existing cracks in walls, floors, driveways shall be documented with sufficient detail for comparison during and upon completion of pile driving activities to determine whether new actual vibration damage has occurred. The results of both surveys shall be provided to the project proponent for review and acceptance of conclusions. Should damage occur during construction, construction operations shall be halted until the problem activity can be identified. Once identified, the problem activity shall be modified to eliminate the problem and protect the adjacent buildings. Any damage to nearby buildings shall be repaired back to the pre-existing condition at the expense of the project proponent.

The study shall also identify site-specific measures to lessen the potential for structural damage and to reduce the potential for human response from ground vibration associated with construction of the skywalk and the project proponent shall require construction contractor(s) to implement the measures identified in the study. Such measures shall include, but are not limited to, the following:

- ▲ All necessary piles shall be driven with sonic pile drivers instead of impact pile drivers, unless sonic pile driving is determined to be infeasible by a qualified geotechnical engineer;
- ▲ To the extent feasible, project structures shall be designed so that impact-driven piles are placed a sufficient distance from nearby buildings and structures to minimize the potential to cause structural damage (e.g., 100 feet, assuming normal propagation conditions), and sonic-driven piles are placed at least 60 feet from nearby buildings and structures to minimize the potential to cause structural damage (e.g., 60 feet, assuming normal propagation conditions);
- ▲ To the extent feasible, project structures shall be designed so that impact-driven piles are placed a sufficient distance from residences and tourist accommodation units to minimize human response (e.g., 300 feet, assuming normal propagation conditions), and sonic-driven piles are placed a sufficient distance from nearby buildings and structures to minimize human response (e.g., 175 feet, assuming normal propagation conditions);
- ▲ To further reduce pile-driving ground vibration impacts, holes shall be predrilled to the maximum feasible depth. This would reduce the number of blows and/or the amount of time required to seat the pile, and would concentrate the pile-driving activity closer to the ground where noise can be attenuated more effectively;

- ▲ Pile driving, earth moving, and ground-disturbance activities shall be phased so as not to occur simultaneously in areas close to off-site sensitive receptors. The total vibration level produced could be substantially less when each vibration source is operated separately;
- ▲ Designate a disturbance coordinator and post that person's telephone number conspicuously around the skywalk construction site and provide to nearby residences. The disturbance coordinator shall receive all public complaints and be responsible for determining the cause of the complaint and implementing any feasible measures to alleviate the problem. The contact information of the disturbance coordinator shall also be provided to the owners of all properties for which a pre-inspection survey is performed; and
- ▲ Provide advanced notice to owners of all residential land uses, tourist accommodations, and commercial land uses located within 300 feet of where impact pile driving would take place or within 175 feet of where sonic pile driving would take place. This noticing shall inform the recipients of when and where pile driving would occur and the types of measures being implemented to lessen the impact at potentially affected receptors. This noticing shall also provide the contact information for the designated disturbance coordinator.

Significance after Mitigation

With implementation of Mitigation Measure 3.15-2a, the level of construction-generated groundborne vibration experienced at nearby buildings for Alternatives B, C, and D would be reduced to less than FTA's vibration standard of 80 VdB for human response at residential land uses. Therefore, implementation of Mitigation Measure 3.15-2a would reduce the ground vibration impact to a **less-than-significant** level for Alternatives B, C, and D for the purposes of CEQA and TRPA.

With implementation of Mitigation Measure 3.15-2b, the potential for groundborne vibration generated by pile driving at the skywalk site with Alternative E to result in structural damage to nearby buildings and structures and to adversely affect occupants of nearby residential dwellings and tourist accommodations units would be reduced. However, because pile driving would occur in close proximity to existing structures and buildings, it is not certain that the measures required by Mitigation Measure 3.15-2b would reduce ground vibration levels at nearby structures to less than FTA's vibration standard of 0.20 in/sec PPV for structural damage. Moreover, because pile driving would occur in close proximity to existing residential dwellings, tourist accommodation units, and commercial land uses it is not certain that the measures required by Mitigation Measure 3.15-2b would reduce ground vibration at these receptors to levels less than FTA's vibration standard for human response. Therefore, this impact would be **significant and unavoidable** with Alternative E for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternatives B, C, D, and E to further reduce to the extent feasible the environmental consequences related to ground vibration during construction.

Mitigation Measure 3.15-3a: Implement traffic noise reduction measures to reduce traffic noise exposure at affected receptors

The following noise abatement measures would apply to the Alternative B transportation improvements and mixed-use redevelopment sites for the purposes of NEPA, CEQA, and TRPA.

Performance Requirements

Traffic noise reduction measures shall be implemented to achieve the following:

1. Ensure that Receptors 80, 88, 89, 90, and 91 are not exposed to an average daily traffic noise level that exceeds the land use-based 55 CNEL threshold established in TRPA's Pioneer/Ski Run Plan Area Statement 092 (TRPA 2002c:3) and that Receptor 136 is not exposed to an average daily traffic noise level that exceeds the land use-based 65 CNEL threshold established in TRPA's Tourist Core Area Plan (City of South Lake Tahoe and TRPA 2013:5-3 to 5-4) under cumulative conditions. These land use-based CNEL

thresholds apply at all portions of these receptor parcels that are more than 300 feet from the edge of US 50. This performance requirement shall take priority over Performance Requirements 3 and 4;

2. TTD shall offer to retrofit the South Shore Inn (Receptor 55) sufficiently to ensure that its ambient interior noise levels do not exceed 45 CNEL with windows and doors closed. However, the owners of the motel may choose to refuse this offer;
3. To the extent feasible, reduce traffic noise levels at those receptors identified in Table 3.15-11 that would experience traffic noise levels that exceed or approach the applicable NAC and/or experience a traffic noise level increase greater than Caltrans's incremental increase criterion of 12 dB. For NEPA purposes, the feasibility of achieving this performance requirement can be based on the Noise Abatement Decision Report prepared for the project (Caltrans 2016), which was prepared pursuant to guidance in Caltrans's Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects (Caltrans 2011) and 23 CFR 772; and
4. To the extent feasible, reduce traffic noise levels at those receptors identified in Table 3.15-11 that would experience a traffic noise level that exceeds the applicable local noise standard (established by the City of South Lake Tahoe), and/or would experience a traffic noise level increase of 3 dB or greater.

Noise Reduction Features

Noise-reduction features may include, but are not limited to, any combination of the following:

- ▲ Paving the nearby segment of roadway with rubberized hot-mix asphalt (RHMA) or equivalent surface treatment with known noise-reducing properties on top of the roadway surface. The RHMA overlay shall be designed with appropriate thickness and rubber component quantity (typically 15 percent by weight of the total blend), such that traffic noise levels are reduced by an average of 4 to 6 dB (noise levels vary depending on travel speeds, meteorological conditions, and pavement quality) as compared to noise levels generated by vehicle traffic traveling on standard asphalt. RHMA has been found to achieve this level of noise reduction in other parts of California (Sacramento County 1999). Pavement will require more frequent than normal maintenance and repair to maintain its noise attenuation effectiveness.
- ▲ Installation of outdoor sound barriers between affected receptors and the roadway segments that are the predominant noise source at the receptors. The sound barriers must be constructed of solid material (e.g., wood, brick, adobe, an earthen berm, boulders, or combination thereof). The reflectivity of each sound barrier will be minimized to ensure that traffic noise reflected off the barrier does not contribute to an exceedance of applicable TRPA CNEL standards at other receptors. The level of sound reflection from a barrier can be minimized with a textured or absorptive surface or with vegetation on or next to the barrier. Scenic quality factors will be taken into account during design, such as using more natural materials (e.g., berms and boulders) to reduce the visible mass of a wall. Mitigation Measure 3.7-3 also proposes the use of a sound barrier to attenuate impacts from headlights shining onto residential properties and describes details to ensure the barriers would not cause negative visual impacts (see Section 3.7, "Visual Resources/Aesthetics"). All barriers will be designed to blend into the restored landscape along the highway, to the extent feasible. Ensuring a character consistent with the surrounding area may involve the use of strategically placed boulders, native trees, or other vegetation; the addition of special materials (e.g., wood or stonework) on the façade of the sound wall; and/or a sound wall that is covered in vegetation. The location and design of sound barriers shall adhere to any space requirements for snow removal on the adjacent roadway. If desired a sound barrier can be divided into two overlapping segments with a gap in the overlapped portion to provide pedestrian access from one side to the other.

The specific location, length, height, and design of noise barriers for Alternative B must be defined during engineering design development. It is not feasible to provide engineering details of noise barriers prior to the initiation of preliminary engineering for the transportation improvements. For conceptual planning purposes, however, based on the environmental planning-level noise analysis in this document, the approximate location and height of noise barriers for Alternative B are as follows:

- Barriers would need to be built on both the north and south sides of the realigned US 50 alignment to protect affected residences behind them. The approximate length is estimated to be in the range of 1,000 to 1,200 feet on each side of the highway. The height needed for an approximately 5 dB attenuation would be between 6 to 8 feet above the road surface. Noise barriers would be entirely within the public right-of-way.
- The conceptual extent of the south barrier would be from the intersection of realigned US 50 and Pioneer Trail (near the existing 90-degree bend in Primrose Road close to Pioneer Trail) east to the curve of the highway onto the Montreal Road alignment (near the existing intersection of Echo Road and Montreal Road).
- The conceptual extent of the north barrier would be from the intersection of realigned US 50 and Pioneer Trail (near the existing intersection of Moss Road and Pioneer Trail) east to beyond Fern Road (near the existing corner of the back parking area of Heavenly Village Center).
- ▲ Reduced vehicle speeds through posted speed limits, advisory signs, and/or design features that serve as traffic calming elements (e.g., median barrier, center islands, and raised crosswalks). The design of any special traffic-calming features shall not prevent the ability to provide adequate snow removal of any surfaces used for driving, walking, or biking.
- ▲ Offer to the property owners of residences, motels/hotels, or other tourist accommodation units where the interior noise levels would exceed 45 CNEL, increased noise insulation of exterior walls to improve the Sound Transmission Class (STC) of those walls, including but not limited to added insulation, upgrades to drywall, acoustical sound absorption panels, new windows, and new exterior siding. For residences or tourist accommodation units that do not currently have air conditioning, install an air conditioning system if necessary to ensure that residents can close all windows and doors during nighttime hours and maintain adequate interior comfort.
- ▲ Acquire properties where the noise level would exceed TRPA thresholds, applicable Caltrans noise abatement criteria, and/or applicable local noise standards; or where traffic noise levels would increase by 3 dB CNEL or greater. Acquisition of additional properties shall only occur if other feasible noise reduction measures are not available to achieve the applicable standards or minimize traffic noise increases to less than 3 dB CNEL.

Selection and Design Process

The selection and design of specific traffic noise reduction measures shall be supported by a site-specific noise abatement assessment conducted by a qualified acoustical engineer or consultant selected by the project proponent. This study shall be fully funded by the project proponent and approved by the project proponent, TRPA, and Caltrans prior to project construction. If necessary to support the effectiveness of selected noise reduction measures, the site-specific noise abatement assessment may involve additional sound level measurements and/or the use of detailed site-specific modeling with software such as FHWA's Traffic Noise Model (FHWA 2006), SoundPLAN (SoundPLAN 2015) or CadnaA (DataKustik 2015).

For those receptors predicted to experience an exceedance of NEPA significance criteria for traffic noise, as identified in Table 3.15-11, the feasibility of constructing a sound barrier, for NEPA purposes, shall be based on the results of the Noise Abatement Decision Report (Caltrans 2016), which was prepared pursuant to guidance in Caltrans's Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects (Caltrans 2011) and 23 CFR 772.

TTD shall prepare a study supplemental to the Noise Abatement Decision Report to identify all necessary measures to ensure attainment of all applicable TRPA land use-based CNEL thresholds. The supplemental study shall also identify all feasible measures to reduce traffic noise increases to less than 3 dB and/or reduce traffic noise levels to less than the applicable local noise standards, with specific attention to the application of the City's noise standard at the outdoor activity areas of residential and tourist accommodation land uses. In

addition, the supplemental study shall identify, and TTD shall select, the set of feasible noise reduction measures that would benefit the most receptors and prioritize the attainment of applicable NAC ahead of the applicable local noise standard.

Significance after Mitigation

Implementation of Mitigation Measure 3.15-3a would, at a minimum, ensure that receptors located more than 300 feet from the edge of US 50 would not be exposed to traffic noise levels that exceed applicable TRPA land use-based exterior CNEL thresholds. Based on the traffic noise modeling summarized in Table 3.15-11, this would be achieved with reductions of 3, 2, 2, 1, 2, and 3 dB at Receptors 80, 88, 89, 90, 91, and 136, respectively. A sound barrier that is just tall enough to break the line of sight between vehicles traveling on a roadway and ground level receptors results in at least 5 dB of noise reduction and can achieve an approximate 1 dB additional reduction for each 2 feet of height above where the sound barrier breaks the line of sight (with a maximum theoretical total reduction of 20 dB) (FHWA 2011:56). The use of RMHM typically provides a reduction of 4 to 6 dB compared to standard asphalt (Sacramento County 1999). Because the necessary reductions would be achievable through the use of sound barriers and/or RMHA, this impact would be reduced to less than the applicable TRPA land use-based noise thresholds. (Note: an illustration depicting the appearance of sound barriers is included as Exhibit 3.7-21 in Section 3.7, “Visual Resources/Aesthetics.” A discussion of the secondary visual effects of the barrier is also included following Mitigation Measure 3.7-3.)

Providing additional noise insulation features to the South Shore Inn (Receptor 55) could ensure that interior noise levels at the motel would not exceed 45 CNEL with windows and doors closed. However, it is not certain that the property owner would accept this offer or that interior noise levels could be reduced to less than the 45 CNEL standard through implementation of off-site noise reduction measures alone (e.g., sound barriers, RHMA).

The Noise Abatement Decision Report determined that the estimated cost of constructing sound barriers to protect residential units from exposure to traffic noise levels that exceed applicable NEPA criteria with Alternative B would not be reasonable relative to the allowance of money per benefited residence for traffic noise abatement (Caltrans 2016:56). If funding for a sound barrier is not available from FHWA or Caltrans, then funding could be provided by TTD or other agencies.

It is also uncertain whether feasible traffic noise abatement measures could be implemented to ensure outdoor traffic noise levels at all receptors would be less than the applicable NAC and less than the applicable local exterior CNEL standard, and ensure traffic noise increases would be less than Caltrans’s incremental increase standard of 12 dB or even less than 3 dB, which is the TRPA significance criterion and the CEQA significance criterion used for receptors in California. Relatively large noise reductions would be needed at receptors located along both sides of the segment of realigned US 50 that would pass through the Rocky Point neighborhood; however, it may not be feasible to construct sound barriers along both sides of the highway that meet aesthetic and snow removal requirements and avoid measurable levels of noise reflection. Multiple receptors in this neighborhood would need noise abatement that achieves reductions of 10 dB or more. For instance, a 17-dB reduction would be needed at Receptor 73 on the north side of the highway and a 15-dB reduction would be needed at Receptor 50 on the south side of the same segment. Locating sound barriers along both sides of the highway could potentially result in a tunneling effect that exposes receptors located near the ends of the sound barriers to additional noise. Therefore, this impact in Alternative B would be **significant and unavoidable** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative B to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Mitigation Measure 3.15-3b: Implement traffic noise reduction measures to reduce traffic noise exposure at affected receptors

The following noise abatement measures would apply to the Alternative C transportation improvements and mixed-use development sites for the purposes of NEPA, CEQA, and TRPA.

Performance Requirements

Traffic noise reduction measures shall be implemented to achieve the following:

1. Ensure that Receptor 136 is not exposed to an average daily traffic noise level that exceeds the land use-based 65 CNEL threshold established in TRPA's Tourist Core Area Plan (City of South Lake Tahoe and TRPA 2013:5-3 to 5-4) under cumulative conditions. This performance requirement shall take priority over Performance Requirements 2, 3 and 4;
2. TTD shall offer to retrofit the South Shore Inn (Receptor 55) sufficiently to ensure that its ambient interior noise level does not exceed 45 CNEL with windows and doors closed. However, the owner of the motel may choose to refuse this offer;
3. To the extent feasible, reduce traffic noise levels at those receptors identified in Table 3.15-12 that would experience a traffic noise level that exceeds or approaches the applicable NAC and/or experience a traffic noise level increase greater than Caltrans's incremental increase criterion of 12 dB. For NEPA purposes, the feasibility of achieving this performance requirement can be based on the Noise Abatement Decision Report prepared for the project (Caltrans 2016), which was prepared pursuant to guidance in Caltrans's Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects (Caltrans 2011) and 23 CFR 772; and
4. To the extent feasible reduce traffic noise levels at those receptors identified in Table 3.15-12 that would experience a traffic noise level that exceeds the applicable local noise standard (established by the City of South Lake Tahoe), and/or would experience a traffic noise level increase of 3 dB or greater.

Noise Reduction Features

Noise reduction features may include, but are not limited to, the same features identified for Alternative B in Mitigation Measure 3.15-3a.

The specific location, length, height, and design of noise barriers for Alternative C must be defined during engineering design development and, as described for Alternative B, adhere to Mitigation Measure 3.7-3 to avoid negative visual impacts (see Section 3.7, "Visual Resources/Aesthetics"). It is not feasible to provide engineering details of noise barriers prior to the initiation of preliminary engineering for the transportation improvements. For conceptual planning purposes, however, based on the environmental planning-level noise analysis in this document, the approximate location and height of noise barriers for Alternative C are as follows (similar to Alternative B):

- ▲ Barriers would need to be built on both the north and south sides of the realigned US 50 alignment to protect affected residences behind them. The approximate length is estimated to be in the range of 1,000 to 1,200 feet on each side of the highway. The height needed for an approximately 5 dB attenuation would be between 6 to 8 feet above the road surface. Noise barriers would be entirely within the public right-of-way.
- ▲ The conceptual extent of the south barrier would be from the intersection of realigned US 50 and Pioneer Trail (near the existing 90-degree bend in Primrose Road close to Pioneer Trail) east to the curve of the highway onto the Montreal Road alignment (near the existing intersection of Echo Road and Montreal Road).

- ▲ The conceptual extent of the north barrier would be from the intersection of realigned US 50 and Pioneer Trail (near the existing intersection of Moss Road and Pioneer Trail) east to beyond Fern Road (near the existing corner of the back parking area of Heavenly Village Center).

Selection and Design Process

The selection and design of specific traffic noise reduction measures to reduce traffic noise impacts under Alternative C shall adhere to the same requirements identified for Alternative B in Mitigation Measure 3.15-5a.

Significance after Mitigation

Implementation of Mitigation Measure 3.15-3b would, at a minimum, ensure that receptors located more than 300 feet from the edge of US 50 would not be exposed to traffic noise levels that exceed applicable TRPA land use-based exterior CNEL thresholds. Based on the traffic noise modeling summarized in Table 3.15-12, this would be achieved with a reduction of 2 dB at the Cedar Inn & Suites (Receptor 136). A sound barrier that is just tall enough to break the line of sight between vehicles traveling on a roadway and ground level receptors result in at least 5 dB of noise reduction and can achieve an approximate 1 dB additional reduction for each 2 feet of height above where the sound barrier breaks the line of sight (with a maximum theoretical total reduction of 20 dB) (FHWA 2011:56). The use of RMHM typically provides a reduction of 4 to 6 dB compared to standard asphalt (Sacramento County 1999). Because the necessary reductions would be achievable through the use of sound barriers and/or RMHA, this impact would be reduced to less than the applicable TRPA land use-based noise thresholds. (Note: an illustration depicting the appearance of sound barriers is included as Exhibit 3.7-21 in Section 3.7, “Visual Resources/Aesthetics.” A discussion of the secondary visual effects of the barrier is also included following Mitigation Measure 3.7-3.)

Providing additional noise insulation features to the South Shore Inn (Receptor 55) could ensure that interior noise levels at the motel would not exceed 45 CNEL with windows and doors closed. However, it is not certain that the property owner would accept this offer or that interior noise levels could be reduced to less than the 45 CNEL standard through implementation of off-site noise reduction measures alone (e.g., sound barriers, RHMA).

Based on the Noise Abatement Decision Report prepared for the project, Caltrans would incorporate noise abatement in the form of a barrier along the west side of US 50 between Fern Road and Echo Road, with a length of approximately 214 feet and average heights of 6 feet. Calculations based on preliminary design data show that this barrier would reduce noise levels by 5 to 7 dB for two residences at a cost of \$134,820 (Caltrans 2016:56). If during final design conditions have substantially changed, noise abatement may not be necessary. The final decision of the noise abatement will be made upon completion of the project design.

The Noise Abatement Decision Report determined that the estimated cost of constructing sound barriers at other locations to protect residential units from exposure to traffic noise levels that exceed applicable NEPA criteria with Alternative C would not be reasonable relative to the allowance of money per benefited residence for traffic noise abatement (Caltrans 2016:56). If funding for a sound barrier is not available from FHWA or Caltrans, then funding could be provided by TTD or other agencies.

It is also uncertain whether feasible traffic noise abatement measures could be implemented to ensure outdoor traffic noise levels at all receptors would be less than the applicable NAC and less than the applicable local CNEL standard, and ensure traffic noise increases would be less than Caltrans’s incremental increase standard of 12 dB or even less than 3 dB, which is the TRPA significance criterion and the CEQA significance criterion used for receptors in California. Relatively large noise reductions would be needed at receptors located along both sides of the segment of realigned east-bound US 50 that would pass through the Rocky Point neighborhood; however, it may not be feasible to construct sound barriers along both sides of the highway that meet aesthetic and snow removal requirements and avoid measurable levels of noise reflection. Multiple receptors in this neighborhood would need noise abatement that achieves reductions of 10 dB or more. For instance, a 13-dB reduction would be needed at Receptor 73 on the north side of the highway and an 11-dB reduction would be needed at Receptor 49 on the south side of the same

segment. Locating sound barriers along both sides of the highway could potentially result in a tunneling effect that exposes receptors located near the ends of the sound barriers to additional noise. Therefore, this impact in Alternative C would be **significant and unavoidable** for the purposes CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative C to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Mitigation Measure 3.15-3c: Implement traffic noise reduction measures to reduce traffic noise exposure at affected receptors

The following noise abatement measures would apply to the Alternative D transportation improvements and mixed-use development sites for the purposes of NEPA, CEQA, and TRPA.

Performance Requirements

Traffic noise reduction measures shall be implemented to achieve the following:

1. Ensure that Receptors 30, 97, and 98 are not exposed to an average daily traffic noise level that exceeds the land use-based 55 CNEL threshold established in TRPA's Pioneer/Ski Run Plan Area Statement 092 (TRPA 2002c:3) and that Receptor 136 is not exposed to an average daily traffic noise level that exceeds the land use-based 65 CNEL threshold established in TRPA's Tourist Core Area Plan (City of South Lake Tahoe and TRPA 2013:5-3 to 5-4). These land use-based CNEL thresholds apply to all portions of these receptor parcels that are more than 300 feet from the edge of US 50. Also ensure that Receptor 29 is not exposed to more than its existing noise level of 65 CNEL under cumulative-plus-Alternative D conditions, which currently exceeds the TRPA land use-based noise threshold of 55 CNEL established in PAS 092 Pioneer/Ski Run (TRPA 2002c:3) and is expected to be exposed to 65 CNEL under cumulative-no-project conditions. This performance requirement shall take priority over Performance Requirements 2, 3, and 4;
2. TTD shall offer to retrofit the Trailhead Motel (Receptor 20) with sufficient noise insulation to ensure that its ambient interior noise levels do not exceed 45 CNEL with windows and doors closed. However, the owners of the motel may choose to refuse this offer;
3. To the extent feasible reduce traffic noise levels at Receptors 42, 68, 71, 83, and 84 so they would not experience a traffic noise level that exceeds or approaches the applicable NAC and/or experience a traffic noise level increase greater than Caltrans's incremental increase criterion of 12 dB. For NEPA purposes, the feasibility of achieving this performance requirement can be based on the Noise Abatement Decision Report prepared for the project (Caltrans 2016), which was prepared pursuant to guidance in Caltrans's Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects (Caltrans 2011) and 23 CFR 772 and is included in Appendix E to the RTP/SCS EIR/EIS; and
4. To the extent feasible reduce traffic noise levels at those receptors identified in Table 3.15-13 that would experience a traffic noise level that exceeds the applicable local noise standard established by the City of South Lake Tahoe, and/or would experience a traffic noise level increase greater than 3 dB.

Noise Reduction Features

Noise reduction features may include, but are not limited to, the same features identified for Alternative B in Mitigation Measure 3.15-3a.

Noise analysis indicates the need for a barrier on the south side of the relocated highway for Alternative D. The specific location, length, height, and design of noise barrier for Alternative D must be defined during engineering design development and, as described for Alternative B, adhere to Mitigation Measure 3.7-3 to avoid negative visual impacts (see Section 3.7, "Visual Resources/Aesthetics"). It is not feasible to provide engineering details of a noise barrier prior to the initiation of preliminary engineering for the transportation

improvements. For conceptual planning purposes, however, based on the environmental planning-level noise analysis in this document, the approximate location and height of the noise barrier for Alternative D are as follows:

- ▲ A barrier would need to be built on the south side of the realigned US 50 alignment to protect affected residences behind it. The approximate length is estimated to be in the range of 800 to 1,000 feet. The height needed for an approximately 5 dB attenuation would be between 6 to 8 feet above the road surface. The noise barrier would be entirely within the public right-of-way. The conceptual extent of the south barrier would be from the intersection of realigned US 50 and Pioneer Trail (near the existing intersection of Echo Road and Pioneer Trail) east to the curve of the highway onto the Montreal Road alignment (near the existing corner of the Heavenly Village Center parking lot).
- ▲ If the existing residential land uses along Fern Road (represented by Receptors 96, 97, and 98) are not replaced with mixed-use redevelopment prior to completion of the realigned US 50 alignment, then a barrier would also need to be built on the north side of the realigned US 50 alignment to protect these affected residences. The approximate length of the barrier on the north side of the realigned US 50 alignment is estimated to be approximately 600 to 800 feet.

Selection and Design Process

The selection and design of specific traffic noise reduction measures to reduce traffic noise impacts under Alternative D shall adhere to the same requirements identified for Alternative B in Mitigation Measure 3.15-5a.

Significance after Mitigation

Implementation of Mitigation Measure 3.15-3c would, at a minimum, ensure that Receptors 30, 97, 98, and 136 would not be exposed to traffic noise levels that exceed applicable TRPA land use-based exterior CNEL thresholds. Based on the traffic noise modeling summarized in Table 3.15-13, this would be achieved with reductions of 3, 4, 5, and 3 dB at Receptors 30, 97, 98, and 136, respectively. Implementation of Mitigation Measure 3.15-5c would also ensure that the noise level at Receptor 29 would not exceed its existing noise level, requiring a reduction of 3 dB under cumulative-plus-Alternative D conditions. A sound barrier that is just tall enough to break the line of sight between vehicles traveling on a roadway and ground level receptors results in at least 5 dB of noise reduction and can achieve an approximate 1 dB additional reduction for each 2 feet of height above where the sound barrier breaks the line of sight (with a maximum theoretical total reduction of 20 dB) (FHWA 2011:56). The use of RMHM typically provides a reduction of 4 to 6 dB compared to standard asphalt (Sacramento County 1999). Because the necessary reductions would be achievable through the use of sound barriers and/or RMHA, this impact would be reduced to less than the applicable TRPA land use-based noise thresholds. (Note: an illustration depicting the appearance of sound barriers is included as Exhibit 3.7-21 in Section 3.7, “Visual Resources/Aesthetics.” A discussion of the secondary visual effects of the barrier is also included following Mitigation Measure 3.7-3.)

Providing additional noise insulation features to the Trailhead Motel (Receptor 20) could ensure that interior noise levels at the motel would not exceed 45 CNEL with windows and doors closed. However, it is not certain that property owner would accept this offer or that interior noise levels could be reduced to less than the 45 CNEL standard through implementation of off-site noise reduction measures alone (e.g., sound barriers, RHMA).

The Noise Abatement Decision Report determined that the estimated cost of constructing sound barriers to protect residential units from exposure to traffic noise levels that exceed applicable NEPA criteria with Alternative D would not be reasonable relative to the allowance of money per benefited residence for traffic noise abatement (Caltrans 2016:56). If funding for a sound barrier is not available from FHWA or Caltrans, then funding could be provided by TTD or other agencies.

It is also uncertain whether feasible traffic noise abatement could be implemented to ensure traffic noise levels at all receptors would be less than the applicable NAC and less than the applicable local CNEL standard, and ensure traffic noise increases would be less than Caltrans’s incremental increase standard of

12 dB or even less than 3 dB, which is the TRPA significance criterion and the CEQA significance criterion used for receptors in California. Relatively large noise reductions would be needed at receptors located along both sides of the segment of realigned US 50 that would pass through the Rocky Point neighborhood; however, it may not be feasible to construct sound barriers along both sides of the highway that meet aesthetic and snow removal requirements and avoid measurable levels of noise reflection. Multiple receptors in this neighborhood would need noise abatement that achieves reductions of 6 dB or more. For instance, a 13-dB reduction would be needed at Receptor 83 on the south side of the highway and a 6-dB reduction would be needed at Receptor 98 on the north side of the same segment. Therefore, this impact in Alternative D would be **significant and unavoidable** for the purposes CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative D to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Mitigation Measure 3.15-3d: Implement traffic noise reduction measures to reduce traffic noise exposure at affected receptors

The following noise abatement measures would apply for Alternative E for the purposes of CEQA and TRPA.

Performance Requirements

Traffic noise reduction measures shall be implemented to achieve the following:

1. Ensure that implementation of Alternative E does not contribute to an exceedance of the land use-based 65 CNEL threshold established in TRPA's Tourist Core Area Plan (City of South Lake Tahoe and TRPA 2013:5-3 to 5-4) at Receptor 136 under cumulative conditions. This means that noise reduction measures shall be implemented to reduce the traffic noise level by a minimum of 1 dB under the cumulative-plus-Alternative E condition. (This performance requirement would also ensure that Alternative E does not contribute to an exceedance of the 65 CNEL transportation noise standard established by the City of South Lake Tahoe.) This performance requirement shall take priority over Performance Requirements 2 and 3;
2. Reduce exterior traffic noise levels at Receptors 20, 99, 102, 107, 135, and 136 by a minimum of 1 dB to offset the contribution by Alternative E under cumulative conditions to an exceedance of the 65 CNEL standard established by the City of South Lake Tahoe for these land uses; and
3. TTD shall offer to retrofit the Trailhead Motel (Receptor 20) and the Park Tahoe Aspen Court (Receptor 107) sufficiently to ensure that its ambient interior noise levels do not exceed 45 CNEL with windows and doors closed. However, the owners of these motels may choose to refuse this offer.

Noise Reduction Features

Noise reduction features may include, but are not limited to, the same features identified for Alternative B in Mitigation Measure 3.15-3a.

Selection and Design Process

The selection and design of specific traffic noise reduction measures to reduce traffic noise impacts under Alternative E shall adhere to the same requirements identified for Alternative B in Mitigation Measure 3.15-5a.

Significance after Mitigation

Implementation of Mitigation Measure 3.15-3d would ensure that Alternative E would not contribute to the exceedance of the land use-based 65 CNEL threshold established in TRPA's Tourist Core Area Plan (City of South Lake Tahoe and TRPA 2013:5-3 to 5-4) at Receptor 136 under cumulative conditions. It would also ensure that Alternative E would not contribute to the exceedance of the 65 CNEL threshold established by the City of South Lake Tahoe at Receptors 20, 99, 102, 107, 135, and 136, and ensure that Alternative E

would not contribute to the exceedance of the 45 CNEL interior noise standard at the Trailhead Motel (Receptor 20) and the Park Tahoe Aspen Court (Receptor 107). Based on the traffic noise modeling summarized in Table 3.15-14, this would be achieved with a reduction of 1 dB. Even if there may not be room on the public right of way to construct a new sound barrier, or a property owner does not agree to provide adequate space to locate a sound barrier, or a property owner of the Trailhead Motel (Receptor 20) and/or the Park Tahoe Aspen Court (Receptor 107) does not allow building retrofits, the resurfacing of the nearby roadway segment with RMHA would provide a noise reduction of 4 to 6 dB compared to standard asphalt (Sacramento County 1999). Because the necessary 1 dB reduction would be achievable at all impacted receptors through the use of RMHA, this impact in Alternative E would be reduced to **less than significant** for the purposes of TRPA and CEQA.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative E to further reduce to the extent feasible the environmental consequences related to the exposure of sensitive receptors to increased traffic noise levels.

Mitigation Measure 3.15-4: Implement noise protection measures to ensure that outdoor activity areas on the mixed-use redevelopment sites are not exposed to noise levels greater than 60 CNEL

The following noise abatement measures would apply to the Alternative B, C, and D mixed-use development sites for the purposes of NEPA, CEQA, and TRPA.

Performance Requirement

Developers of each mixed-use redevelopment site shall be required to ensure that ambient traffic noise levels do not exceed 60 CNEL at all common outdoor activity areas (not including parking lots or walkways between parking lots and building entrances). This performance standard shall be achieved at each site prior to occupancy of any of the housing units and under the cumulative-plus-project condition for Alternatives B, C, and D.

Noise Reduction Features

Measures to reduce noise exposure levels may include, but are not limited to, any combination of the following:

- ▲ Setting back common outdoor activity areas as far as possible from the nearest segment(s) of US 50;
- ▲ Strategically locating buildings to shield common outdoor activity areas from noise generated by traffic on the nearby segment(s) of US 50. An example of this type of design layout exists at the existing Forest Suites Resort on the corner of Lake Parkway and Heavenly Village Way;
- ▲ Installing outdoor sound barriers on the redevelopment property between the outdoor activity areas and the nearby segment(s) of US 50. The sound barriers must be constructed of solid material (e.g., wood, brick, adobe, an earthen berm, boulders, or combination thereof). The reflectivity of each sound barrier shall be minimized to ensure that traffic noise reflected off the barrier does not contribute to an exceedance of applicable noise standards at other off-site receptors. The level of sound reflection from a barrier can be minimized with a textured or absorptive surface or with vegetation on or next to the barrier. All barriers shall blend into the overall landscape and have an aesthetically pleasing appearance that agrees with the character of the surrounding area, and not become the dominant visual element of the area. Ensuring a character consistent with the surrounding area may involve the use of strategically placed boulders, native trees, or other vegetation; the addition of special materials (e.g., wood or stonework) on the façade of a sound wall; and/or a sound wall that is covered in vegetation. Special icon panels depicting works of art or emblems meaningful to the area may be included on sound barriers so long as they comply with any applicable local guidelines for public art. The location and design of sound barriers shall adhere to any space requirements for snow removal on US 50. Where desired a sound barrier can be divided into two overlapping segments with a gap to provide pedestrian access from one side to the other; and/or

- ▲ Locating outdoor activity areas, such as swimming pools or patios, on building rooftops.

Selection and Design Process

The selection and design of specific measures to reduce noise exposure at outdoor activity areas at each mixed-use redevelopment site shall be conducted by a qualified acoustical engineer or consultant pursuant to Policy HS-8.6 of the City of South Lake Tahoe General Plan. The study for each site shall be fully funded by the applicant seeking to develop the site and approved by City staff prior to project construction. If necessary to support the effectiveness of selected noise reduction measures, the site-specific noise abatement assessment may involve additional sound level measurements and/or the use of detailed site-specific modeling with software such as FHWA's Traffic Noise Model (FHWA 2006), SoundPLAN (SoundPLAN 2015) or CadnaA (DataKustik 2015).

Significance after Mitigation

Implementation of Mitigation Measure 3.15-4 would ensure that all common outdoor activity areas and the outdoor activity areas developed on the redevelopment sites would not be exposed to traffic noise levels that exceed 60 CNEL. For each doubling of the setback distance between a roadway and an outdoor activity area, the level of traffic noise exposure from that roadway is reduced by 3 to 4.5 dB depending on the acoustical softness of the intervening land (Caltrans 2013a:2-29). A sound barrier that is just tall enough to break the line of sight between vehicles traveling on a roadway and ground level receptors results in at least 5 dB of noise reduction and can achieve an approximate 1 dB additional reduction for each 2 feet of height above where the sound barrier breaks the line of sight (with a maximum theoretical total reduction of 20 dB) (FHWA 2011:56). Multiple-story buildings strategically located to shield outdoor activity areas from highway noise can result in 3-10 dB of noise reduction depending on the building sizes, spacing of buildings, and site geometry (Caltrans 2013a:2-35). Because the necessary reductions would be achievable through these design measures in Alternatives B, C, and D, this impact would be reduced to **less than significant** for purposes of CEQA and TRPA.

For the purpose of NEPA, additional mitigation measures have been incorporated into Alternatives B, C, and D to further reduce to the extent feasible the environmental consequences related to the potential to expose land uses to an incompatible noise environment.

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3.16 BIOLOGICAL ENVIRONMENT

This section summarizes the common and sensitive vegetation, terrestrial wildlife, and aquatic biological resources that are known or have the potential to occur in the project site. Biological resources include common vegetation and habitat types, sensitive plant communities, and special-status plant and animal species. Federal, TRPA, state, and local regulations related to biological resources are summarized. Potential impacts of the proposed alternatives are analyzed, and mitigation measures are provided for those impacts determined to be significant. Cumulative biological resources impacts are addressed in Section 3.19, “Cumulative Impacts.”

The primary issues raised during scoping that pertain to biological resources included:

- ▲ Project-related disturbances to a stream environment zone and the need for mitigation.
- ▲ Potential effects of additional lighting and noise on wildlife, particularly near Van Sickle Bi-State Park.

For this analysis, information about common and sensitive biological resources known or with potential to occur within the project site boundaries is based primarily on reconnaissance surveys conducted by Ascent biologists and available data sources. Sources consulted consist of the following: *US 50/South Shore Community Revitalization Project Natural Environment Study* (NES; TTD 2015); *Tree Survey for the US 50/South Shore Community Revitalization Project* memorandum (Ascent Environmental 2014) (Appendix L); Section 3.10, “Biological Resources,” of the Regional Plan Update Environmental Impact Statement (RPU EIS) and Lake Tahoe Regional Transportation Plan (RTP, also known as *Mobility 2035*) and Sustainable Communities Strategy Environmental Impact Report and Environmental Impact Statement (RTP/SCS EIR/EIS); Tahoe Regional Planning Agency (TRPA) survey and GIS data; a records search of the California Natural Diversity Database (CNDDDB 2015); California Native Plant Society Online Inventory of Rare and Endangered Plants (CNPS 2015); a database search of the U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC) and a list of federally proposed, candidate, threatened, and endangered species that may occur in the project region (USFWS 2016); USFS Region 5 EVeg land cover data (U.S. Forest Service [USFS] 2014); and high resolution aerial imagery.

Although the draft 2017 RTP has been released for public review, and includes the US 50/South Shore Community Revitalization Project, the 2012 RTP/SCS is the currently adopted plan. Because an initial study/initial environmental checklist (IS/IEC) has been prepared for the 2017 RTP as a supplement to the 2012 RTP/SCS EIR/EIS and does not result in new significant environmental impacts, the analysis below continues to rely on that EIR/EIS.

None of the build alternatives evaluated herein would be constructed within an area covered by an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state conservation plan. Therefore, project implementation would not conflict with the provisions of an adopted conservation plan and this issue is not evaluated further. Section 3.16.2, “Affected Environment,” discusses the special-status plant and animal species evaluated in this analysis, and Tables M-1 and M-2 in Appendix M summarize the potential for each of these species to occur in the project site. Generally, those plant and animal species not expected to 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 this analysis. Implementation of the proposed build alternatives would have no effect on those species, including any species listed, proposed for listing, or designated as a candidate for listing under the federal Endangered Species Act. Additionally, the project site is not positioned within any known important wildlife movement or migratory corridors. Because the project site is subject to high levels of human disturbance and isolation of habitat patches because of commercial and residential development, presence of major road corridors, and recreational uses, it is not likely to function as an important corridor and this issue is not addressed further.

Potential effects of construction-related noise, changes in traffic noise levels, and changes in nighttime lighting conditions on wildlife with all of the build alternatives were considered. Effects of noise and lighting on wildlife species depend on the specific type, location, and context of noise and lighting sources, and the sensitivity of specific wildlife species to variation in noise and lighting levels. All of the build alternatives would be implemented within major road corridors and commercial/residential areas that are presently subject to substantial noise levels, nighttime lighting, and other disturbances. The introduction of a new source of light during nighttime hours in these urban settings would not substantially alter the amount of illumination in the study area, recognizing the existing night lighting of roadways, parking lots, and commercial areas. Additionally, as described later in this section, no special-status wildlife species are expected to regularly use or occur within or adjacent to the project site due to the disturbed habitat conditions there. Wildlife species that regularly use habitats within and adjacent to the project site are locally and regionally common, and adapted to urban environments or other disturbed areas subject to considerable noise and light levels. Therefore, project-related changes in noise and nighttime lighting relative to ambient levels are not expected to substantially affect the presence or abundance of wildlife species, and this issue is not addressed further.

3.16.1 Regulatory Setting

Biological resources in the Tahoe Basin are regulated by several federal, state, and local laws and policies. Key regulations and conservation planning issues applicable to the project are summarized below.

FEDERAL

The following federal regulations described in the RPU EIS and RTP/SCS EIR/EIS are applicable to the US 50/South Shore Community Revitalization Project. They are described in detail in the two, program-level environmental documents and have not changed since these documents were published. Summaries of the following laws, regulations, and executive orders are incorporated by reference:

- ▲ Federal Endangered Species Act (ESA)
- ▲ Migratory Bird Treaty Act
- ▲ Bald and Golden Eagle Protection Act
- ▲ Executive Order 11990, Protection of Wetlands
- ▲ Executive Order 13112, National Invasive Species Management Plan
- ▲ Section 404 of the Clean Water Act (CWA)
- ▲ CWA Section 401 Water Quality Certification

Please refer to Section 3.10.1, “Regulatory Background,” of Section 3.10, “Biological Resources,” of the RTP/SCS EIR/EIS (Tahoe Metropolitan Organization [TMPO] and TRPA 2012:3.10-9 through 3.10-10) and the RPU EIS (TRPA 2012:3.10-8 through 3.10-10).

TAHOE REGIONAL PLANNING AGENCY

TRPA implements its authority to regulate growth and development in the Lake Tahoe Region through the Regional Plan. The Regional Plan includes the Goals and Policies, Environmental Threshold Carrying Capacities (threshold standards), Code of Ordinances, and other guidance documents. These elements of the Regional Plan that are related to biological resources and applicable to the US 50/South Shore Community Revitalization Project are described in Section 3.10.1, “Regulatory Background,” of Section 3.10, “Biological Resources,” of the RTP/SCS EIR/EIS (TMPO and TRPA 2012:3.10-1 through 3.10-8) and the RPU EIS (TRPA 2012:3.10-1 through 3.10-8), and are incorporated by reference.

STATE

The following state laws and regulations are described in Section 3.10.1, “Regulatory Background,” of Section 3.10, “Biological Resources,” of the RTP/SCS EIR/EIS (TMPO and TRPA 2012:3.10-11 through 3.10-13) and the RPU EIS (TRPA 2012:3.10-10 through 3.10-12), and are incorporated by reference:

- ▲ California Endangered Species Act (CESA)
- ▲ California Fish and Game Code Section 1602—Streambed Alteration
- ▲ California Fish and Game Code Sections 3503–3503.5—Protection of Bird Nests and Raptors
- ▲ California Native Plant Protection Act
- ▲ Porter-Cologne Water Quality Control Act
- ▲ Z'Berg-Nejedly Forest Practice Act
- ▲ Nevada Administrative Code 527.010 and Nevada Revised Statutes (NRS) 527.260, NRS 527.270, and NRS 527.300
- ▲ Nevada Revised States, Title 45
- ▲ Nevada Revised Statutes 503.610 and 503.620

LOCAL

City of South Lake Tahoe General Plan

The City of South Lake Tahoe General Plan (City of South Lake Tahoe 2011) includes goals and policies to protect biological resources within the city. Policies NCR-3.1 through NCR-3.16 address the conservation and protection of natural habitats and open space, sensitive species, stream environment zones, native trees, and other biological resources.

Douglas County Master Plan

The Douglas County Master Plan Environmental Resources and Conservation (ERC) Element describes goals, policies, and actions to protect the natural resources of Douglas County (Douglas County 2011). ERC Policies 6.1 through 6.3 were enacted to protect wetland resources and specify compliance with the CWA, the possibility of wetland mitigation banking, and the protection of wetlands for groundwater discharge, flood protection, sediment and pollution control, wildlife habitat, and open space. ERC Policies 14.1 through 14.3 address the protection of sensitive wildlife, vegetation, and habitats through limitations on development or mitigation. ERC Action 14.1 directs the County to develop regulations and design guidelines to minimize impacts of new development on sensitive habitats and migration routes.

3.16.2 Affected Environment

The following sections summarize the biological resources in the study area that are most relevant to the significance criteria and impact analysis for the project, which are provided in Section 3.16.3, “Environmental Consequences.”

LAND COVER AND HABITAT TYPES

Land cover within the project site consists of a mix of primarily developed and urban areas (80 percent of the total area) interspersed with patches of natural habitats, including Jeffrey pine, low sagebrush, montane riparian, and montane meadow. Table 3.16-1 summarizes the vegetation/land cover types mapped within the project site, their estimated acreages, and biological conditions. Exhibit 3.16-1 shows the corresponding location and extent of land cover types within the project site as mapped during project surveys.

SENSITIVE BIOLOGICAL RESOURCES

In this analysis, sensitive biological resources include those species and biological communities that receive special consideration through the TRPA Goals and Policies and TRPA Code, ESA, CESA, CWA, or local plans, policies, and regulations; or that are otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations. Sensitive biological resources evaluated as part of this analysis include sensitive natural communities and special-status plant and animal species. These resources are addressed in the following sections.

Sensitive Natural Communities and Habitats

Sensitive habitats include those that are of special concern to resource agencies or are afforded specific consideration through the TRPA Goals and Policies and TRPA Code, Section 404 of the CWA, and other applicable regulations. Sensitive natural habitats may be of special concern to these 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. For the California side of the Tahoe Basin, many of these communities are tracked in the CNDDDB. Sensitive natural communities and habitats in the project site are montane riparian, montane meadow, perennial stream, and intermittent and ephemeral drainages. Streams and drainages in the project site are Edgewood Creek (perennial stream), Golf Course Creek (intermittent drainage), and Stateline Creek (ephemeral drainage); these features are described in Section 3.9, "Floodplains."

The NES prepared for the project (TTD 2015) identified several potential wetlands and other waters of the United States within the project site, based on a preliminary wetland delineation conducted in 2010 and 2011. The largest of these are two features located around Golf Course Creek on either side of its intersection with Lake Parkway. Another small potential wetland was mapped on the margins of Edgewood Creek at its intersection with US 50. The remaining potential wetlands are associated with roadside drainages along Lake Parkway and US 50. In total, 0.89 acre of potential wetlands and 0.09 acre of non-wetland waters were identified within the project site.

Most of the wetland/riparian habitats would likely be considered jurisdictional by U.S. Army Corps of Engineers (USACE) and, in California, the Lahontan Regional Water Quality Control Board (Lahontan RWQCB) under Section 404 of the federal CWA and the state's Porter-Cologne Act. In addition, on the California side of the Tahoe Basin, the California Department of Fish and Wildlife (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 Tahoe Basin are also designated as stream environment zone (SEZ), which is one of two TRPA-adopted threshold standards for soil conservation. SEZ is a term used specifically in the Tahoe Basin to describe perennial, intermittent and ephemeral streams; wet meadows, marshes, and other wetlands; riparian areas; and other areas expressing the presence of surface and ground water through its biological and physical characteristics.

Table 3.16-1 Land Cover and Habitat Types Mapped in the Project Site

Vegetation Community/ Habitat Type	Summary Description	Acres in Project Site
Natural Habitats		
Jeffrey Pine	Jeffrey pine forest is the dominant natural vegetation type in the project site, and primarily occurs along Lake Parkway in the eastern portion of the project site. Open forest community clearly dominated (80-85 percent) by Jeffrey pine (<i>Pinus jeffreyi</i>) but with 10-15 percent white fir (<i>Abies concolor</i>) and occasional lodgepole pine (<i>Pinus contorta</i>) and incense cedar (<i>Calocedrus decurrens</i>). Canopy cover is generally open as Jeffrey pine tends to be more scattered throughout the community. This allows for the understory of the Jeffrey pine forest to contain plants requiring drier, sunnier conditions than in other conifer communities. These understory plants include mountain big sagebrush (<i>Artemisia tridentata</i> var. <i>vaseyana</i>), bitterbrush (<i>Persia tridentata</i>), rubber rabbitbrush (<i>Chrysothamnus nauseosus</i>), Wood's rose (<i>Rosa woodsii</i>), Greenleaf manzanita (<i>Arctostaphylos patula</i>), mule ears (<i>Wyethia mollis</i>), and Idaho fescue (<i>Festuca idahoensis</i>).	15.0
Low Sagebrush	Consists of soft-woody shrubs dominated by low sagebrush (<i>Artemisia arbuscula</i>) and mountain big sagebrush. Rubber rabbitbrush and bitterbrush are the most common associates of this community in the project site. Scattered Jeffrey pine can also be found associated within this community. Common species in the herbaceous understory include lupines (<i>Lupinus</i> sp.), mule ears, and a variety of grasses. This community occurs within the eastern portion of the project site, north of Van Sickle Bi-State Park.	1.5
Montane Meadow	Montane meadow habitat within the project site consists of both wetlands and upland components. Wet meadows in the project site have seasonally saturated soils with hydrology supported by toe-slope seeps and seasonal or intermittent streams. The majority of montane meadow is located in the northeast portion of the project site along Lake Parkway; a few small areas of seasonal wetlands were identified in this area but most of this area of montane meadow is upland. The largest wet meadow community (Friday's Station meadow) was historically used for livestock grazing and appears to have been seeded with non-native forage grasses in the past. Portions of this meadow have been significantly disturbed. A small wetland area of montane meadow is located adjacent to the parking lot for Harrah's resort-casino. The meadow is supported by a drainage that originates on the east side of Lake Parkway and flows beneath the road via a culvert. Of the 4.44 acres of montane meadow in the project site, 0.39 acre is wetland. The montane meadow habitat consists of a wide variety of grasses and forbs adapted for growth in saturated soils. Herbaceous hydrophytes include sedges (<i>Carex amplifolia</i> , <i>Carex aquatilis</i>), creeping spikerush (<i>Eleocharis macrostachya</i>), corn lily (<i>Veratrum californicum</i> var. <i>californicum</i>), and Oregon checkerbloom (<i>Sidlacea oregano spicata</i>). Lemmon's willow (<i>Salix lemmonii</i>) was also present in the wettest portion of the meadow in the northeast portion of the project site along Lake Parkway.	6.5
Montane Riparian	Montane riparian habitat is located along Edgewood Creek, Stateline Creek, and Golf Course Creek, and in association with wet meadows, intermittent drainages, and toe-slope seeps in the eastern part of the project site. The montane riparian communities within in the project site generally consist of dense willow (<i>Salix</i> sp.) and mountain alder (<i>Alnus incana</i> ssp. <i>tenuifolia</i>), with or without flowing water. The predominant overstory species included Lemmon's willow, arroyo willow (<i>Salix lasiolepis</i>) and mountain alder; quaking aspen, and white fir are also present. Representative woody understory species include mountain rose (<i>Rosa woodsii</i> var. <i>ultramontana</i>), serviceberry (<i>Amelanchier alnifolia</i> var. <i>pumila</i>), and sapling overstory species. Common herbaceous species include sedges, baltic rush (<i>Juncus balticus</i>), and common horsetail (<i>Equisetum arvense</i>).	2.8
Non-Natural/Urban Habitats		
Developed	A developed landscape dominated by commercial uses. Vegetation is generally confined to ornamental plantings and landscaping.	68.4
Ruderal	Ruderal vegetation occurs in areas that have been disturbed by human activities such that natural communities no longer exist. In the project site, ruderal vegetation typically occurs along road shoulders or adjacent areas; ruderal vegetation also occurs in two detention basins near the junction of Pioneer Trail and US 50 and on the California Tahoe Conservancy (Conservancy) parcel between Forest Suites Resort and the Harrah's resort-casino parking lot. Plant species occurring in ruderal areas include cheatgrass (<i>Bromus tectorum</i>), ripgut brome (<i>Bromus diandrus</i>), shield cress (<i>Lepidium perfoliatum</i>), bull thistle (<i>Cirsium vulgare</i>), prickly lettuce (<i>Lactuca serriola</i>), field pennycress (<i>Thlaspi arvense</i>), and common plantain (<i>Plantago major</i>).	14.3
Urban Jeffrey Pine	Urban Jeffrey pine habitat is located in the southern portion of the project site near Pioneer Trail. This community consists of single-family residences and similar developed areas where the understory component of the Jeffrey pine community has been eliminated but the overstory component (i.e., Jeffrey pine trees) is mostly intact.	21.6

Source: TTD 2015, data compiled by Ascent Environmental in 2015

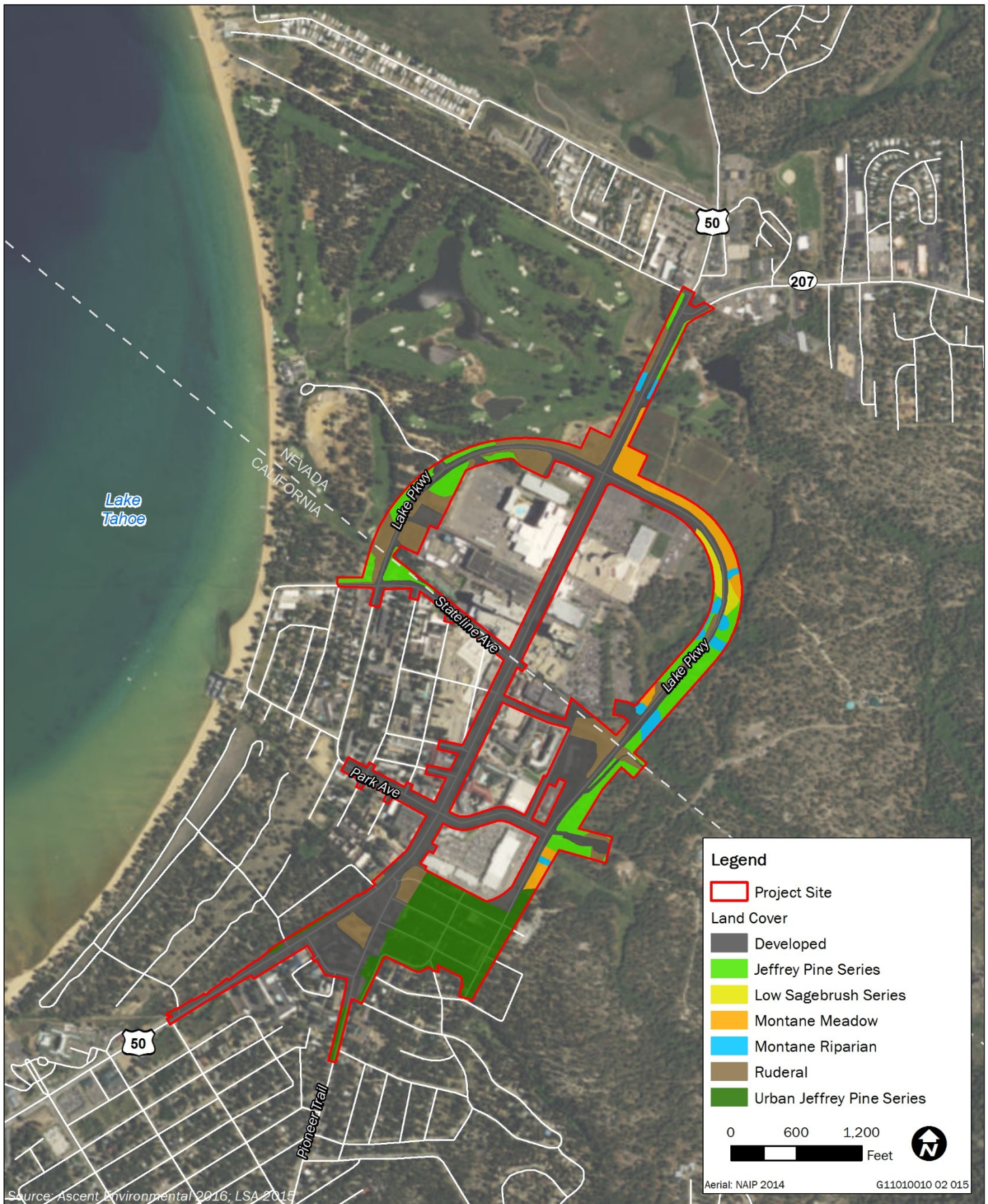


Exhibit 3.16-1

Land Cover/Habitat Types Within the Project Site

Special-Status Species

Special-status species include plants and animals that are legally protected or otherwise considered sensitive by federal, state, or local resource agencies and conservation organizations. Special-status species are defined as plants and animals in the following categories.

- ▲ Listed or proposed for listing as threatened or endangered under ESA.
- ▲ Designated as a candidate for listing as threatened or endangered under ESA.
- ▲ Designated as a sensitive, special-interest, or threshold species by TRPA.
- ▲ Designated as sensitive by the USFS Regional Forester in Region 5.
- ▲ Listed or proposed for listing as threatened or endangered under CESA.
- ▲ Listed or a candidate for listing by the state of California as threatened or endangered under CESA.
- ▲ Listed as fully protected under the California Fish and Game Code.
- ▲ Animals identified by CDFW as species of special concern.
- ▲ Plants considered by CDFW to be “rare, threatened or endangered in California” (California Rare Plant Ranks [CRPR] of 1A, presumed extinct in California; 1B, considered rare or endangered in California and elsewhere; and 2, considered rare or endangered in California but more common elsewhere). The California Rare Plant Ranks correspond with and replace former CNPS listings. 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 CEQA.
- ▲ Considered a locally significant species, 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 Guidelines Section 15125 [c]) or is so designated in local or regional plans, policies, or ordinances (State CEQA Guidelines, Appendix G).
- ▲ Otherwise meets the definition of rare or endangered under CEQA Guidelines Section 15380(b) and (d).
- ▲ Plant species on Nevada’s state list of fully-protected species of native flora (Nevada Administrative Code, Section 527.010), also known as the Critically Endangered Species List.
- ▲ Designated as an At-Risk Species by the Nevada Natural Heritage Program (NNHP).

A preliminary list of special-status plant and animal species known or with potential to occur in the project site was developed based on a review of the sources listed at the beginning of this section.

Plants

The data review identified 49 special-status plant species that could occur in or near the project site. Table M-1 (Appendix M) summarizes the regulatory status, habitat and flowering period, and potential for occurrence in the project site of each special-status plant species evaluated during this analysis. No special-status plant species were observed during focused plant surveys conducted in 2010 by LSA Associates (TTD 2015), and none of the species identified in the data review have a moderate or high potential to exist in the project site (i.e., they have low or no potential to occur), because of a lack of suitable habitat, existing disturbance levels, lack of occurrence records, or the species’ elevational range is outside the project site. Additionally, natural vegetation communities in the project site that may otherwise provide potential habitat for some special-status plant species are not expected to, because those areas are subject to high levels of human disturbance, degradation, and isolation of habitat patches due to commercial and residential development, presence of

major road corridors, and recreational uses. Therefore, no special-status plant species, including species listed under the ESA, are expected to occur in the project site. The project would not affect any plant species listed, proposed for listing, or designated as a candidate for listing under the ESA.

Animals

The data review identified 39 special-status animal species and two special-status fish species that could occur in or near the project site. Table M-2 (Appendix M) summarizes the potential for occurrence of each special-status animal species that was evaluated during this analysis. Of these species, none are expected to occur or regularly use the project site. This determination was based on the types, extent, and quality of habitats in the project site; the proximity of the project site to known occurrences of the species; and the regional distribution and abundance of the species. Additionally, natural vegetation communities in the project site that may otherwise provide potential habitat for some special-status animal species are not expected, for the same reasons discussed previously for special-status plants. Therefore, no special-status animal species are expected to regularly use or occur in the project site. The project would not affect any animal species listed, proposed for listing, or designated as a candidate for listing under the ESA.

3.16.3 Environmental Consequences

METHODS AND ASSUMPTIONS

The analysis of potential impacts to biological resources from project implementation is based on the data review and resource mapping, project-specific biological surveys, and technical studies described previously. The following summarizes the impact mechanisms and assumptions considered for this analysis, and how potential impacts were evaluated for the project alternatives.

Primary Impact Mechanisms and Assumptions

Potential impacts associated with the project can be classified as either temporary or permanent. Temporary impacts generally include ground disturbances associated with temporary construction activities, including:

- ▲ construction staging,
- ▲ minor cut and fill that would be restored to existing conditions after project completion,
- ▲ potential construction disturbances assumed to occur within 10 feet of permanent project features, and
- ▲ noise, ground vibration, and airborne particulate (dust) generated by construction activities.

Permanent impacts generally include effects associated with permanent tree or other vegetation removal as a result of:

- ▲ earthwork/excavation;
- ▲ new paving for bridge, roadway, bike path, and parking facilities;
- ▲ cut and fill that changes the existing ground elevation;
- ▲ landscaping; and
- ▲ installation of bridge footings.

The following summarizes the methodology for determining potential impacts on vegetation, wildlife, and aquatic resources, including key assumptions about their relative effects.

Vegetation and Wildlife

Potential impacts of each build alternative on vegetation and wildlife resources were initially identified by overlaying GIS layers of project components on the land cover maps of the project site and maps of sensitive biological resources. Any natural community and wildlife habitat that overlapped with an area of proposed modification was considered to be directly removed during project construction. An estimate of the amount of vegetation removal planned for the clearing of work areas and access ways was determined. Short-term construction impacts would occur where natural vegetation would be removed to construct new features and

facilities or modify existing features. Construction-related impacts could also indirectly affect biological resources through stormwater runoff, erosion, and the introduction of invasive or non-native species. Long-term impacts to biological resources would occur in or adjacent to habitats that would experience a permanent conversion in land use and cover (i.e., conversion of natural vegetation to paved areas, other facilities, and landscaping).

No substantial changes in biological resources would occur as a result of modified public uses (e.g., recreation opportunities, commercial uses). The project site is located within the tourist core area of the state line and currently experiences high levels of public use and other human activity.

Special-Status Species

Impacts to plant and animal species could occur either through temporary or permanent habitat loss, disturbance of normal activity or dispersal patterns, or through direct mortality. Potential impacts to sensitive species were determined by analyzing species life history requirements and known occurrences or potential to occur in the project site.

Section 3.16.2, “Affected Environment,” discusses all special-status plant and animal species evaluated in this analysis, and Tables M-1 and M-2 (Appendix M) summarize the potential for each of these species to occur in the project site. As discussed previously, no special-status plant species is expected to occur in the project site, and no special-status animal is expected to occur or regularly use the project site. As discussed previously, for species listed, proposed for listing, or designated as a candidate for listing under the ESA, project implementation would result in no effect. Therefore, the project is not expected to substantially affect any special-status species, and the following analysis does not further address special-status species.

Aquatic Resources

Potential impacts of each build alternative on aquatic resources (e.g., streams and drainages) were identified by overlaying GIS layers of project alternative components on aquatic habitats. Impacts to aquatic resources were determined by the proximity of these resources to project work areas, taking into account the construction needs within those areas. Hydrologic and flow characteristics and vegetation were also considered.

SIGNIFICANCE CRITERIA

Significance criteria relevant to biological resources are summarized below.

NEPA Criteria

An environmental document prepared to comply with NEPA must consider the context and intensity of the environmental effects that would be caused by or result from the locally preferred action. Under NEPA, the significance of an effect is used solely to determine whether an EIS must be prepared. Under NEPA, the context and intensity of an alternative’s potential effect on biological resources were evaluated based on whether the alternative would:

- ▲ substantially reduce the size, continuity, or integrity of a plant community through temporary or permanent removal, interruption of natural processes that support it, and/or disturbance that favors the establishment of invasive nonnative species; or
- ▲ substantially reduce the size, continuity, or integrity of wildlife or fish habitat, or result in unnatural changes in the abundance, diversity, or distribution of wildlife or fish species; substantially affect, either directly or through habitat modifications, any species listed as threatened or endangered under the ESA or other special-status species.

TRPA Criteria

Vegetation and wildlife criteria from the TRPA Initial Environmental Checklist were used to evaluate the biological resources impacts of the alternatives. The project would result in a significant impact if it would result in:

- ▲ removal of riparian vegetation or other vegetation associated with critical wildlife habitat, either through direct removal or indirect lowering of the groundwater table;
- ▲ removal of stream bank and/or backshore vegetation, including woody vegetation such as willows;
- ▲ introduction of new vegetation that will require excessive fertilizer or water, or will provide a barrier to the normal replenishment of existing species;
- ▲ removal of any native live, dead, or dying trees 30 inches or greater in diameter at breast height (dbh) within TRPA's Conservation or Recreation land use classifications;
- ▲ introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals;
- ▲ change in the diversity or distribution of species, or number of any species of plants or animals;
- ▲ reduction of the numbers of any unique, rare, or endangered species of plants or animals;
- ▲ a change in the natural functioning of an old growth ecosystem; or
- ▲ deterioration of existing fish or wildlife habitat quantity or quality.

CEQA Criteria

Appendix G of the State CEQA Guidelines was used to determine whether environmental impacts to biological resources are significant environmental effects. The project would result in a significant impact if it would:

- ▲ 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, USFWS, or USACE;
- ▲ have a substantial adverse effect on federal or state protected wetlands as defined by Section 404 of the CWA or as defined by state statute, through direct removal, filling, hydrological interruption, or other means;
- ▲ 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;
- ▲ substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range (i.e., geographic distribution) of an endangered, rare, or threatened species;
- ▲ 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; or
- ▲ conflict with any local policies or ordinances that protect biological resources, such as a tree preservation policy or ordinance.

ENVIRONMENTAL EFFECTS OF THE PROJECT ALTERNATIVES

Impact 3.16-1: Disturbance or loss of common vegetation communities and wildlife habitats

With three of the build alternatives (Alternatives B, C, and D), project implementation would result in the removal or disturbance of 0.5 to 1.7 acres of common natural vegetation communities and habitats, including Jeffrey pine and low sagebrush. Because these habitats are locally and regionally common and abundant, and the project site is presently affected by high levels of commercial/urban, residential, and recreational uses, none of these build alternatives would substantially reduce the size, continuity, or integrity of any common vegetation community or habitat type. With the no-build alternative (Alternative A) or Alternative E, no project-related removal of common vegetation communities would occur.

NEPA Environmental Consequences: The design features of Alternative B, C, and D would avoid or minimize the disturbance or loss of common vegetation communities and wildlife habitats; No Impact for Alternatives A and E

CEQA/TRPA Impact Determinations: Less than Significant for Alternatives B, C, and D; No Impact for Alternatives A and E

With Alternatives B, C, and D, Jeffrey pine and low sagebrush are the common native vegetation and habitat types that would be directly removed or temporarily disturbed primarily from project construction. (Impacts on sensitive habitats are addressed separately below.) Table 3.16-2 summarizes permanent and temporary effects on common vegetation for each build alternative.

Table 3.16-2 Acreage of Permanent and Temporary Footprints within Common Vegetation Community/Habitat Types

Vegetation Community/Habitat Type	Alternative B		Alternative C		Alternative D		Alternative E	
	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp
Jeffrey Pine	1.5	1.0	0.4	1.4	1.5	1.0	-	-
Low Sagebrush	0.2	0.3	0.1	0.3	0.2	0.3	-	-
Total of Natural Habitats	1.7	1.3	0.5	1.7	1.7	1.3	0.0	0.0
Urban Jeffrey Pine	3.4	3.7	1.8	3.6	2.6	3.2	-	-
Developed	26.2	11.3	24.1	11.7	25.9	9.7	0.03	0.8
Ruderal	1.1	4.7	1.2	5.4	0.7	4.1	-	-
Total	32.2	21.0	27.6	22.4	30.9	18.3	0.03	0.8

Source: Data compiled by Ascent Environmental Inc. in 2015

Alternative A: No Build (No Project)

Because no project-related vegetation removal would occur with Alternative A, there would be **no impact** from this alternative to common vegetation communities for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

With Alternative B, 1.7 acres of common natural habitat (Jeffrey pine and low sagebrush) would be permanently disturbed or converted to new or improved roadway, roadway and pedestrian features (e.g., curbs, gutters, retaining walls), landscaping, and other project features, and 1.3 acres would be temporarily disturbed. The loss of this amount of common habitat from the Tahoe Region in this location would not substantially reduce the quantity or quality of these habitats in the Region, and would not result in a change in diversity or distribution of species in the Region, or result in a substantial change in local population

numbers of any common plant or tree species or any unique, rare, or endangered species of plants or animals. Jeffrey pine forest and low sagebrush habitat are common and widely distributed in the Tahoe Basin and elsewhere in the Sierra Nevada, and the amount of habitat disturbance and loss would be very small relative to the total amount available in the area. Additionally, the number, distribution, and sizes of trees removed would not substantially affect overall canopy cover or reduce the abundance of this vegetation type on the landscape.

Permanent and temporary loss and disturbance that would occur with Alternative B would not substantially reduce the size, continuity, or integrity of any common vegetation community or habitat type or interrupt the natural processes that support common vegetation communities in the project site. Additionally, because the project site is already highly disturbed and fragmented by commercial/urban, residential, and recreational uses, project-related disturbances on the biological functions of common habitats are not considered substantial. Therefore, this impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative B would avoid or minimize the disturbance or loss of common vegetation communities and wildlife habitats such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

None of the three potential mixed-use development sites are located within any common natural habitat types. Therefore, this impact would be the same as that described previously for implementation of the transportation improvements alone without the mixed-use development. The Alternative B mixed-use development, including replacement housing, would result in a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development sites as part of Alternative B would avoid or minimize the disturbance or loss of common vegetation communities and wildlife habitats such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for disturbance or loss of common vegetation communities and wildlife habitats as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the loss or disturbance of common vegetation communities and wildlife habitats would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on common vegetation communities and wildlife habitats.

For the purposes of NEPA, the design features of the transportation improvements and the mixed-use development sites as part of Alternative B would minimize the disturbance or loss of common vegetation communities and wildlife habitats such that no additional mitigation measures are needed or feasible to implement.

Alternative C: Triangle One-Way

Transportation Improvements

With Alternative C, 0.5 acre of common natural habitat would be permanently converted and 1.7 acre would be temporarily disturbed. This impact would be similar to, but less than, that described above for Alternative B because project construction with Alternative C would be located mostly in the same locations and would include the same construction effects as Alternative B, but would construct a smaller road footprint than

Alternative B. For the reasons discussed above, this impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative C would avoid or minimize the disturbance or loss of common vegetation communities and wildlife habitats such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

None of the three potential mixed-use development sites are located within any common natural habitat types. Therefore, this impact would be the same as that described previously for implementation of the transportation improvements alone without the mixed-use development. The Alternative C mixed-use development sites, including the replacement housing, would result in a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development sites as part of Alternative C would avoid or minimize the disturbance or loss of common vegetation communities and wildlife habitats such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for disturbance or loss of common vegetation communities and wildlife habitats as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the loss or disturbance of common vegetation communities and wildlife habitats would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on common vegetation communities and wildlife habitats.

For the purposes of NEPA, the design features of the transportation improvements and replacement housing at the mixed-use development sites as part of Alternative C would minimize the disturbance or loss of common vegetation communities and wildlife habitats such that no additional mitigation measures are needed or feasible to implement.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

With Alternative D, 1.7 acres of common natural habitat would be permanently converted and 1.3 acres would be temporarily disturbed. This impact would be similar to that described above for Alternative B because project construction with Alternative D would be located mostly in the same locations and would include the same construction effects as Alternative B. For the reasons discussed above, this impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the transportation improvements included in Alternative D would avoid or minimize the disturbance or loss of common vegetation communities and wildlife habitats such that no additional mitigation measures are needed or feasible to implement.

Mixed-Use Development including Replacement Housing

None of the three potential mixed-use development sites are located within any common natural habitat types. Therefore, this impact would be the same as that described previously for implementation of the transportation improvements alone without the mixed-use development. The Alternative D mixed-use developments, including the replacement housing, would result in a **less-than-significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of the mixed-use development sites as part of Alternative D would avoid or minimize the disturbance or loss of common vegetation communities and wildlife habitats such that no additional mitigation measures are needed or feasible to implement.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for disturbance or loss of common vegetation communities and wildlife habitats as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the loss or disturbance of common vegetation communities and wildlife habitats would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **less-than-significant** impact on common vegetation communities and wildlife habitats.

For the purposes of NEPA, the design features of the transportation improvements and replacement housing at the mixed-use development sites as part of Alternative D would minimize the disturbance or loss of common vegetation communities and wildlife habitats such that no additional mitigation measures are needed or feasible to implement.

Alternative E: Skywalk

Alternative E would create an elevated pedestrian structure in an area that is entirely developed and supports no natural habitat types. Therefore, implementation of Alternative E would have **no impact** on common natural vegetation communities and habitats for the purposes of NEPA, CEQA, and TRPA.

Impact 3.16-2: Disturbance or loss of sensitive habitats (jurisdictional wetlands, riparian vegetation, SEZ, aquatic habitat)

Implementing Alternatives B, C, and D would result in direct removal and disturbance of sensitive habitats, including waters of the United States, waters of the state, riparian habitat, and SEZs. With the no-build alternative (Alternative A) or Alternative E, no project-related disturbance of sensitive habitats would occur.

NEPA Environmental Consequences: Mitigation Measures 3.16-2a, 3.16-2b, and 3.16-2c have been incorporated into Alternatives B, C, and D to further reduce to the extent feasible the environmental consequences related to disturbance or loss of sensitive habitats; No Impact for Alternatives A and E

CEQA/TRPA Impact Determinations: Less Than Significant for Alternative B, C, and D after implementation of Mitigation Measures 3.16-2a, 3.16-2b, and 3.16-2c; No Impact for Alternatives A and E

Construction associated with Alternatives B, C, and D would result in permanent loss or temporary disturbance of montane riparian and montane meadow habitats, which are considered sensitive. Table 3.16-3 summarizes and compares the acreage of sensitive habitats present and affected on a permanent and temporary basis for each build alternative. Additionally, the NES for the project (TTD 2015) identified several potential wetlands and other waters of the United States within the project site, based on a preliminary wetland delineation conducted in 2010 and 2011. This preliminary delineation of potential wetlands and other waters of the United States has not been verified by USACE and will need to be updated prior to permit application and approval. Most of these areas are included within the montane riparian and montane meadow habitat types mapped and quantified in the project site.

Table 3.16-3 Acreage of Permanent and Temporary Effects on Sensitive Habitats

Sensitive Habitat Type	Alternative B		Alternative C		Alternative D		Alternative E	
	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp
Montane Riparian	0.4	0.5	0.1	1.0	0.4	0.5	0.0	0.0
Montane Meadow	1.2	1.1	0.2	0.9	1.2	1.2	0.0	0.0
Total	1.6	1.6	0.3	1.9	1.6	1.5	0.0	0.0

Source: Data compiled by Ascent Environmental Inc. in 2014

Alternative A: No Build (No Project)

Because no project-related vegetation removal or other disturbances would occur with Alternative A, there would be **no impact** from this alternative on sensitive habitats for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

With Alternative B, 1.6 acres of sensitive habitats occur in the permanent disturbance area, and 1.6 acres are within the temporary disturbance area (see Table 3.16-5); these sensitive habitat features include Edgewood Creek, Golf Course Creek, and Stateline Creek as well the area east of and across Lake Parkway from the Heavenly Village Center and northeast of Montbleu. However, the values presented here are considered a maximum and likely an overestimate of the area of actual impacts. For example, montane riparian habitat is present where the proposed roadway expansion and improvements along Montreal Road and Lake Parkway cross Stateline Creek, Golf Course Creek, and Edgewood Creek, but the actual impact acreage there would be reduced because the transportation improvements would span much of the riparian habitat, rather than remove it. Additionally, the construction corridor would be reduced in sensitive habitat areas and best management practices (BMPs) would be integrated into the project design (as described in Section 3.10, “Water Quality and Stormwater Runoff”) to avoid and minimize impacts in these areas.

Construction or expansion of roadway alignments, roadway and pedestrian features (e.g., curbs, gutters, retaining walls), and other project elements could result in minor vegetation removal or trampling, fill of wetlands, hydrologic changes, deposition of dust or debris, soil compaction, or other disturbances that could temporarily affect the condition and function of sensitive habitats. Additionally, any project-related construction adjacent to wetlands or other sensitive habitat could similarly affect those resources, either directly or indirectly, although potential effects would be avoided or minimized through implementation of project BMPs.

Some of the sensitive habitats affected by implementation of Alternative B would be considered jurisdictional by USACE and (on the California side) the Lahontan RWQCB under Section 404 of the federal CWA and the state’s Porter-Cologne Act, and potentially subject to regulation by CDFW under Sections 1600 *et seq.* of the California Fish and Game Code. Additionally, most of the areas within wetland/riparian habitats are also designated as SEZ by TRPA. Fill or reconfiguration of jurisdictional waters of the United States requires a permit from USACE pursuant to Section 404 of the Clean Water Act. Also, the deciduous riparian vegetation within most or all SEZs would likely be considered jurisdictional habitat by the USACE and would require a permit and mitigation. 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.

Where Edgewood Creek passes below US 50 and Golf Course Creek intersects Lake Parkway, the existing culverts at those locations would be lengthened to accommodate the wider roadway width with Alternative B. As described in Section 3.10, “Water Quality and Stormwater Runoff,” since TRPA, Lahontan RWQCB, and Nevada Department of Environmental Protection (NDEP) regulations are in place to minimize erosion and

transport of sediment and other pollutants during construction, and since appropriate project-specific measures would be defined to secure necessary permits and approvals, project-related impacts to the stream channels and water quality would be minimized and would not result in substantial adverse effect on aquatic habitats.

Implementing Alternative B would result in minor loss or degradation of jurisdictional wetlands and other waters of the United States, riparian vegetation, and SEZs protected by Section 6.3 of the TRPA Code. These riparian and wetland habitats are considered sensitive, because they are declining in quantity and condition throughout the region and because they provide important habitat functions. Even though the amount of habitat lost would be minor, the affected habitats are recognized as sensitive and important; the loss or degradation of sensitive habitats would be a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative B to further reduce to the extent feasible the environmental consequences related to the loss or degradation of sensitive habitats.

Mixed-Use Development including Replacement Housing

None of the three potential mixed-use development sites are located within any sensitive habitat types. Therefore, this impact would be the same as that described previously for implementation of the transportation improvements alone without the mixed-use development. The Alternative B mixed-use development sites, including the replacement housing, would result in a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative B to further reduce to the extent feasible the environmental consequences related to the loss or degradation of sensitive habitats.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential loss or disturbance of sensitive habitats as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential impacts to sensitive habitats would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact on sensitive habitats.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative B to further reduce to the extent feasible the environmental consequences related to the disturbance or loss of sensitive habitats.

Alternative C: Triangle One-Way

Transportation Improvements

With Alternative C, 0.3 acre of sensitive habitat occurs in the permanent disturbance area, and 1.9 acres is within the temporary disturbance area (see Table 3.16-5). This impact would be similar to, but less than, that described above for Alternative B because project construction with Alternative C would be located mostly in the same locations and would include the same construction effects as Alternative B. For the reasons discussed above, this impact would be **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative C to further reduce to the extent feasible the environmental consequences related to the loss or degradation of sensitive habitats.

Mixed-Use Development including Replacement Housing

None of the three potential mixed-use development sites are located within any sensitive habitat types. Therefore, this impact would be the same as that described previously for implementation of the transportation improvements alone without the mixed-use development. The Alternative C mixed-use development, including replacement housing, would result in a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative C to further reduce to the extent feasible the environmental consequences related to the loss or degradation of sensitive habitats.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential loss or disturbance of sensitive habitats as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential impacts to sensitive habitats would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact on sensitive habitats.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative C transportation improvements and mixed-use development sites to further reduce to the extent feasible the environmental consequences related to the disturbance or loss of sensitive habitats.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

With Alternative D, 1.6 acres of sensitive habitats occur in the permanent disturbance area, and 1.5 acres are within the temporary disturbance area (see Table 3.16-5). This impact would be similar to that described above for Alternative B because project construction with Alternative D would be located mostly in the same locations and would include the same construction effects as Alternative B. For the reasons discussed above, this impact would be **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative D to further reduce to the extent feasible the environmental consequences related to the loss or degradation of sensitive habitats.

Mixed-Use Development including Replacement Housing

None of the three potential mixed-use development sites are located within any sensitive habitat types. Therefore, this impact would be the same as that described previously for implementation of the transportation improvements alone without the mixed-use development. The Alternative D mixed-use development sites, including the replacement housing, would result in a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative D to further reduce to the extent feasible the environmental consequences related to the loss or degradation of sensitive habitats.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential loss or disturbance of sensitive habitats as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential impacts to sensitive habitats would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact on sensitive habitats.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative D transportation improvements and mixed-use development sites to further reduce to the extent feasible the environmental consequences related to the disturbance or loss of sensitive habitats.

Alternative E: Skywalk

Alternative E would create an elevated pedestrian structure in an area that is entirely developed and supports no sensitive habitat types. Therefore, implementation of Alternative E would have **no impact** on sensitive natural vegetation communities and habitats for the purposes of NEPA, CEQA, and TRPA.

Impact 3.16-3: Tree removal

Regardless of the magnitude of biological effects of tree removal, native trees are protected in the Tahoe Basin, because of their natural qualities and functions. Because Alternatives B, C, and D would result in removal of more than 100 trees 14 inches or greater dbh, they would result in substantial tree removal. With Alternative E, native tree removal would not be substantial. While all build alternatives would require removal of trees greater than 24 inches dbh in eastside forest and/or 30 inches dbh in westside forest, which is generally prohibited by TRPA, the US 50/South Shore Community Revitalization Project meets the exception in TRPA Code Section 61.1.4.A.7 that allows for the removal of these trees for Environmental Improvement Program (EIP) projects, provided that findings demonstrate that the tree removal is necessary. In Alternative A no trees would be removed.

NEPA Environmental Consequences: Mitigation Measure 3.16-3 has been incorporated into Alternatives B, C, and D to further reduce to the extent feasible the environmental consequences related to biological effects resulting from tree removal; No Adverse Effect for Alternative E; No Impact for Alternative A

CEQA/TRPA Impact Determinations: Less Than Significant for Alternatives B, C, and D after implementation of Mitigation Measure 3.16-3; Less Than Significant for Alternative E; No Impact for Alternative A

Section 61.1.8 of the TRPA Code defines substantial tree removal as, “activities on project areas of three acres or more and proposing the removal of more than 100 live trees 14 inches dbh or larger....” All of the build alternatives considered for the US 50/South Shore Community Revitalization Project would require tree removal. Project components, including roadway alignments, roadway features (e.g., curbs, gutters, retaining walls), and bike path realignment would be constructed or expanded in areas supporting conifer forest and other habitats.

With limited exceptions, Section 61.1.4, “Old Growth Enhancement and Protection,” of the TRPA Code prohibits the removal of trees greater than 24 and 30 inches dbh in eastside and westside forest types, respectively, in lands classified as conservation or recreation lands. TRPA has defined and mapped eastside forest types as those forests east of a north-south line from Brockway Summit in the north Tahoe Basin to

and along the California-Nevada boundary in the south Tahoe Basin; westside forest types are those forests west of that line. The US 50/South Shore Community Revitalization Project site is within both eastside and westside forest areas. However, the project is exempt from this prohibition because it is on the EIP list of projects, as described in Chapter 2, “Proposed Project and Project Alternatives.”

Table 3.16-4 provides tree removal estimates by size class and eastside/westside area for each alternative.

Table 3.16-4 Estimated Tree Removal by Alternative

Alternative	Eastside (NV) Trees Removed (dbh) ¹			Westside (CA) Trees Removed (dbh) ¹			Total Trees Removed (≥14" dbh)
	≥14 - <24"	≥24 - <30"	≥30"	≥14 - <24"	≥24 - <30"	≥30"	
B: Triangle	133	22	17	396	141	118	827
C: Triangle One-Way	164	17	13	248	79	64	585
D: PSR Alternative 2	133	22	17	316	106	101	695
E: Skywalk	22	0	0	2	1	1	26

¹ Tree removal numbers and dbh values were estimated from interpretation of remote sensed LiDAR data provided by TRPA in 2013 and project-specific field surveys that determined the typical number and size class of trees in representative sample locations in the forest.

Source: Ascent Environmental 2014

Alternative A: No Build (No Project)

With Alternative A, the US 50/South Shore Community Revitalization Project would not be built. Thus, no tree removal would occur and there would be **no impact** for purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

With Alternative B, an estimated 827 trees that are 14 inches dbh or greater could be removed, including 39 eastside trees greater than 24 inches dbh and 118 westside trees greater than 30 inches dbh. While Section 61.1.4 of the TRPA Code prohibits removal of eastside and westside trees greater than 24 and 30 inches dbh, respectively, Section 61.1.4.A.7 allows removal for EIP projects, provided that findings demonstrate that the tree removal is necessary. Regardless, the removal of 827 trees 14 inches dbh or greater would constitute substantial tree removal under Section 61.1.8 of the TRPA Code. Thus, this impact would be **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative B to further reduce to the extent feasible the environmental consequences related to biological effects resulting from tree removal.

Mixed-Use Development including Replacement Housing

Alternative B with the potential mixed-use development would require tree removal in addition to that described above for the transportation improvements alone. The estimated additional tree removal required for the potential mixed-use development has not been quantified; however, this impact would be greater than that for the transportation improvements alone. For the reasons discussed above, Alternative B with the potential mixed-use development would also result in a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative B to further reduce to the extent feasible the environmental consequences related to biological effects resulting from tree removal.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for tree removal as described for the mixed-use development sites. However,

because the location of replacement housing elsewhere is unknown, analysis of the potential biological impacts related to tree removal would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact on biological resources related to tree removal.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative B transportation improvements and mixed-use development sites to further reduce to the extent feasible the environmental consequences related to tree removal.

Alternative C: Triangle One-Way

Transportation Improvements

With Alternative C, an estimated 585 trees that are 14 inches dbh or greater could be removed, including 30 eastside trees greater than 24 inches dbh and 64 westside trees greater than 30 inches dbh. While Section 61.1.4 of the TRPA Code prohibits removal of eastside and westside trees greater than 24 and 30 inches dbh, respectively, Section 61.1.4.A.7 allows removal for EIP projects, provided that findings demonstrate that the tree removal is necessary. Regardless, the removal of 585 trees 14 inches dbh or greater would constitute substantial tree removal under Section 61.1.8 of the TRPA Code. Thus, this impact would be **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated in to the transportation improvements included in Alternative C to further reduce to the extent feasible the environmental consequences related to biological effects resulting from tree removal.

Mixed-Use Development including Replacement Housing

Alternative C with the potential mixed-use development would require tree removal in addition to that described for the transportation improvements alone. The estimated additional tree removal required for the potential mixed-use development has not been quantified; however, this impact would be greater than that for the transportation improvements alone. For the reasons discussed above, Alternative C with the potential mixed-use development would result in a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative C to further reduce to the extent feasible the environmental consequences related to biological effects resulting from tree removal.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for tree removal as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential biological impacts related to tree removal would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact on biological resources related to tree removal.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative C transportation improvements and replacement housing at the mixed-use development sites to further reduce to the extent feasible the environmental consequences related to tree removal.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

With Alternative D, an estimated 695 trees that are 14 inches dbh or greater could be removed, including 39 eastside trees greater than 24 inches dbh and 101 westside trees greater than 30 inches dbh. While Section 61.1.4 of the TRPA Code prohibits removal of eastside and westside trees greater than 24 and 30 inches dbh, respectively, Section 61.1.4.A.7 allows removal for EIP projects, provided that findings demonstrate that the tree removal is necessary. Regardless, the removal of 695 trees 14 inches dbh or greater would constitute substantial tree removal under Section 61.1.8 of the TRPA Code. Thus, this impact would be **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative D to further reduce to the extent feasible the environmental consequences related to biological effects resulting from tree removal.

Mixed-Use Development including Replacement Housing

Alternative D with the potential mixed-use development would require tree removal in addition to that described for the transportation improvements alone. The estimated additional tree removal required for the potential mixed-use development has not been quantified; however, this impact would be greater than that for the transportation improvements alone. For the reasons discussed above, Alternative D with the potential mixed-use development would result in a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative D to further reduce to the extent feasible the environmental consequences related to biological effects resulting from tree removal.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential for tree removal as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential biological impacts related to tree removal would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact on biological resources related to tree removal.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative D transportation improvements and mixed-use sites to further reduce to the extent feasible the environmental consequences related to tree removal.

Alternative E: Skywalk

With Alternative E, an estimated 26 trees that are 14 inches dbh or greater could be removed, including 1 westside tree greater than 30 inches dbh. While Section 61.1.4 of the TRPA Code prohibits removal of eastside and westside trees greater than 24 and 30 inches dbh, respectively, Section 61.1.4.A.7 allows removal for EIP projects, provided that findings demonstrate that the tree removal is necessary. The removal of 26 trees 14 inches dbh or greater would not constitute substantial tree removal under Section 61.1.8 of the TRPA Code. Thus, this impact would be **less than significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, the design features of Alternative E would minimize the environmental consequences related to tree removal such that no additional mitigation measures are needed or feasible to implement.

Impact 3.16-4: Introduction and spread of invasive plants

With three of the build alternatives (Alternatives B, C, and D), project implementation has the potential to introduce and spread terrestrial and aquatic invasive plants during construction and revegetation periods. Noxious weeds and other invasive plants could inadvertently be introduced or spread in the project site during grading and construction activities, if nearby source populations passively colonize disturbed ground, or if construction and personnel equipment is transported to the site from an infested area. Soil, vegetation, and other materials transported to the project site from off-site sources for BMPs, revegetation, or fill for project construction could contain invasive plant seeds or plant material that could become established in the project site. Additionally, invasive species currently present in or near the project site have the potential to be spread by construction disturbances. The introduction and spread of terrestrial or aquatic invasive species would degrade terrestrial plant, wildlife, and aquatic habitats, including habitats of special significance (riparian) within the project site opening up the potential introduction and spread of invasive species with Alternatives B, C, and D. With the no-build alternative (Alternative A) or Alternative E, no project-related ground disturbances in any common or sensitive vegetation community would occur; therefore, there would be no related spread or introduction of invasive plants into common or sensitive vegetation communities and habitats from these alternatives.

NEPA Environmental Consequences: Mitigation Measure 3.16-4 has been incorporated into Alternatives B, C, and D to further reduce to the extent feasible the environmental consequences related to the introduction and spread of invasive plants; No Impact for Alternatives A and E

CEQA/TRPA Impact Determinations: Less Than Significant for the Alternative B, C, and D transportation improvement improvements and mixed-use development sites after implementation of Mitigation Measure 3.16-4; No Impact for Alternatives A and E

Alternative A: No Build (No Project)

Because no project-related ground disturbance or vegetation removal would occur with Alternative A, there would be **no impact** related to invasive species introduction and spread from this alternative for the purposes of NEPA, CEQA, and TRPA.

Alternative B: Triangle (Locally Preferred Action)

Transportation Improvements

Implementing Alternative B could result in the spread of invasive plants that are present in the project site. Invasive plant species documented in the project site include cheatgrass (*Bromus tectorum*), ripgut brome (*Bromus diandrus*), and bull thistle (*Cirsium vulgare*) (TTD 2015). Additionally, new noxious weed species and other invasive plants could be introduced into the project site during construction. Construction associated with Alternative B would involve temporary ground-disturbing activities in disturbed and native vegetation types. Constructing or expanding roadway alignments, roadway features (e.g., curbs, gutters, retaining walls), and other project elements would temporarily create areas of open ground that could be colonized by invasive plant species from inside or outside of the project site. Invasive plants could inadvertently be introduced or spread in the project site during grading and construction activities, if nearby source populations passively colonize disturbed ground, or if seeds or propagules are inadvertently transported and distributed by construction equipment and personnel from an infested area. Project BMPs would reduce the potential for introducing or spreading weed and other invasive plant occurrences in the project site by reducing the amount of open ground during construction; however, the potential for this effect would still exist. Erosion-control materials, seed mixes, and unwashed construction equipment can transport propagules of invasive plants to construction sites where disturbed areas can provide ideal conditions for their establishment, and aid their spread into adjacent native plant communities.

Once established, invasive plant species can alter ecosystem processes and cause serious deleterious effects on native biological communities. Potential impacts to native species and ecosystems include altered hydrologic patterns, fire cycles, and soil chemistry; reduced nutrient, water, and light availability; and reduced biodiversity (Coblentz 1990, Vitousek et al. 1996, CallIPC 2006). The effects of invasive plant species can also decrease wildlife habitat values. Nonnative terrestrial and aquatic invasive species compete with native plant and animal species; their introduction and proliferation in ecosystems can substantially alter the dynamics of native aquatic and terrestrial communities. This conversion can indirectly affect wildlife and fish species by changing and often reducing food sources and habitat structure and can lead to competition between native plant species and the weeds, often resulting in loss of native vegetation.

The TRPA Code specifically prohibits the release of nonnative species in the Tahoe Basin because they can invade important wildlife habitats and compete for resources. Additionally, in its recent Regional Plan Update, TRPA adopted a new policy to explicitly prohibit and prevent the release of invasive, exotic, or undesirable nonnative aquatic species into the Tahoe Basin and control existing populations of those species. With Alternative B some of the construction BMPs would reduce the potential for introducing or spreading weed populations in the project site by reducing the amount of open ground during construction; however, the potential for this effect would still exist. Any introduction or spread of invasive plants could degrade plant and wildlife habitat, including habitats of special significance (riparian) in or near the project site. This construction-related impact would be **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative B to further reduce to the extent feasible the environmental consequences related to the introduction and spread of invasive plants.

Mixed-Use Development including Replacement Housing

Alternative B with the potential mixed-use development would require some ground disturbances in addition to those described for the transportation improvements alone. Therefore, the potential for construction-related introduction and spread of invasive plant species could be greater than without the mixed-use development. For the reasons discussed above, Alternative B with the potential mixed-use development would result in a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative B to further reduce to the extent feasible the environmental consequences related to the introduction and spread of invasive plants.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential to introduce and spread invasive plants as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential introduction and spread of invasive plants would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative B transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact related to the potential introduction and spread of invasive plants.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative B transportation improvements and replacement housing to further reduce to the extent feasible the environmental consequences related to the potential introduction and spread of invasive plants.

Alternative C: Triangle One-Way

Transportation Improvements

The potential construction-related introduction and spread of invasive species with Alternative C would generally be the same as that described for Alternative B, because project construction and ground disturbance with Alternative C would be in the same locations and would include the same construction effects as Alternative B. For the reasons discussed above, this impact would be **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative C to further reduce to the extent feasible the environmental consequences related to the introduction and spread of invasive plants.

Mixed-Use Development including Replacement Housing

Alternative C with the potential mixed-use development would require some ground disturbances in addition to those described for the transportation improvements alone. Therefore, the potential for construction-related introduction and spread of invasive plant species could be greater than with the transportation improvements alone. For the reasons discussed above, Alternative C with the potential mixed-use development would result in a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative C to further reduce to the extent feasible the environmental consequences related to the introduction and spread of invasive plants.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential to introduce and spread invasive plants as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential introduction and spread of invasive plants would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative C transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact related to the potential introduction and spread of invasive plants.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative C transportation improvements and mixed-use development sites to further reduce to the extent feasible the environmental consequences related to the potential introduction and spread of invasive plants.

Alternative D: Project Study Report Alternative 2

Transportation Improvements

The potential construction-related introduction and spread of invasive species with Alternative D would generally be the same as that described for Alternative B, because project construction and ground disturbance with Alternative D would generally be in the same locations and would include the same construction effects as Alternative B. For the reasons discussed above, this impact would be **potentially significant** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the transportation improvements included in Alternative D to further reduce to the extent feasible the environmental consequences related to the introduction and spread of invasive plants.

Mixed-Use Development including Replacement Housing

Alternative D with the potential mixed-use development would require some ground disturbances in addition to those described for the transportation improvements alone. Therefore, the potential for construction-related introduction and spread of invasive plant species could be greater than with the transportation improvements. For the reasons discussed above, the Alternative D mixed-use developments, including replacement housing, would result in a **potentially significant** impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the mixed-use development sites included in Alternative D to further reduce to the extent feasible the environmental consequences related to the introduction and spread of invasive plants.

Construction of replacement housing at a location other than the three mixed-use development sites could result in a similar potential to introduce and spread invasive plants as described for the mixed-use development sites. However, because the location of replacement housing elsewhere is unknown, analysis of the potential introduction and spread of invasive plants would be speculative at this time. Full, project-level environmental review of replacement housing somewhere other than the mixed-use development sites would be required prior to construction of replacement housing and displacement of existing residents.

Conclusion

For the purposes of CEQA and TRPA, taken as a whole, the Alternative D transportation improvements and mixed-use development, including replacement housing, would result in a **potentially significant** impact related to the potential introduction and spread of invasive plants.

For the purposes of NEPA, additional mitigation measures have been incorporated into construction of the Alternative D transportation improvements and mixed-use development sites to further reduce to the extent feasible the environmental consequences related to the potential introduction and spread of invasive plants.

Alternative E: Skywalk

Alternative E would create an elevated pedestrian structure in an area that is entirely developed in urban uses and supports no common or sensitive vegetation communities. Because no project-related ground disturbances in any vegetation community would occur, there would be **no impact** related to spread or introduction of invasive plants into common or sensitive vegetation communities and habitats with Alternative E for the purposes of NEPA, CEQA, and TRPA.

3.16.4 Avoidance, Minimization, and/or Mitigation Measures**Mitigation Measure 3.16-2a: Implement vegetation protection measures and revegetate disturbed areas**

This mitigation would apply to the transportation improvements and mixed-use development sites included in Alternatives B, C, and D for the purposes of NEPA, CEQA, and TRPA.

Vegetation will not be disturbed, injured or removed, except in accordance with the TRPA Code and other conditions of project approval. All trees, major roots, and other vegetation, not specifically designated and approved for removal in connection with a project will be protected according to methods approved by TRPA. All vegetation outside the construction site boundary, as well as other vegetation designated on the approved plans, will be protected by installing temporary fencing pursuant to Subsections 33.6.9 and 33.6.10 of the TRPA Code. Areas outside the construction site boundary that sustain vegetation damage during construction will be revegetated according to a revegetation plan in accordance with Section 61.4.

Mitigation Measure 3.16-2b: Conduct delineation of waters of the United States and obtain authorization for fill and required permits

The following mitigation applies to the transportation improvements and mixed-use development sites included in Alternatives B, C, and D for the purposes of NEPA, CEQA, and TRPA.

A preliminary delineation of potential wetlands and other waters of the United States was conducted in 2010 and 2011 (TTD 2015). However, the preliminary delineation has not been verified by USACE. Additionally, because the delineation was completed more than 5 years before project construction, it is considered expired, and will need to be repeated prior to permit application and approval.

Before the start of on-site construction activities on any potentially affected jurisdictional resource, a qualified biologist will survey the project site for sensitive natural communities. Sensitive natural communities or habitats are those of special concern to resource agencies or those that are afforded specific consideration, based on Section 404 of the CWA, Sections 1600 et seq. of the California Fish and Game Code, and other applicable regulations. If sensitive natural communities or habitats that are afforded specific consideration, based on Section 404 of the CWA are determined to be present, a delineation of waters of the United States, including wetlands that would be affected by the project, will be prepared by a qualified biologist through the formal Section 404 wetland delineation process. The delineation will be submitted to and verified by USACE. If, based on the verified delineation, it is determined that fill of waters of the United States would result from implementation of the project, authorization for such fill will be secured from USACE through the Section 404 permitting process. The acreage of riparian habitat (deciduous riparian vegetation) and wetlands that would be removed or disturbed during project implementation will be quantified and replaced or restored/enhanced in accordance with USACE and TRPA regulations, which include meeting the no-net-loss standard in accordance with USACE requirements. Habitat restoration, enhancement, and/or replacement will be at a location and by methods agreeable to USACE as determined during the permitting processes for CWA Section 404 and by TRPA during the permitting process for SEZ.

In addition, on the California side of the study area, if any project activities would affect aquatic resources and associated riparian habitats subject to regulation by CDFW under Sections 1600 et seq. of the California Fish and Game Code (i.e., the bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources), the project proponent shall consult with CDFW to determine whether a lake and streambed alteration agreement (LSAA) is required. If required under Section 1602, any compensatory mitigation shall be conducted in accordance with the terms of the LSAA, and in coordination with the other requirements of this mitigation measure (Mitigation Measure 3.16-2b) and Mitigation Measure 3.16-2c.

Mitigation Measure 3.16-2c: Compensate for Unavoidable Loss of SEZ

The following mitigation applies to the transportation improvements and mixed-use development sites included in Alternatives B, C, and D for the purposes of NEPA, CEQA, and TRPA.

The following measures will be implemented to ensure consistency with Section 61.3 of the TRPA Code and further reduce potential adverse effects on SEZs, streams, and riparian habitat:

- ▲ All reasonable alternatives shall be implemented to avoid or reduce the extent of encroachment into SEZs.
- ▲ In instances where there is no feasible alternative to avoid an SEZ, the project proponent shall mitigate all impacts within the boundaries of SEZs by restoring SEZ habitat (land capability district 1b) in the surrounding area, or other appropriate area as determined by TRPA, at a minimum ratio of 1.5:1, consistent with TRPA Code.
- ▲ The project proponent shall retain a qualified restoration ecologist to prepare a restoration plan that will address final clean-up, stabilization, and revegetation procedures for areas disturbed by the project. The restoration plan for SEZs shall include the following:

- identification of compensatory mitigation sites and criteria for selecting these mitigation sites;
- complete assessment of the existing biological resources in the restoration areas;
- in kind reference habitats for comparison with compensatory SEZs (using performance and success criteria) to document success;
- monitoring protocol, including schedule and annual report requirements (Compensatory habitat shall be monitored for a minimum of five years from completion of mitigation, or human intervention [including recontouring and grading], or until the success criteria identified in the approved mitigation plan have been met, whichever is longer);
- ecological performance standards, based on the best available science and including specifications for native plant densities, species composition, amount of dead woody vegetation gaps and bare ground, and survivorship; at a minimum, compensatory mitigation planting sites must achieve 80 percent survival of planted vegetation by the end of the five-year maintenance and monitoring period or dead and dying plants shall be replaced and monitoring continued until 80 percent survivorship is achieved;
- corrective measures if performance standards are not met;
- responsible parties for monitoring and preparing reports; and
- responsible parties for receiving and reviewing reports and for verifying success or prescribing implementation or corrective actions.

Significance after Mitigation

Implementation of Mitigation Measures 3.16-2a, 3.16-2b, and 3.16-2c would reduce the potentially significant impacts on sensitive habitats (Impact 3.16-2) to a **less-than-significant** level for Alternatives B, C and D for purposes of CEQA and TRPA. The mitigation measures would require that sensitive habitat is avoided to the extent feasible and that sensitive habitats that cannot be avoided are restored following construction, or if the habitat cannot be restored, that the project proponent compensates for unavoidable losses in a manner that results in no net loss of sensitive habitats and meets TRPA mitigation requirements for impacts on SEZs.

Because of the reasons stated above, for the purposes of NEPA, the environmental consequences of implementing the transportation improvements and mixed-use development sites including in Alternatives B, C, and D with Mitigation Measures 3.16-2a, 3.16-2b, and 3.16-2c **would not be adverse**.

Mitigation Measure 3.16-3: Prepare tree removal, protection, and replanting plan

The following mitigation applies to the transportation improvements and mixed-use development sites included in Alternatives B, C, and D for the purposes of NEPA, CEQA, and TRPA.

A Tree Removal, Protection, and Replanting Plan shall be prepared by the project proponent to provide tree protection measures to comply with the performance criteria and other requirements of Chapter 61 of the TRPA Code, prevent damage to trees that are proposed to remain, and determine appropriate tree replanting locations and approaches to occur in the project site. The Plan will include marking and inventorying the specific trees to be removed, after detailed design is completed. A qualified forester will make a determination regarding the project's consistency with Chapter 61 of the TRPA Code. The plan shall set forth prescriptions for tree removal, water quality protection, root zone and vegetation protection, residual stocking levels, replanting, slash disposal, fire protection, and other appropriate considerations.

Significance after Mitigation

Implementation of Mitigation Measure 3.16-3 would reduce potentially significant impacts associated with tree removal because a qualified forester will be retained to develop a tree removal plan that would comply with Chapter 61 of the TRPA Code. By ensuring adherence to the TRPA requirements associated with tree removal, this impact (Impact 3.16-3) would be reduced to a **less-than-significant** level for Alternatives B, C, and D for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, the environmental consequences of implementing the transportation improvements and mixed-use developments sites included in Alternatives B, C, and D with Mitigation Measures 3.16-3 **would not be adverse**.

Mitigation Measure 3.16-4: Implement invasive plant management practices during project construction

This following mitigation applies to the transportation improvements and mixed-use development sites included in Alternatives B, C, and D for the purposes of NEPA, CEQA, and TRPA.

In consultation with TRPA, the project proponent shall implement appropriate invasive plant management practices during project construction. Recommended practices generally include the following:

- ▲ Before construction activities begin, invasive plant infestations will be identified and appropriately treated where feasible. A qualified biologist will conduct a pre-construction survey for noxious weeds and other invasive plants in project construction areas, and determine the feasibility and appropriate method of removal/treatment. Treatments will be selected based on their effectiveness for each species ecology and phenology. All treatment methods—including the potential use of herbicides outside of potential wetland and SEZ areas—will be conducted in accordance with the law, regulations, and policies governing the land owner. Herbicides will not be used in sensitive habitats, including potential wetlands and SEZs. Land owners will be notified before the use of herbicides for invasive treatment. In areas where treatment is not feasible, noxious weed areas will be clearly flagged or fenced to clearly delineate work exclusion.
- ▲ To ensure that fill material and seeds imported to the project site are free of invasive plants/noxious weeds, the project will use on-site sources of fill and seeds whenever available. Fill and seed materials that need to be imported to the project site will be certified weed-free by the Resident Engineer. In addition, only certified weed-free imported materials (or rice straw in upland areas) will be used for erosion control.
- ▲ Vehicles and equipment will arrive at the project site clean and weed-free. All equipment entering the project site from weed-infested areas or areas of unknown weed status will be cleaned of all attached soil or plant parts before being allowed into the project site. Vehicles and equipment will be cleaned using high-pressure water or air at designated weed-cleaning stations after exiting a weed-infested area. Cleaning stations will be designated by a botanist or noxious weed specialist and located away from aquatic resources. Equipment will be inspected by the on-site environmental monitor for mud or other signs that weed seeds or propagules could be present before use in the project site. If the equipment is not clean, the monitor will deny entry into work areas.
- ▲ If designated weed-infested areas are unavoidable, the plants will be cut, if feasible, and disposed of in a landfill in sealed bags or disposed of or destroyed in another manner acceptable to TRPA or other agencies as appropriate. If cutting weeds is not feasible, layers of mulch, degradable geotextiles, or similar materials will be placed over the infestation area to minimize the spread of seeds and plant materials by equipment and vehicles during construction. These materials will be secured so they are not blown or washed away.
- ▲ Locally collected native seed sources for revegetation shall be used when possible. Plant and seed material will be collected from or near the project site, from within the same watershed, and at a similar elevation when possible and with approval of the appropriate authority. Persistent nonnatives such as cultivated timothy (*Phleum pretense*), orchard grass (*Dactylis glomerata*), or ryegrass (*Lolium* spp.) shall not be used.

Significance after Mitigation

Implementing Mitigation Measure 3.16-4 would reduce potentially significant impacts from the spread of invasive plant species (Impact 3.16-4) to a **less-than-significant** level for the purposes of CEQA and TRPA because invasive plant species management practices would be implemented during project construction and the inadvertent introduction and spread of invasive plants from project construction would be prevented.

Because of the reasons stated above, for the purposes of NEPA, the environmental consequences of implementing the transportation improvements and mixed-used developments sites included in Alternatives B, C, and D with Mitigation Measures 3.16-4 **would not be adverse**.

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3.17 RELATIONSHIP BETWEEN THE SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

NEPA (40 CFR 1502.16) and the TRPA Code of Ordinances (Section 3.7.2.F) require a discussion of the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity of the environment. The following discussion addresses how the US 50/South Shore Community Revitalization Project would affect the short-term use and the long-term productivity of the environment. In general, “short-term” is used here to refer to the construction period, while “long-term” refers to the operational life of the project and beyond.

Implementation of the build alternatives would result in short-term construction-related impacts within the study area (construction impacts are described in detail in the individual resource sections in Chapter 3, “Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures”). Potential short-term impacts include ground disturbance and vegetation removal for construction access and safety of operations, temporary limitations to vehicle and recreation access in some areas, increased air emissions, potential disturbance of currently unrecorded cultural resources, transport and use of hazardous materials (e.g., fuels and lubricants), soil erosion and water quality impacts, and increased ambient noise levels. Short-term impacts would be minimized through implementation of mitigation measures intended to reduce environmental effects. Over the long term, these resources are expected to recover from any adverse effects without a loss in productivity.

In the long term, the build alternatives would result in increased coverage (see Section 3.11, “Geology, Soils, Land Capability, and Coverage”); tree removal and disturbance and loss of sensitive habitats (see Section 3.16, “Biological Environment”); increases in ambient noise levels and visual impacts on neighborhood character in the Rocky Point residential area west of the Heavenly Village Center (see Sections 3.15, “Noise and Vibration,” and 3.7, “Visual Resources/Aesthetics”); and the division of the Rocky Point neighborhood and displacement of residences. These impacts would be minimized through implementation of mitigation measures intended to reduce environmental effects.

Implementation of the US 50/South Shore Community Revitalization Project would meet the need to address existing and future transportation deficiencies and projected multi-modal transportation needs along the US 50 corridor between Pioneer Trail and SR 207, to alleviate cut-through traffic in local neighborhoods in the City of South Lake Tahoe, and to support community revitalization goals in the California/Nevada state line area. The project would also meet the demand for transportation improvements to create well-designed, safer facilities that balance the needs of pedestrian, bicycle, transit, and private vehicle access while respecting the unique environmental setting of the Lake Tahoe Basin. The project would help the South Shore area to achieve revitalization goals, such as creating more walkable, transit-served public space in the tourist core through public and private investment, which would promote economic vitality.

Redevelopment of the mixed-use sites provides an opportunity for replacement of the displaced residents and business in the same immediate area. Depending on the composition of the mixed-use developments, these sites could include primarily affordable housing and provide a unique opportunity to meaningfully address the existing workforce housing deficiency in the Tahoe Basin.

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3.18 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES AND SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

The irreversible and irretrievable commitment of resources is the permanent loss of resources for future or alternative purposes. Irreversible and irretrievable resources are those that cannot be recovered or recycled or those that are consumed or reduced to unrecoverable forms. Section 15126.2(c) of the California State CEQA Guidelines states that significant irreversible environmental changes that would be involved with a project may include:

- ▲ consumption of non-renewable resources;
- ▲ changes to land use which would commit future generations to similar uses; and
- ▲ irreversible changes which may result from environmental accidents associated with the project.

3.18.1 Consumption of Non-Renewable Resources

Implementation of any of the build alternatives for the US 50/South Shore Community Revitalization Project would result in the consumption of energy and materials. Fossil fuels would be required for construction of the project, as well as operation and maintenance. Construction associated with the new pedestrian bridge, the realignment of US 50, and related improvements associated with Alternatives B, C, and D, and the pedestrian plaza with Alternative E, would require the manufacture of new materials (e.g., asphalt, concrete, rebar, paint). The raw materials and energy required for the manufacture of these materials would result in an irretrievable commitment of natural resources.

Alternatives B, C, and D also include the potential future redevelopment of three sites within the project site to include a mix of residential and commercial uses. These sites are the preferred location for replacement housing for dislocated residents. Energy would be expended in the form of gasoline, diesel fuel, and oil for vehicles and equipment in support of construction and operation. Construction activities and demolition of existing facilities would generate non-recyclable materials, such as solid waste and construction debris. Electricity and natural gas would be expended for the construction and operation of the future mixed-use development sites, a portion of which would be offset by the displacement and removal of similar uses to accommodate the highway realignment. This would include irreversible changes associated with excavation, grading, and construction activities and would affect air quality, coverage, and water quality. These changes that are associated with the improvements related to each of the build alternatives are addressed throughout this document and the changes associated with the mixed-use development sites is addressed programmatically in this document.

The mixed-use development sites would be subject to subsequent project-level environmental review, which may yield additional site-specific mitigation measures. Regardless, the potential for disturbance associated with the build alternatives would represent an irreversible change. In addition, construction activities would entail the use of concrete, glass, plastic, and petroleum products, as well as an increase in energy consumption, which would be irreversible and irretrievable upon expenditure.

3.18.2 Changes to Land Use Which Would Commit Future Generations to Similar Uses

The US 50/South Shore Community Revitalization Project consists of realignment of US 50, related improvements, construction of a new pedestrian bridge between the tourist core and Van Sickel Bi-state Park, pedestrian and bicycle facilities, and three mixed-use development sites with Alternatives B, C, and D. Implementation of these alternatives would require the removal of woody vegetation within the project site

(see Section 3.16, “Biological Environment”). This loss of woody vegetation would be permanent as a result of paving and other necessary construction components”); however, the effects would be minimized with preparation and implementation of a Tree Removal, Protection, and Replanting Plan as required by Mitigation Measure 3.16-3.

Uses of nonrenewable resources during construction of any of the build alternatives may be irreversible because a large commitment of such resources makes removal or reuse thereafter unlikely. Implementation of the project would result in permanent changes to the existing environment, which have been described throughout this EIR/EIS/EIS. Construction activities associated with the project would result in the irreversible consumption of nonrenewable resources. The irreversible commitment of limited resources is inherent in any construction project. Resources anticipated to be irreversibly committed would include: sand, gravel, concrete, petrochemicals, construction materials, and water. The project would also require the consumption of fossil fuels to meet energy demands associated with construction vehicles and equipment.

3.18.3 Irreversible Changes Which Would Result from Environmental Accidents

The project does not provide for an appreciable increase in use of hazardous materials relative to existing conditions and would transport, use, and generate only small volumes of hazardous materials associated with construction. The construction contractor would prepare a construction hazardous materials management plan as identified in Mitigation Measure 3.12-2b. The construction contractor would also prepare a storm water pollution prevention plan (SWPPP) that must address proper use and storage of hazardous materials, spill prevention and containment, and cleanup and reporting of any hazardous materials releases. The SWPPP also includes proposed best management practices (BMPs) and a site-specific Construction Site Monitoring and Reporting Plan developed by a Qualified SWPPP Developer. With continued compliance with existing federal, state, and local laws and regulations related to hazardous materials (see Section 3.12, “Hazards, Hazardous Materials, and Risk of Upset”), the US 50/South Shore Community Revitalization Project would not be expected to result in environmental accidents that have the potential to cause irreversible damage to the natural or human environment.

3.19 CUMULATIVE IMPACTS

3.19.1 Cumulative Impact Analysis Methodology

This section describes the cumulative impact analysis methodology for all environmental resource topics. The proposed US 50/South Shore Community Revitalization Project is a later activity consistent with the Lake Tahoe Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), which was evaluated in a program environmental impact report (EIR) and Tahoe Regional Planning Agency (TRPA) environmental impact statement (EIS) that was adopted in December 2012. Therefore, cumulative impacts from the US 50/South Shore Community Revitalization Project are addressed in light of the information in the program EIR/EIS. Where cumulative impacts have previously been addressed in the RTP/SCS EIR/EIS, and are still applicable at this time, analysis of those impacts has not been repeated. Rather, reference is made to the appropriate analysis in the RTP/SCS. This approach is in accordance with Section 15168(d) of the State CEQA Guidelines.

The 2017 Regional Transportation Plan (2017 RTP), which is an update to the 2012 RTP, and its joint CEQA/TRPA environmental document have been circulated for public review. The vision and goals of the 2017 RTP were based on the 2012 RTP. The projects listed in the 2017 RTP are substantially similar to those in the 2012 RTP, and the US 50/South Shore Community Revitalization Project is included in both documents.

Although the draft 2017 RTP has been released for public review, and includes the US 50/South Shore Community Revitalization Project, the 2012 RTP/SCS is the currently adopted plan. Because an initial study/initial environmental checklist (IS/IEC) has been prepared for the 2017 RTP as a supplement to the RTP/SCS EIR/EIS and does not result in new significant environmental impacts, the analysis below continues to rely on the EIR/EIS.

DEFINITION OF CUMULATIVE IMPACTS

Section 15130(a) of the State CEQA Guidelines requires a discussion of the cumulative impacts of a project when the project's incremental effect is cumulatively considerable. Cumulatively considerable, as defined in State CEQA Guidelines Section 15065(a)(3), means that the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." State CEQA Guidelines Section 15355 defines a cumulative impact as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

NEPA implementing regulations require consideration of cumulative effects (40 Code of Federal Regulations [CFR] 1508.25) during environmental review. Cumulative effects are defined as an "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

Although the TRPA Rules of Procedure and Code of Ordinances do not identify consideration of cumulative impacts as a specific requirement of an EIS, the TRPA Initial Environmental Checklist form poses the following question: "Does the project have impacts which are individually limited, but cumulatively considerable?" In practice, TRPA looks to NEPA and CEQA for guidance in the approach to assessing

cumulative impacts, so analysis that complies with those environmental laws is also sufficient for TRPA purposes.

CUMULATIVE IMPACT APPROACH

The 2012 RTP/SCS was approved based on the environmental analysis in a joint CEQA EIR/TRPA EIS that was prepared as a program environmental document for the entire plan of transportation projects, including the US 50/South Shore Community Revitalization Project. The RTP/SCS EIR/EIS is incorporated by reference into this document for the purpose of relying on cumulative and region-wide impact analysis that has already been prepared and presented in the certified program EIR, in accordance with State CEQA Guidelines Section 15168, and in the certified TRPA EIS. Section 15168(d) of the State CEQA Guidelines states:

- (d) Use with Subsequent EIRs and Negative Declarations. A program EIR can be used to simplify the task of preparing environmental documents on later parts of the program. The program EIR can:
 - (1) Provide the basis in an Initial Study for determining whether the later activity may have any significant effects.
 - (2) Be incorporated by reference to deal with regional influences, secondary effects, cumulative impacts, broad alternatives, and other factors that apply to the program as a whole.
 - (3) Focus an EIR on a subsequent project to permit discussion solely of new effects which had not been considered before.

To the extent that cumulative impacts and region-wide influences are covered in the RTP/SCS EIR/EIS and are still applicable, this EIR/EIS/EIS relies on that prior analysis and does not conduct a redundant evaluation. These impacts are described in sub-section 3.19.3 below.

To examine the contributions of other related projects that are not included in the RTP/SCS EIR/EIS, the cumulative impact analysis is conducted in accordance with State CEQA Guidelines Section 15130. It identifies two basic methods for establishing the cumulative context within which a project is considered: (1) the use of a list of past, present, and probable future projects or (2) the use of adopted projections from a general plan, other regional planning document, or a certified EIR for such a planning document. A combination of these approaches may also be used. NEPA and TRPA do not provide similarly detailed guidance on methods for cumulative impact analysis.

This cumulative analysis uses the “list” approach to supplement, where needed, the analysis, modeling of projections, and impact evaluation from the previously certified EIR/EIS for the RTP/SCS. Sub-section 3.19.4 discusses cumulative impacts using the list approach. The effects of past and present projects on the environment are reflected by the existing conditions in the project site and broader study area, as described in Chapter 3, Sections 3.1 through 3.18 of this EIR/EIS/EIS.

3.19.2 Cumulative Setting

The geographic area that could be affected by the project varies depending on the type of environmental resource being considered. When the effects of the project are considered in combination with other past, present, and probable future projects to identify cumulative impacts, the other projects that are considered may also vary depending on the type of environmental effects being assessed. Table 3.19-1 presents the general geographic areas associated with the different resources addressed in this analysis.

Table 3.19-1 Geographic Scope of Cumulative Impacts

Resource Topic	Geographic Area
Land Use	Limited to project site and surrounding land uses
Parks and Recreation Facilities	Tahoe Region (overall accessibility of recreational opportunities) and South Shore area (interactions with individual recreational activities)
Community Impacts	South Shore area (defined as the area extending from Meyers, CA to Zephyr Cove, NV)
Public Services and Utilities	South Shore area of Lake Tahoe (water, wastewater, electricity, natural gas, and solid waste) and study area (police and fire)
Traffic and Transportation	Tahoe Region and local roadways where the project could alter traffic conditions
Visual Resources/Aesthetics	Project site and surrounding public viewpoints
Cultural Resources	Study area
Floodplains	Local and regional watersheds
Water Quality and Stormwater Runoff	Local and regional watersheds
Geology, Soils, Land Capability, and Coverage	Tahoe Region for land capability and coverage; study area for site grading and erosion potential
Hazards, Hazardous Materials, and Risk of Upset	Study area
Air Quality, Greenhouse Gas Emissions and Climate Change	Tahoe Region (pollutant emissions that affect the air basins), study area (pollutant emissions that are highly localized), and global/statewide for greenhouse gases
Noise and Vibration	Study area where project-generated noise could be heard concurrently with noise from other sources
Biological Resources	Defined differently for each species, based on species distribution, habitat requirements, and scope of impact from proposed activities

Source: Compiled by Ascent Environmental, Inc. in 2016

3.19.3 Cumulative Impacts Addressed in the RTP/SCS EIR/EIS

The US 50/South Shore Community Revitalization Project is included in the list of projects to be undertaken to implement the Lake Tahoe RTP/SCS. The RTP is a long-range plan to develop a transportation system in the Tahoe Region that supports a healthy and prosperous community, economy, and environment and mitigates existing adverse mobility and environmental conditions. 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 Lake Tahoe RTP/SCS was last updated and adopted in December 2012. Many of the contemporary concepts necessary to achieve the Region's transportation vision were incorporated into the RTP at that time, in conjunction with the SCS for the California side of the Region. These concepts include integration between land use planning and transportation; bringing work, shopping, recreation, housing, and lodging closer together; improving the linkage of development to a multi-modal transportation system; closing gaps in the existing bicycle and pedestrian network; enhancing transit service; and revitalizing communities through corridor enhancement projects that improve mobility for all travel modes.

In December 2012, prior to adoption of the plan, a program EIR/EIS was certified for the RTP/SCS. In accordance with Section 15168 of the State CEQA Guidelines, a program EIR may be prepared on a series of actions that can be characterized as one large project and are related to, among other things, the issuance of general criteria to govern the conduct of a continuing program or individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects that can be mitigated in similar ways. The proposed RTP/SCS met these criteria for use of a program EIR.

A program EIR provides a regional consideration of cumulative effects and includes broad policy alternatives and program-level mitigation measures that are equally broad in scope. The program EIR prepared for the RTP/SCS provides a regional-scale analysis and a framework of mitigation measures for subsequent, site-specific environmental review documents prepared by lead agencies in the Region as individual planning, development, and transportation projects are identified, designed, and move through the planning, review, and decision-making process.

Because the RTP/SCS EIR/EIS serves as the program environmental document for the US 50/South Shore Community Revitalization Project and the project is included in the RTP/SCS project description, the project is a “later part of” the RTP/SCS and is consistent with the program EIR/EIS. As noted in Section 15168(d) of the State CEQA Guidelines, the program EIR can be used to “simplify the task of preparing environmental documents on later parts of the program.” The program EIR can be incorporated by reference into a later project’s EIR to “deal with regional influences, secondary effects, cumulative impacts, broad alternatives and other factors that apply to the later project.” As such, the following discussion summarizes cumulative impacts that have been addressed adequately in the RTP/SCS EIR/EIS. Refer to the RTP/SCS EIR/EIS for more detailed information. The Draft and Final EIR/EIS can be found and downloaded at <http://tahoempo.org/Mobility2035/>.

CUMULATIVE VEHICLE MILES TRAVELED PER CAPITA IN THE REGION

Vehicle miles traveled (VMT) per capita is a measure of the efficiency of the transportation system and the degree to which the land use pattern would reduce personal motor vehicle travel. For the Tahoe Region, VMT per capita may be influenced by a number of variables, including land use pattern, emphasis on personal motor vehicle travel compared to other travel modes, and implementation of vehicle trip reduction strategies. When VMT per capita increases, it results in indirect environmental impacts such as air pollutant emissions. In the RTP/SCS analysis, VMT per capita increases would be caused by a number of factors such as additional external workers associated with new commercial space; lack of substantial bicycle, pedestrian, and transit enhancements; and limited number of new dwelling units added to the Region (i.e., less ability to use new dwelling unit placement to decreased average VMT). Region-wide VMT per capita decreases would result from improved non-motor vehicle mobility under Alternatives B, C, and D, such as the pedestrian overcrossing, cycle track, bicycle lanes, and sidewalks of the US 50/South Shore Community Revitalization Project, and the placement of a majority of new dwelling units within a town center as directed by the Lake Tahoe Regional Plan. Under the adopted RTP/SCS, region-wide VMT per capita would decrease. Thus, recognizing the US 50/South Shore Community Revitalization Project was included in the region-wide analysis for the RTP/SCS, the project’s contribution to any change in VMT per capita **would not contribute to a cumulatively significant impact** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, there **would not be an adverse cumulative effect** related to change in VMT per capita.

CONSISTENCY WITH AIR QUALITY PLANS AND TRANSPORTATION CONFORMITY

The Lake Tahoe Air Basin (LTAB) is in attainment or designated unclassified for all National Ambient Air Quality Standards (National AAQS) and is designated nonattainment for ozone and PM₁₀ per California AAQS. The intent of the RTP/SCS is to accommodate the expected growth in the Region in a way that improves traffic flow and mobility of residents and visitors to the Region, and reduces regional and localized traffic congestion. The US 50/South Shore Community Revitalization Project helps achieve the traffic flow and mobility goals of the RTP/SCS.

For the California portion of the LTAB, the only applicable federal air quality plan for Lake Tahoe is the Carbon Monoxide Maintenance Plan (CO Maintenance Plan) originally adopted in 1996 and revised in 2004. Since other pollutants were already in attainment with their respective national air quality standards when the CO Maintenance Plan was prepared, no other maintenance plans were developed. Part of the CO

maintenance strategy involves allocation of transportation emissions budgets to maintenance areas. The RTP is (and must be) in conformance with the transportation emissions budget allocated to the Region. The emissions budgets only apply to VMT in the applicable California jurisdictions. If the RTP conforms to the emissions budget allocated to the Region, then the RTP would be consistent with the CO maintenance strategy for the CO National AAQS.

The RTP/SCS was found to result in mobile-source CO emissions well within the emissions budgets allocated for transportation conformity. The transportation emissions budget is the basis for air quality planning efforts in the Lake Tahoe CO Maintenance Plan. If the transportation emissions budget is met, then the Basin is considered to be on track for continuing to maintain attainment of the national CO standards. The RTP/SCS would not conflict with or obstruct regional CO maintenance efforts; in fact, the mobility improvements consistent with the RTP help maintain the national CO standard. Because the US 50/South Shore Community Revitalization Project is included within the RTP/SCS list of projects that would improve traffic flow and mobility, the project also conforms with the CO Maintenance Plan. Therefore, the project's impact on continued attainment of the national CO standard would be beneficial and **would not contribute to a cumulatively significant impact** for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, there **would not be an adverse cumulative effect** related to attainment of the national CO standard.

CUMULATIVE LONG-TERM OPERATIONAL REGIONAL AIR QUALITY IMPACTS

Basin-wide VMT calculations for the RTP/SCS were obtained from the TRPA travel demand model and were estimated using the origin-destination method recommended by the SB 375 Regional Targets Advisory Committee. Total Basin-wide, mobile-source emissions associated with VMT for the RTP/SCS were modeled using EMFAC 2011. It was assumed that the vehicle fleet information contained in the EMFAC model for eastern Placer and El Dorado Counties would be representative of vehicles throughout the Region because the factors that determine vehicle choice (e.g., lifestyle, mobility, environmental, and local economic factors) do not differ dramatically within the Basin.

Mobile-source emissions associated with the RTP/SCS were found to decrease over the plan implementation period, because of increasingly stringent vehicle emission standards. These emissions estimates were based on outputs from the regional transportation model for plan build-out and represent the cumulative (2035) condition. Because long-term regional emissions would decrease over the plan period, RTP/SCS implementation would not conflict with attainment and maintenance efforts and would help TRPA achieve air quality standards and thresholds. Because the US 50/South Shore Community Revitalization Project is included within the RTP/SCS list of projects and was contemplated in the RTP/SCS EIR/EIS, implementation of the project **would not contribute to a cumulatively significant impact** to long-term, operational, regional air quality for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, there **would not be an adverse cumulative effect** related to long-term, operational, regional air quality.

GREENHOUSE GAS EMISSIONS – CUMULATIVE CLIMATE CHANGE CONTRIBUTION

Implementation of the RTP/SCS would occur in conjunction with land use development and population growth anticipated during the plan horizon. Although the RTP strategies would improve the efficiency of transportation-related GHG emissions by increasing transit and non-motorized vehicle travel, the combined influence of development and population growth occurring during the RTP/SCS plan horizon would be greater than the GHG efficiency gains that would be achieved, resulting in a net cumulative increase in GHG emissions. The regional GHG emissions increase would contribute to the significant cumulative impact on global climate change, despite implementation of all feasible measures to reduce GHG emissions. The adopted RTP/SCS alternative's strategy package of land use and transportation actions provides the maximum feasible extent of GHG emission reduction for the Region's transportation sector. Because the

US 50/South Shore Community Revitalization Project is included within the RTP/SCS list of projects, it would be part of a considerable contribution to the cumulative impact of climate change. Additionally, the RTP/SCS EIR/EIS and the Regional Plan Update Environmental Impact Statement (RPU EIS) included Mitigation Measures 3.5-1 (TRPA 2012b:3.5-24 – 3.5-25) and 3.5-1 in the RTP/SCS EIR/EIS (TMPO and TRPA 2012:3.5-23) that minimize greenhouse gas emissions associated with construction activities and operation of new buildings. TRPA implemented these mitigation measures through changes to the standard conditions of approval for projects that includes additional efforts to reduce emissions through construction best practices, revisions to the Code for vehicle idling restrictions, and an amendment to the Code that requires Area Plans to include a strategy to reduce GHG emissions from the construction or operation of buildings (TRPA 2013:75 – 88). Construction of the transportation improvements and mixed-use development, including replacement housing, would be required to implement all feasible construction best practices as a condition of approval. No additional feasible mobile-source GHG mitigation is available. This **significant cumulative impact** was acknowledged in the RTP/SCS EIR/EIS, so it need not be re-evaluated here.

CUMULATIVE LONG-TERM TRAFFIC NOISE LEVELS ALONG EXISTING ROADWAY ALIGNMENTS

Long-term traffic noise levels under the RTP/SCS could exceed threshold standards established by TRPA for different land use categories and highway corridors. They could result in a perceptible long-term increase to the ambient noise level of 3 dBA Community Noise Equivalent Level (CNEL) or greater in areas where the applicable TRPA threshold standard is not exceeded, and/or result in a long-term noise level increase in an area where the applicable TRPA threshold standard is already exceeded. It is unknown at this time whether all individual projects included in the adopted RTP/SCS alternative would be able to incorporate design and operational measures that would prevent an increase in traffic noise levels that exceed applicable TRPA-designated CNEL standards and/or that would fully offset traffic noise increases in areas where TRPA-designated CNEL standards are already exceeded. However, the RTP/SCS EIR/EIS provided mitigation that would reduce potential impacts of project implementation to a less-than-significant level, and that mitigation is incorporated into the US 50/South Shore Community Revitalization Project. As a result, the project **would not contribute to a cumulatively significant impact** on long-term traffic noise levels along existing roadway alignments.

Because of the reasons stated above, for the purposes of NEPA, there **would not be an adverse cumulative effect** related to long-term traffic noise levels along existing roadway alignments.

CUMULATIVE LONG-TERM TRAFFIC NOISE LEVELS ALONG REALIGNED ROADWAYS

Two projects involving roadway realignments are included in the approved RTP/SCS: the US 50/South Shore Community Revitalization Project and the SR 89/Fanny Bridge Community Revitalization Project. A project involving the realignment of existing roadways would relocate traffic and attendant noise to locations that were previously quieter and where future traffic noise levels could exceed the CNEL standards established by the applicable area plans, community plans, plan area statements (PASs) and/or local jurisdictions. Adopted mitigation that is part of the RTP/SCS would reduce potential impacts of project implementation to a less-than-significant level. Although the US 50/South Shore Community Revitalization Project is included within the RTP/SCS and its EIR/EIS, and all mitigation measures in the RTP/SCS EIR/EIS also apply to this project, additional noise mitigation would be required beyond what was prescribed in the RTP/SCS EIR/EIS for the relocated section of the highway through the Rocky Point neighborhood. Please refer to Cumulative Impact 3.15-3 below.

CUMULATIVE LAND COVERAGE

According to the 2015 Threshold Evaluation for soil conservation, Land Capability Districts (LCDs) 1a, 1c, and 2 through 7 are meeting the land coverage threshold standard for hard impervious cover. LCD 1b is not meeting the stream environment zone (SEZ) threshold standard, since existing hard impervious cover is estimated to be exceeding the allowable land coverage by approximately 660 acres region-wide (TRPA 2016).

Coverage is considered a major environmental issue in the Region and various programs and projects exist to reduce coverage and the associated indirect impacts (e.g., water quality degradation). Many projects throughout the Region involve reductions in coverage on sensitive lands and the public acquisition of private sensitive land parcels. These projects include the Environmental Improvement Program (EIP), Tahoe Conservancy, Nevada Division of State Lands (NDSL), and US Forest Service land acquisition and restoration projects, the excess coverage mitigation program, and coverage transfer requirements. In addition, certain development projects, such as Beach Club on Lake Tahoe, Sierra Colina Village, and the Edgewood Lodge and Golf Course Improvement Project, also include reductions in coverage on sensitive lands.

In combination with these existing programs, all future development projects would be limited in land coverage by the TRPA Code. In addition, through reducing coverage in SEZs and focusing development into community centers on high capability lands, the RTP/SCS would move the Region toward attainment and maintenance of the soil conservation threshold standards.

Limitations on coverage and concentration of development in the community centers, coupled with incentives to transfer coverage out of low capability lands, would contribute to beneficial effects on indirect impacts of coverage, including effects on water quality, air quality, and biological resources, as discussed elsewhere in this cumulative impact discussion. Therefore, the RTP/SCS, including the US 50/South Shore Community Revitalization Project, **would not contribute to a cumulatively significant impact** on land coverage in the Region for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to land coverage in the Region.

BASIN-WIDE VMT THRESHOLD STANDARD UNDER THE REGIONAL PLAN UPDATE

In addition to certification of the RTP/SCS, TRPA concurrently certified the Lake Tahoe Regional Plan Update in December 2012. Under Article V of the Tahoe Regional Planning Compact (Public Law 96-551), both a land use plan and a transportation plan are required to be prepared for the Tahoe Region. As stated in the Compact, the Regional Plan must include a “transportation plan for the integrated development of a regional system of transportation,” including, but not limited to, parkways, highways, transit, waterways, public transportation, and bicycle facilities. As a result, the transportation analysis of the Regional Plan Update EIS included transportation policies proposed as part of the Transportation Element of the Goals and Policies and the package of capital projects and transportation strategies proposed in the RTP/SCS, which included the US 50/South Shore Community Revitalization Project. One impact included in the Regional Plan Update EIS and the RTP/SCS applies to this cumulative analysis: the Vehicle Miles Travelled (VMT) Threshold Standard for Air Quality under the Regional Plan Update. Refer to the Regional Plan Update EIS for more detailed information, available at <http://trpa.org/>, and the RTP/SCS EIR/EIS, available at <http://tahoempo.org/>.

VMT is a measure of automobile travel within the transportation system, and an indicator of the degree of integration between the transportation system and planned land uses (i.e., a lower VMT indicates greater beneficial integration of transportation systems and land uses to reduce personal vehicle travel). The 2011 Threshold Evaluation, and the recently adopted 2015 Threshold Evaluation, also recognized VMT as a proxy for regional traffic congestion, as well as for air quality (i.e., for nitrates, particulates, and visibility). As described above, VMT may be influenced by a number of variables, including land use pattern, emphasis on facilities to encourage use of certain travel modes over others, and implementation of vehicle trip reduction strategies.

The RTP/SCS includes new bicycle and pedestrian facilities, capital improvement projects, transit service and capital enhancements, and waterborne transit. These projects are estimated to result in a 2035 VMT that is 7.2 percent less than the 1981 VMT of the Tahoe Region. Because the VMT Threshold Standard calls for a 10 percent reduction from 1981, falling short of the reduction goal would be a significant impact. As described in the RPU EIS, there would be a potentially significant impact on the TRPA VMT Threshold

Standard, because implementation of the Regional Plan, including planned transportation projects, would not achieve a 10 percent reduction in VMT from 1981.

Because the US 50/South Shore Community Revitalization Project is included within the traffic analysis in the Regional Plan Update, the RTP/SCS, and this analysis, the project **would contribute to a cumulatively significant impact, before consideration of mitigation.**

TRPA adopted Mitigation Measure 3.3-3: Implement Additional VMT Reduction, in response to the shortfall in reaching the VMT reduction goal to reduce VMT by 10 percent from 1981 VMT. Under this mitigation measure, TRPA developed a program for the phased release of land use allocations, followed by monitoring and forecasting of actual roadway traffic counts and VMT. New development allocations will be authorized for release by the TRPA Governing Board every four years, beginning with the approval of the Regional Plan in 2012. Approval of the release of allocations is contingent upon demonstrating, through modeling and the use of actual traffic counts, that the VMT Threshold Standard will be maintained over the subsequent four-year period. This mitigation measure was established as TRPA Code Section 50.4.3. As a result of this requirement, the project **would not contribute to a cumulatively significant impact** for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to the VMT Threshold Standard.

3.19.4 Related Project List Analysis of Cumulative Impacts

RELATED PROJECT LIST

A list of reasonably foreseeable, probable future projects has been developed to supplement the transportation projects included in the RTP/SCS, because these projects were not explicitly identified in the RTP/SCS EIR/EIS. The list of related projects is provided in Table 3.19-2. Probable future projects are those in the project vicinity that have a reasonable potential to interact with the US 50/South Shore Community Revitalization Project to generate a cumulative impact (based on proximity, type of impacts, and construction schedule) and either:

- ▲ are partially occupied or under construction,
- ▲ have received final discretionary approvals,
- ▲ have applications accepted as complete by local agencies and are currently undergoing environmental review, or
- ▲ are proposed projects that have been discussed publicly by an applicant or have otherwise become known to a local agency and have provided sufficient information about the project to allow at least a general analysis of environmental impacts.

Projects located within the vicinity of the project site have the possibility of interacting with the project alternatives to generate cumulative impacts. The list of projects in Table 3.19-2 was used in establishing the cumulative settings and impacts. Exhibit 3.19-1 shows the corresponding locations of the projects listed in Table 3.19-2.

CUMULATIVE IMPACTS ADDITIONAL TO THOSE CONSIDERED IN RTP/SCS EIR/EIS

The following discussion addresses the cumulative impacts associated with implementation of the project alternatives in combination with other past, present, and reasonably foreseeable related projects. The cumulative impacts described below are limited to those environmental impacts that would occur related to

implementation of one or more of the alternatives evaluated in this EIR/EIS and that were not otherwise previously analyzed in the RTP/SCS EIR/EIS (as described above).

Land Use

Cumulative Impact 3.2-1: Cumulatively conflict with or impede implementation of existing land use plans and policies

Growth and development in the Region, including the study area for the project, is guided by the various land use and planning documents of TRPA, Tahoe Metropolitan Planning Organization (TMPO), City of South Lake Tahoe, and Douglas County. These documents serve as the blueprints for the South Lake Tahoe and Stateline communities in achieving their vision of the future. Analysis of the project's consistency with applicable plans is included in Appendix E, "Goals and Policies Consistency Analysis."

The cumulative projects listed in Table 3.19-2 could combine with the project to result in cumulative impacts on implementation of relevant land use plans and policies. In the course of environmental review, permitting, and approval, projects proposed in each jurisdiction are reviewed for consistency with adopted land use guidance documents. The cumulative projects within the jurisdiction of the City of South Lake Tahoe would be reviewed to ensure consistency with the City of South Lake Tahoe General Plan, TCAP, city code, including the zoning ordinance. The cumulative projects within the jurisdiction of Douglas County would be reviewed to ensure consistency with the Douglas County Master Plan, SSAP, county code, including the zoning ordinance. These projects would also be reviewed for compliance with the Regional Plan, TRPA Code of Ordinances, PAS 080, PAS 089, PAS 090, and PAS 092. Because individual projects would be reviewed by land use agencies in the context of their particular planning documents, zoning ordinances, codes, and other guidance documents prior to approval and implementation, resulting alterations of land use would be in accord with, and would implement the vision of these communities as prescribed in the land use plans and policies. The cumulative impact would be less than significant.

As described in Impact 3.2-1, transportation improvements included in Alternatives B, C, and D would implement planned improvements identified in the RTP/SCS, TCAP, SSAP, and ATP. Implementation of the mixed-use development, including replacement housing, as part of these alternatives would result in redevelopment and revitalization within the town center and improvements to pedestrian and bicycle safety and connectivity, which are high priorities of the Regional Plan, TCAP, and SSAP. The project would cumulatively combine with Zalanta at the Village and bike and pedestrian facility projects identified in the ATP to result in a cumulative benefit related to implementing the Regional Plan and TCAP policies related to redevelopment of town centers and mobility and connectivity improvements. The project's conflicts with plans and policies are assessed in this EIR/EIS/EIS and minimized to the extent feasible. Additionally, the project would not cumulatively combine with other projects to result in adverse physical effects on the environment related to cumulative conflicts with plans and policies. Therefore, for the purposes of CEQA and TRPA, **no cumulative impact** related to conflicts with any relevant land use plans, policies, designations, or zoning would occur.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to conflicts with any relevant land use plans, policies, designations, or zoning.

Table 3.19-2 Cumulative Projects List

Project Name	Location	Description	Housing Units and/or Non-Residential Area	Project Status
Beach Club	Kahle Drive, Stateline, Nevada	Redevelopment of the existing mobile home park off Kahle Drive in Stateline with 143 residential housing units, development of a recreational beach and swim club, and a reconstructed pier. The project would also address specific environmental issues by reducing coverage, improving drainage, installing Best Management Practices (BMPs) for water quality, restoring SEZ, and improving flood attenuation.	143 housing units	Revised plans approved by TRPA April 2016. Environmental review and pier construction complete. Construction of the housing units anticipated to begin summer 2016.
Bijou Park Creek Watershed Management/Southwest Corner Project	Ski Run and Lake Tahoe Boulevard/US 50, South Lake Tahoe, California	Redevelop and restore a key site in the city. The project would remove several existing, aged buildings and construct approximately 50,000 square feet of commercial development at the southwest corner of Ski Run Boulevard and Lake Tahoe Boulevard (currently vacant) and several developed parcels to the west. The development would consist of retail and restaurant uses in two or three new buildings on the site, with surface parking.	–	Currently seeking funding for acquisition and beginning planning phase. Potential construction 2017.
Edgewood Lodge and Golf Course Realignment Project	180 Lake Parkway, Stateline, Nevada	Development at the Edgewood Tahoe Golf Course includes a lodge with 154 hotel rooms, a health spa, restaurant, and conference center. In addition, plans include 40 fractional residences, improvements to the golf course, and expansion of the existing clubhouse, and a new publicly-accessible beach.	154 hotel rooms 10 4-plex cabin structures	Environmental review and pier construction complete. The Lodge is under construction. Ten 4-plex cabin structures expected to start construction late 2016 or early 2017. Completion expected in 2020.
El Dorado Beach to Ski Run Bike Trail	Lake Tahoe Boulevard/US 50 between El Dorado Beach and Ski Run Boulevard, South Lake Tahoe, California	Construct a Class One bike trail from El Dorado Beach to Ski Run Boulevard	–	Design complete, construction planned for 2016.
Gondola Vista	South Lake Tahoe, California	Development of 22 housing units in 10 duplex buildings on the mountain side of Lake Parkway East across from Forest Suites Inn.	22 housing units	Existing TRPA and City permits have expired. A new application is currently under review. Expansion of US 50 would preclude this project as planned.

Table 3.19-2 Cumulative Projects List

Project Name	Location	Description	Housing Units and/or Non-Residential Area	Project Status
Heavenly Epic Discovery	South Lake Tahoe, California and Stateline, Nevada	Expansion of summer and year-round activities at Heavenly Mountain Resort. Includes activities such as ropes courses, zip lines, canopy tours, mountain biking, mountain coaster, and above-ground sky cycle. All activities would be accessed using the existing Gondola from the base station at Heavenly Village.	–	Approval by the Forest Service in April 2015 anticipated construction to occur over “several construction seasons.” Construction on some components of the project have been completed, including the zip line. Expansion of activities outside of the top of Gondola area to the East Peak, Dipper/Comet areas will begin in summer 2016.
Linking Tahoe: Active Transportation Plan	Multiple locations, South Lake Tahoe, California and Stateline, Nevada	The plan guides the long-term planning of bicycle and pedestrian facilities in Lake Tahoe. The plan is intended to provide implementing agencies with the ability to apply for funding for new infrastructure, and provides implementation guidelines for design, development coordination, and programming. Bike and pedestrian facilities planned near the casino core include Class I trail along Park Avenue; Class II bike lane along Pine Boulevard, Park Avenue, Lake Parkway East, Lake Tahoe Scenic Bike Loop—Casino Core; Class III bike routes along Stateline Ave/Lakeshore Blvd/Park Ave; and pedestrian facilities along Park Avenue, US 50, and Lake Parkway East.	–	A technical amendment to the plan was completed in 2014. The plan is currently being updated. Individual projects are at various stages in the approval process and are to be implemented by various local agencies.
Osgood Basin Expansion	On CTC and City of South Lake Tahoe lands east of Ski Run Blvd., between Osgood Ave. and Paradise Ave.	Retrofit of the existing undersized Osgood basin to reduce fine sediment particles and nutrients in a high-priority, directly-connected catchment that discharges directly into the Ski Run Marina. Expansion of the basin to the east would require a higher berm, and proportionally larger footprint to overcome the challenges with the high groundwater table onsite. Alternative options may include a low flow drain to the Wildwood basins that would also improve the capacity current undersized Osgood basin	–	Pre-planning phase, no timeline for construction.
Overlook Court/Ruby Way	Near Overlook Court and Ruby Way, South Lake Tahoe, California	Provide additional storm drain inlets, subsurface drain pipes that will redirect runoff from a steep hillslope area to an existing under-utilized rock-lined channel and construct a series of linear storm drain detention basins to allow infiltration of stormwater.	–	Pre-planning phase, no timeline for construction.

Table 3.19-2 Cumulative Projects List

Project Name	Location	Description	Housing Units and/or Non-Residential Area	Project Status
Pioneer Trail Pedestrian Upgrades	Pioneer Trail between Ski Run Boulevard and Larch Avenue, South Lake Tahoe, California	Design and construct 0.5 miles of ADA compliant sidewalks and city street lighting along both sides of Pioneer Trail between Larch Avenue and Ski Run Blvd.	–	Pre-planning phase, no timeline for construction.
Sierra Colina Village	Lake Village Drive (adjacent to US 50), Stateline, Nevada	The approved project includes construction of 50 housing units (42 housing units in 21 townhouse-style duplexes, plus eight single-family homes, for a total of 29 building footprints), roadway improvements, utility infrastructure improvements, and four linear public facilities, or LPFs (public access facilities, recreation paths).	50 housing units	Revised permit approved by TRPA February 2015. Phase 1 construction anticipated for 2016 and expected to continue through 2022.
South Tahoe Greenway	Extends from Meyers, California to Stateline, Nevada	Project includes a Class I shared-use trail connecting Meyers, California to Stateline, Nevada at Van Sickle CA/NV Bi-State Park, which will also consolidate informal trails, restore disturbed land, and improve forest health along its length.	–	Phase 1a between Herbert Avenue and Glenwood Way in South Lake Tahoe was completed in summer 2015. CTC is submitting a plan revision to change the alignment for some of the other sections. TRPA will have to issue a new permit and/or plan revision for it.
Van Sickle Bi-State Park Master Plan	South Lake Tahoe, California and Stateline, Nevada	This is a multiple phased project that includes park infrastructure improvements (entrance and access points); public facilities, such as picnic/day use areas, restrooms, parking, interpretive facilities, and interpretive and hiking trails; cultural facility protection and improvements; and enhancement of natural resources (i.e., forest health, SEZ restoration, and wildfire protection) on 570 acres of land on the CA/NV border between the South Shore casino corridor and Heavenly Ski Resort. Future phases could include overnight camping, additional parking, additional trailheads, and a visitor center.	–	Phase 1 construction complete. Park opened to the public summer 2011. No new applications submitted for subsequent phases.
Zalanta at the Village (Chateau at the Village, Project B, Phase 1)	Between Friday Avenue and Stateline Avenue along US 50, South Lake Tahoe, California	Project B – Phase 2 of the Chateau at the Village project. 3-story mixed-use development with 19,477 square feet ground-level retail, upper floor condominium hotels, 73 parking spaces at the rear of the project area, 51 offsite parking spaces located at Project A, Phase 1 underground parking garage, streetscape and pedestrian improvements along Lake Tahoe Boulevard/US 50, and a courtyard with guest amenities.	32 Tourist Accommodation Units	Construction is in progress. Estimated completion in November 2016.

Source: Compiled by Ascent Environmental 2016

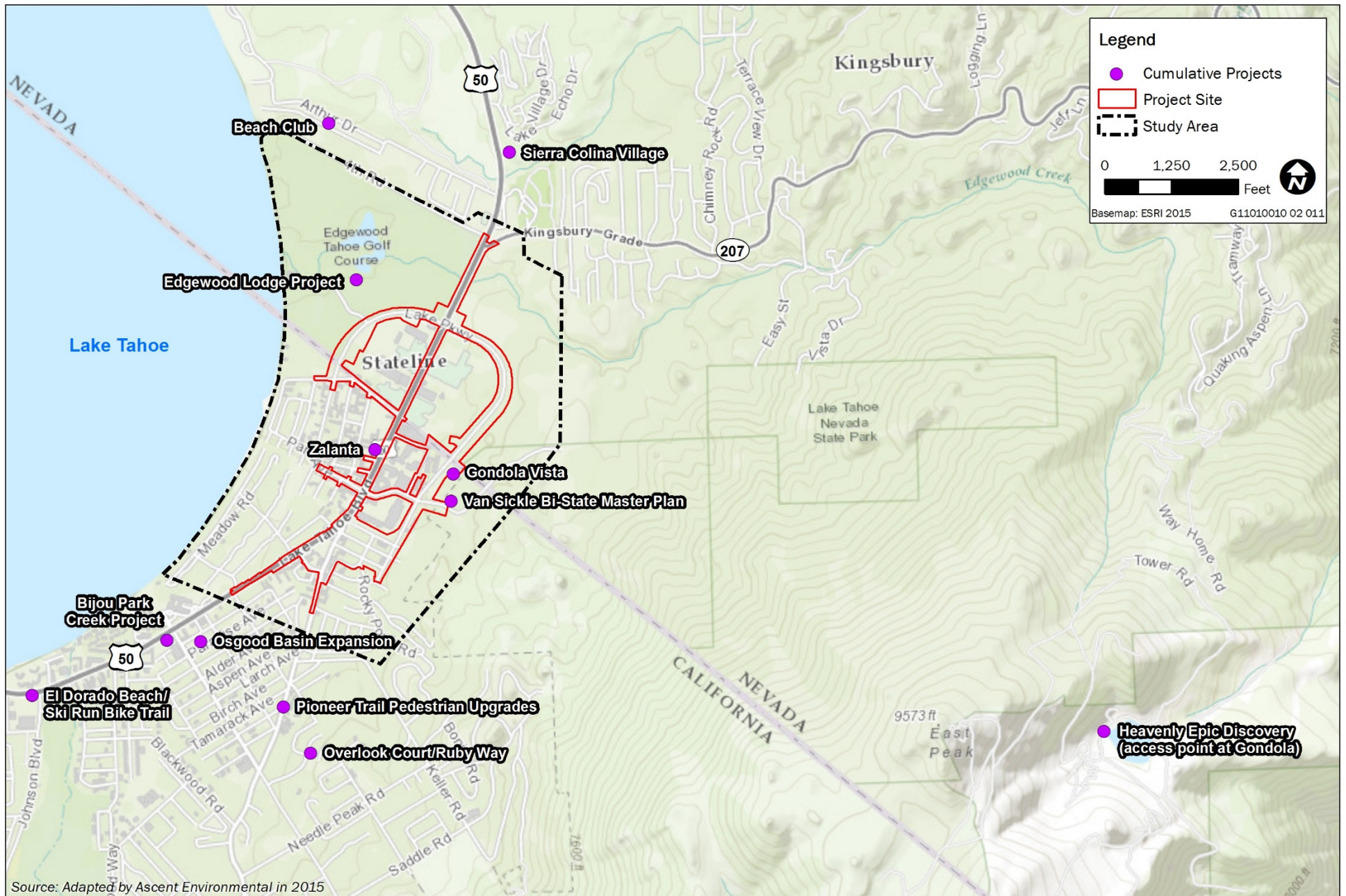


Exhibit 3.19-1

Locations of Cumulative Projects

Cumulative Impact 3.2-2: Cumulatively include uses that are not listed as permissible uses in the applicable Plan Area Statements, community plans, and area plans or expand or intensify an existing non-conforming use

The project features that are proposed in the US 50/South Shore Community Revitalization Project are identified as either allowable or special uses in applicable planning documents. Similarly, the approved or potentially approved new projects listed in Table 3.19-2 would also be permissible or expanding existing non-conforming uses. Because existing regulations preclude the development of prohibited uses, and require that findings for any special uses be made before project approval, Alternatives B, C, D, and E, taken together with the proposed new projects list, would not include uses that are not permissible, nor would it expand or intensify an existing non-conforming use. Therefore, for the purposes of CEQA and TRPA, **no cumulative impact** would occur.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to development of uses that are not listed as permissible or expand or intensify an existing non-conforming use.

Parks and Recreational Facilities

Cumulative Impact 3.3-1: Cumulative temporary disruption of public access to public lands and recreation areas

This portion of the Lake Tahoe Region contains a high density of recreational opportunities (Exhibit 3.3-1), including access to Lake Tahoe, Van Sickle Bi-State Park, Heavenly Mountain Resort, U. S. Forest Service lands, bike trails, and golf courses. Projects for which construction may be ongoing at the same time as the US 50/South Shore Community Revitalization Project include the Edgewood Lodge and Golf Course Realignment Project, Van Sickle Bi-State Park Master Plan Project, and Beach Club development project. If construction activities on any of these projects overlap, a cumulative temporary disruption of public access to recreation sites in the area could result.

Access to Edgewood Tahoe Golf Course, Van Sickle Bi-State Park, and Linear Park would be temporarily disrupted by construction activities under Alternatives B, C, and D. The timing of roadway construction under these alternatives would be determined once an alternative has been selected. Overlap in the construction period for the project with other nearby projects could contribute to a temporary cumulative impact to public access. Project impacts on recreation access during construction would be fully mitigated through Mitigation Measure 3.3-1; therefore, for the purposes of CEQA and TRPA, the project impacts with mitigation **would not be cumulatively considerable** on temporary access to Lake Tahoe, public lands, or recreation areas.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative environmental consequences related to temporary access to Lake Tahoe, public lands, or recreation areas.

Cumulative Impact 3.3-2: Cumulative long-term change in public access to public lands and recreation areas

As discussed in Cumulative Impact 3.3-1, the southeastern portion of the Lake Tahoe Region contains a high density of recreational opportunities for visitors and residents of the region. Recreational access in the area is expected to increase with implementation of new projects over the next several years. Access to Lake Tahoe will be improved by the completion of the Edgewood Lodge and Golf Course Realignment Project and the proposed Beach Club development, both of which include additional public pedestrian beach access. Access to trails and public lands will be improved by completion of the South Tahoe Greenway bike trail; implementation of other projects within the Linking Tahoe: Active Transportation Plan (TMPO 2016); and implementation of the Van Sickle Bi-State Park Master Plan (NSP, CDPR, and Conservancy 2005), which includes additional trailheads and connection to the South Tahoe Greenway. As such, any cumulative impact on public access to recreation areas is anticipated to be beneficial.

None of the build alternatives would have a long-term adverse impact on access to Lake Tahoe, USFS lands, Linear Park, or other recreational facilities. Access to Van Sickle Bi-State Park would be improved under Alternatives B, C, and D by the addition of a trail, level crosswalk, and pedestrian bridge across the new US

50 ROW connecting the park to the urban core. Currently, a single crosswalk connects the park to the urban core at the intersection of Heavenly Village Drive and Montreal Road. The increase in public access to recreation facilities that would result with implementation of the project would **contribute to this beneficial cumulative effect** for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to long-term change in public access to public lands and recreation areas.

Cumulative Impact 3.3-3: Cumulative increase in demand for or physical deterioration of recreation facilities

As discussed above, the southeastern portion of the Lake Tahoe Region contains a high density of recreational opportunities for visitors and residents of the Region. The capacity of existing recreational facilities and the addition of new facilities is expected to increase overall recreation capacity in the near future. As mentioned above, both the Edgewood Lodge and Golf Course Realignment Project and the proposed Beach Club development project would provide additional public access to beaches on those properties. The Van Sickle Bi-State Park Master Plan, when implemented, proposes to provide new overnight camping facilities, expanded day use facilities, a visitor center, and additional trailheads that would expand the recreational capacity of the area. Expansion of Epic Discovery at Heavenly Ski Resort is expected to add additional recreational capacity through mountain biking, a mountain coaster, and an aboveground sky cycle. Other future projects, however, would increase the number of residents and visitors to the area. The Edgewood Lodge and Golf Course Realignment Project would add 154 hotel rooms and 10 four-plex cabins. The proposed Beach Club development would add 143 housing units. The Sierra Colina Village development, just north of SR 207 in Douglas County, would add 50 residences.

Alternatives A and E, and Alternatives B, C, and D transportation improvements, would not include additional residential development and, therefore, would not result in additional demand on or physical deterioration of recreational facilities. Alternatives B, C, and D mixed-use development, including replacement housing, however, would add between 139 and 146 additional residences to the project area, which equates to between 317 and 337 net additional residents. This increase in residents for both the US 50/South Shore Community Revitalization Project and the additional projects was previously assessed in the Tourist Core Area Plan (TCAP) and the Regional Plan Update environmental documents, along with the potential for increased demand for recreation. The TCAP environmental document states that, while demand would be likely to increase, existing recreational facilities would be able to meet that demand. Although Alternatives B, C, and D mixed-use development, including replacement housing, would increase the number of residents and visitors who would use the recreational facilities and public lands in the area, the existing recreational capacity and the planned future capacity would accommodate this additional demand for recreational facilities and, therefore, **would not be a cumulatively significant impact** for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to an increase in demand for or physical deterioration of recreation facilities.

Cumulative Impact 3.3-4: Cumulative change to the quality of recreation user experience

The Van Sickle Bi-state Park Master Plan envisions the possible addition of campgrounds, new trailheads, and a visitor center. Alternatives B, C, and D would increase traffic and traffic noise levels in some areas of Van Sickle Bi-State Park; however, noise level changes at these locations would not be discernible by users at the existing park facilities. These alternatives would use context-sensitive design solutions in the changes at the main entrance to the park, the pedestrian overcrossing into the park, and the retaining wall along the mountain side of existing Lake Parkway. The potential for the same noise levels to have a greater impact on overnight visitors to Van Sickle Bi-state Park if the park improvements proposed in the Master Plan are implemented, would be taken into consideration when locating possible overnight camp facilities within the park in the future. For these reasons, and taking into account the park setting in proximity to an urban area, Alternatives B, C, and D would not substantially diminish recreation user experience. Recognizing the influence of the combination of both detractions and enhancements to recreation resource site conditions of the list of related projects (i.e., adverse for forest use, beneficial for access and amenities) and reasonably anticipating that user expectations take into account the setting, nearby urban area, and existing land use

patterns, the effect of the project's infrastructure improvements **would not result in a cumulatively significant impact** on the quality of recreation user experiences in the study area.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to the quality of recreation user experiences in the study area.

Community Impacts

Cumulative Impact 3.4-1: Cumulative physical division of an established community causing changes to community character and cohesion

With implementation of Alternatives B, C, and D, US 50 would be rerouted through an established neighborhood (generally known as Rocky Point), which exhibits a moderately cohesive residential community. The realigned US 50 would create a physical barrier restricting pedestrian access across the new highway alignment, although vehicular connectivity through the neighborhood would be maintained. The realigned highway would also result in increased pedestrian trip lengths for residents southwest of the highway. These three alternatives would physically divide residences within the Rocky Point neighborhood from each other, and from the adjacent commercial and tourist core area. The construction and operation of the new US 50 alignment would result in short-term and long-term adverse effects on this neighborhood associated with additional traffic, increased traffic noise, increased light and glare, visual impacts on neighborhood character, division of the neighborhood, and displacement of residences (cumulative displacement of residents are addressed in Cumulative Impact 3.4-4) even with implementation of Mitigation Measure 3.4-1. Displaced residents would be relocated to replacement housing constructed before residents are displaced and before construction of the transportation improvements in California begin. The preferred location for the replacement housing are the three sites identified for the mixed-use development. Therefore, the physical division of an established community caused by realignment of US 50 would result in adverse changes in the character and cohesiveness of a residential neighborhood. However, none of the reasonably foreseeable projects listed in Table 3.19-2 include actions that would divide an established community causing adverse changes in community character and cohesion of a residential neighborhood. Thus, the cumulative projects would not further exacerbate any divisions of the neighborhood or reduction of community cohesion, resulting in a worse effect on a cumulative basis. Consequently, for the purposes of CEQA and TRPA, these impacts of Alternatives B, C, and D transportation improvements **would be remain significant on a project basis, but would not combine with effects of other projects to cause a cumulatively significant impact** on physical division of an established community or community character and cohesion. Implementation of Alternatives B, C, and D mixed-use development, including replacement housing, would not result in additional significant adverse impacts related to community character and division of an established community. Similarly, they would not be exacerbated by listed projects on a cumulative basis.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to physical division of an established community or community character and cohesion.

Cumulative Impact 3.4-2: Cumulative alteration of the location, distribution, or growth of the human population for the Region during construction

The geographic area that is considered for cumulative impacts on population growth and housing demand during construction consists of the City of South Lake Tahoe and state line areas.

During construction, the project would generate a temporary increase in employment in the South Shore area of up to approximately 80 construction jobs over the course of constructing the project, with approximately 30 construction jobs during the most intensive phase of constructing the transportation improvements. Alternatives B, C, and D mixed-use development, including replacement housing, could generate approximately 175 construction jobs over the course of constructing the mixed-use development, with approximately 90 construction jobs during the most intensive phase of construction. Similarly, the cumulative projects identified in Table 3.19-2 would also generate a temporary increase in employment associated with construction that would contribute to a potential cumulative impact on population growth

and housing demand during construction. These projects would generate a temporary increase in employment associated with construction. It is likely that some of these projects would be constructed concurrently with the project.

As identified in Table 3.4-3 and described in Impact 3.4-2, in 2014, 434 residents in the South Shore area were employed in the construction industry (TTD 2013:10). In addition, the decline in construction jobs recorded since 2002 would indicate an available labor pool of construction trades people who are under-employed. This existing construction industry labor pool is expected to be sufficient to meet the demand for construction workers that would be generated by the project, plus other projects in the region that could be under construction concurrently. Further, construction employees could originate in other nearby communities including Truckee (Nevada County), El Dorado County, and from the Reno area. Because construction workers serving the project and other projects in the Region can be expected to come from an ample available construction labor pool, substantial population growth or increases in housing demand in the region as a result of these construction jobs is not anticipated. Furthermore, even if some construction workers from outside the Region were employed at local project sites, construction workers typically do not change residences when assigned to a new construction site, and substantial permanent relocation of these workers to the area is not anticipated. Therefore, the construction of the project, in combination with other past, present, and reasonably probable future projects, would not be expected to generate the need for substantial additional housing. The cumulative impact related to population growth and housing demand associated with project construction would be less than significant. For the purposes of CEQA and TRPA, implementation of the project **would not contribute to a significant cumulative impact**.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to population growth and housing demand associated with project construction.

Cumulative Impact 3.4-3: Cumulative alteration of the location, distribution, or growth of the human population for the Region during operation

The geographic area that is considered for cumulative impacts on population growth and housing demand during operation consists of the City of South Lake and Stateline areas.

As shown in Table 3.19-2, cumulative buildout of anticipated projects would result in construction of approximately 215 housing units, 226 TAUs, and 19,477 square feet of CFA in the South Shore and Stateline areas. These types of projects would foster economic and population growth through the construction of additional housing and employment opportunities. Assuming 2.59 persons per dwelling unit (per the average for the City of South Lake Tahoe and Stateline areas), population growth related to these proposed housing units would be approximately 557 persons. The addition of CFA from these projects would generate between approximately 30 and 115 new jobs. The location and distribution of development is heavily regulated in the Tahoe Region. Developers must be granted authorization for construction of new housing units, CFA, and TAUs through a limited number of allocations that are capped by the Regional Plan. These projects are required by the Regional Plan to obtain allocations for housing units, CFA, and TAUs. The cumulative impacts of the Regional Plan allocation system was previously determined in the RPU EIS and the RTP EIR/EIS to not result in a cumulatively significant impact related to population growth and the location of population, housing, and employment in the Region (TRPA 2012b:4-32 – 4-33, TMPO and TRPA 2012:4-27). For these reasons, the cumulative projects would not result in a substantial cumulative population growth or housing demand that would alter the distribution and location of population, housing, and employment planned for the Region.

Alternatives B, C, and D transportation improvements would result in an incremental increase in permanent employment associated with maintenance of the roadways and pedestrian overcrossing, and would not result in new residential uses, CFA, or TAUs. Permanent employment needs for Alternatives B, C, and D transportation improvements would be anticipated to be met by existing residents and would not generate population growth. The transportation improvements, when combined with other cumulative projects, would result in a less-than-significant cumulative impact on population growth and housing demand. For the reasons described above, the transportation improvements would not induce substantial population growth

that would alter the distribution and location of population, housing, and employment planned for the Region.

Alternatives B, C, and D mixed-use development, including replacement housing, would result in a net population increase of approximately 320 to 340 people associated with new housing units and would result in a net increase of approximately 180 to 210 jobs. With the cumulative projects, the permanent population of the South Shore area would increase by approximately 900 persons and the number of jobs would increase by up to approximately 330 jobs. Because the mixed-use development, including replacement housing, would be subject to the Regional Plan development allocations described above, the project mixed-use development combined with other cumulative projects would result in a less-than-significant cumulative impact on population growth and housing demand. For the reasons described above, the transportation improvements would not induce substantial population growth that would alter the distribution and location of population, housing, and employment planned for the Region. For the purposes of CEQA and TRPA, the project transportation improvements and mixed-use development, including replacement housing, **would not contribute to a significant cumulative impact** on the location and distribution of population, employment, and housing in the Region.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to population growth and housing demand associated with project operations.

Cumulative Impact 3.4-4: Cumulative change in housing supply availability, including affordable housing

The type of property acquisition and subsequent displacement of residents and housing described in Impact 3.4-4 is not typical in the Tahoe Region and is not considered to contribute to or create a cumulative effect. The only cumulative project that would result in changes in the availability of housing, would be the Beach Club project listed in Table 19-2. Because the Beach Club project would construct new housing and result in a total net the loss of 12 housing units. As mitigation, the Beach Club project would provide one-to-one replacement for 54 moderate income housing units (Douglas County 2008:5.2-11 – 5.2-12). The Bijou Park Creek Watershed Management/Southwest Corner Project would displace the Knight's Inn, which is outside of the study area. The Knight's Inn does not contain any SRO units (Roverud, pers. comm., 2016). This impact would be a site-specific issue that does not accumulate to cause broader environmental consequences, so by its nature, cumulative impacts would not occur. Furthermore, there would be no net change in housing resulting from the project, including affordable housing, in the Region because Alternatives B, C, and D would construct replacement housing for the residents that would be displaced by the project. Because the project would result in no net loss of housing in the Region and the Beach Club project would replace moderate income housing displaced by that project, these projects would not combine to result in a significant cumulative impact on housing supply in the Region, including affordable housing. For the purposes of CEQA and TRPA, the project **would not contribute to a significant cumulative impact** on housing supply availability, including affordable housing.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to housing supply availability, including affordable housing.

Cumulative Impact 3.4-5: Cumulative displacement of businesses

The type of property acquisition and subsequent displacement of businesses described in Impact 3.4-5 is not typical in the Tahoe Region and is not considered to contribute to or create a cumulative effect. The Bijou Park Creek Watershed Management/Southwest Corner Project would displace the Knight's Inn. This impact would be a site-specific issue that does not accumulate to cause broader environmental consequences, so by its nature, cumulative impacts would not occur. Therefore, this issue is not discussed further for the purposes of NEPA, CEQA, and TRPA.

Cumulative Impact 3.4-6: Cumulative disproportionate adverse environmental effects on minority and low-income populations

The geographic area that is considered for cumulative impacts related to disproportionate adverse environmental effects on minority and low-income populations consists of the project study area. As detailed

in Section 3.4, “Community Impacts,” of this Draft EIR/EIS/EIS, the environmental justice discussions for the project focus on the Rocky Point neighborhood west of the Heavenly Village Center.

Cumulative projects within the study area that would be most likely to have a potential disproportionate adverse effect on the minority and low-income populations in the study area include the Van Sickle Bi-State Master Plan, Gondola Vista, and Zalanta. These cumulative projects could result in adverse effects, such as increased traffic and an associated increase in traffic noise, that could be disproportionately borne by the minority and low-income populations in the study area. The Pioneer Trail Pedestrian Upgrades and El Dorado Beach/Ski Run Bike Trail would not result in disproportionate adverse physical effects on the minority and low-income populations within the study area but would result in improved pedestrian and bicycle connectivity in the city that would be beneficial for this population. These minor impacts on minority and low-income populations from additional cumulative projects would generally offset each other. The impacts of the project described in Impact 3.4-6 are the primary impacts from a cumulative perspective, and the additional projects are minor compared to the project alternatives. Therefore, for the purposes of NEPA, CEQA, and TRPA this issue is not discussed further.

Public Services and Utilities

Cumulative Impact 3.5-1: Cumulative conflicts with existing utility infrastructure

Impacts associated with utility lines are generally limited to discrete locations. These types of impacts are related to construction activities and are short-term in nature. Disruption of utilities lines can be predicted and involve coordination with service providers, local agencies, and the entities affected. Thus, there is not an existing cumulative condition associated with impacts on existing utility lines. Implementation of the project alternatives would result in potentially significant impacts related to conflicts with existing utility infrastructure. These impacts would be limited to the project site and would not combine with related projects to result in a cumulative impact. Thus, for the purposes of CEQA and TRPA, the project **would not contribute to a significant cumulative impact** associated with interference with existing utility infrastructure.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to existing utility infrastructure.

Cumulative Impact 3.5-2: Cumulative demand for water supply

The geographic area considered for assessing cumulative demand for water supply is the South Tahoe Public Utility District (STPUD) service boundary. Cumulative plus project conditions for water supply are evaluated within the project-specific impact analysis in Impact 3.5-2. As indicated in Impact 3.5-2, there would be sufficient and available water supplies to meet current demands, and the addition of demands from the project. Related projects that would also require water supplies, within the STPUD service area, include Zalanta (32 tourist accommodation units) and Gondola Vista (22 housing units). As described under Impact 3.5-2, there is over 4,000 acre-feet per year of water available through 2035, according to current planning documents. Thus, adequate water supplies would be available upon completion and operation of planned projects, including implementation of any of the build alternatives. Thus, for the purposes of CEQA and TRPA, the project **would not contribute to a significant cumulative impact** on water supply.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to demand for water supply.

Cumulative Impact 3.5-3: Cumulative demand for wastewater collection, conveyance, and treatment

The geographic area considered for assessing cumulative demand for wastewater collection, conveyance, and treatment is the STPUD service boundary. Cumulative plus project conditions for wastewater collection, conveyance, and treatment are evaluated within the project-specific impact analysis in Impact 3.5-3. Modeling of the overall wastewater collection and conveyance infrastructure is based on buildout identified by the general plans in effect at the time of the model development, which consisted of the City of South Lake Tahoe 1999 General Plan, the 2008 General Plan Housing Element Public Review Draft, and the El Dorado County 2004 General Plan. Related projects that would also require wastewater collection,

conveyance, and treatment, within the STPUD service area, include Zalanta (32 tourist accommodation units) and Gondola Vista (22 housing units). As described under Impact 3.5-3, approximately 3.6 million gallons per day of treatment capacity is available at the STPUD treatment plant. Thus, adequate wastewater treatment capacity would be available upon completion and operation of planned projects, including implementation of any of the project alternatives. However, Impact 3.5-3 determines that Alternative B, C, and D mixed-use development, including replacement housing, would contribute to a potentially significant impact on two areas of the sewer collection system: sanitary sewer manhole (SSMH) BJ25 and the sewer pipe between SSMH BJ182 and SSMH BJ181. With implementation of Mitigation Measure 3.5-3, the necessary improvements to these components of the STPUD wastewater collection and conveyance system would be implemented in order to provide adequate capacity for operation of the mixed-use development. Thus, for the purposes of CEQA and TRPA, the project **would not contribute to a significant cumulative impact** on wastewater collection, conveyance, and treatment.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to demand for wastewater collection, conveyance, and treatment.

Cumulative Impact 3.5-4: Cumulative impacts on solid waste disposal

The geographic area considered for assessing cumulative demand for solid waste disposal is the service area of the Lockwood Regional Landfill. Lockwood Regional Landfill presently has a capacity of 302.5 million cubic yards, over an area of 856.6 acres. Based on the April 2010 aerial survey the Landfill contained a waste volume of approximately 32.8 million cubic yards (NDEP 2016). Ultimately, the landfill would reach capacity and be subject to closure requirements under the Nevada Division of Environmental Protection. However, given that approximately 90 percent of the landfill capacity is available, there would be sufficient and available capacity to meet solid waste disposal needs for the foreseeable future.

The cumulative projects listed in Table 3.19-2 would contribute to the generation of solid waste and disposal at the Lockwood Regional Landfill, both as a result of construction activities and generation during operation of the projects. Construction and demolition activities associated with the project could generate approximately 5,700 cubic yards of solid waste; however, the project would be required to recycle or salvage for reuse a minimum of 50 percent of construction and demolition debris. Contributions of solid waste to the landfill associated with the project would be minimal (i.e., approximately 1,000 cubic yards or 800 tons per year for alternatives proposing mixed-use development). Another project in the cumulative setting, the Edgewood Lodge and Golf Course Improvement Project, is projected to generate approximately 400 tons of solid waste annually (TRPA 2012a:5.14-14). Thus, each of these two projects would generate approximately 2.19 tons and 1.1 tons per day, respectively. Presently, approximately 280 million cubic yards of solid waste capacity is available, and the landfill receives approximately 5,000 tons of waste per day (NDEP 2016), or 6,667 cubic yards per day. Even if all cumulative projects were projected to generate 2 tons per day, the projects' combined cumulative contribution would not be substantial (less than one percent of daily contribution). For these reasons, for the purposes of CEQA and TRPA, the project's contribution to solid waste cumulative impacts **would not contribute to a significant cumulative impact** on solid waste disposal.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to demand for solid waste disposal.

Cumulative Impact 3.5-5: Cumulative impacts on energy efficiency and energy consumption

The geographic area considered for cumulative impacts related to energy use includes the service areas for Liberty Energy, NV Energy, and Southwest Gas Corporation. These providers employ various programs and mechanisms to support provision of these services to new development; various utilities charge connection fees and re-coup costs of new infrastructure through standard billings for services. There is currently sufficient infrastructure and energy supply to support existing demand.

Cumulative projects identified in Table 3.19-2 that would be served by these energy providers include Sierra Colina Village, Zalanta at the Village, Edgewood Lodge and Golf Course Realignment Project, and Beach Club. Through their established process to provide connections, electricity, and natural gas supply to new

development, Southwest Gas, NV Energy and Liberty Utilities use plans provided by developers to determine if or when upgrades in the system would be required to meet demand. Additionally, these projects would contribute to increased energy demand; however, in California, these projects would be required to implement energy efficiency measures in accordance with Title 24 to reduce energy demand. Nevada also requires adherence to energy efficiency standards, presently the 2012 International Energy Efficiency Code, which is related to energy efficiency in residential and commercial buildings. However, the project would not construct any new buildings in the Nevada portion of the project site. For the purposes of CEQA and TRPA, for these reasons and because the utilities have procedures to plan for system improvements to keep pace with projected demand, the project **would not contribute to a significant cumulative impact** related to energy efficiency and consumption.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to energy efficiency and consumption.

Cumulative Impact 3.5-6: Cumulative demand for law enforcement and fire and emergency services

The geographic area considered for assessing cumulative demand for law enforcement and fire and emergency services is the City of South Lake Tahoe and Douglas County. As described in Impact 3.5-6, the project would result in a small increase of permanent full-time residents. During holidays and other periods of high tourist visitation (e.g., ski season, summer weekends), the project population would be expected to increase, which, in combination with other nearby similar developments including, Sierra Colina Village, Zalanta at the Village, Edgewood Lodge and Golf Course Realignment Project, and Beach Club, could affect police, fire, and emergency services ratios and response times. However, because it would be periodic, in a manner consistent with the periodic peak visitation that already occurs in the region, it would not be anticipated to result in physical deterioration of existing facilities or require additional facilities. Additional staff on duty during these peak periods are accommodated in existing facilities and with existing equipment. Because the project and other development would not be substantial compared to the types of seasonal population fluctuations typical of South Lake Tahoe, for the purposes of CEQA and TRPA, the project **would not contribute to a significant cumulative impact** on law enforcement and fire and emergency services.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to law enforcement and fire and emergency services.

Cumulative Impact 3.5-7: Cumulative demand for public schools

The geographic area considered for assessing cumulative demand for public schools is limited to the Lake Tahoe Unified School District (LTUSD) and the Douglas County School District. During the 2014/2015 school year, LTUSD-wide enrollment totaled 3,881. Cumulative residential projects, in addition to the project, that would contribute to demand for public schools would include the Gondola Vista Project in California, which proposes 22 housing units. As discussed in Impact 3.5-7, the project would result in a net increase of 45 to 49 new students, that could be served by the schools in LTUSD, which have available capacity. Acquisition of a portion of the Gondola Vista property and the roadway design for Alternatives B, C, and D would preclude implementation of the Gondola Vista project. Although Gondola Vista could be constructed if Alternative E is implemented, Alternative E would not generate additional demand for school services as identified in Impact 3.5-7. In Nevada, the Sierra Colina and Beach Club projects would add approximately 193 residences, though the Beach Club project replaces 150 mobile homes. The Douglas County School District at Lake Tahoe has seen a precipitous drop in enrollment that has resulted in the closure of the middle school. Existing capacity exists at Whittell High School and Zephyr Cove Elementary School to accommodate the additional students that would be anticipated with construction of these residential projects in Nevada. Therefore, the project would not cumulatively combine with any other similar or nearby projects to result in a cumulative impact on demand for school services. For these reasons and because a greater number of students have been served by LTUSD and the Douglas County School District in the past (Table 3.5-2), the project's demand for school services **would not contribute to a significant cumulative impact** to demand on public schools for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to demand on public schools.

Traffic and Transportation

The project-level analysis in Section 3.6, “Traffic and Transportation,” addresses both the 2020 (opening day) scenario and the 2040 (design year) scenario. The 2040 (design year) analysis involves impacts of the construction of mixed-use development, including replacement housing, proposed with Alternatives B, C, and D, which would take place after opening day (2020) and before the long-term planning design year (2040). As such, the Year 2040 (design year) analysis contained in Section 3.6 also constitutes a cumulative impact analysis because it incorporates long-term impacts of the cumulative projects identified in Table 3.19-2. Therefore, this discussion of cumulative traffic and transportation impacts summarizes the 2040 (design year) analysis provided in Section 3.6 only. Because parking impacts identified in Impact 3.6-10 and 3.6-11 (see Section 3.6, “Traffic and Transportation”) associated with construction of the project and during operations would be site-specific and no other cumulative project identified in Table 19-2 would combine with the project to result in a cumulative loss of parking. For these reasons, cumulative impacts related to parking are not discussed further for the purposes of NEPA, CEQA, and TRPA.

Cumulative Impact 3.6-12: Cumulative impacts on intersection operations

Based on the 2040 (design year) analysis provided in Section 3.6, Alternative A and Alternative C, transportation improvements and mixed-use development, including replacement housing, are projected to degrade intersection operations in the project study area to unacceptable levels. Alternatives B and D, transportation improvements and mixed-use development, including replacement housing, and Alternative E would not degrade intersection operations. Therefore, for the purposes of CEQA and TRPA, Alternative A **would make a considerable contribution to a significant cumulative impact**; with implementation of Mitigation Measure 3.6-2 Alternative C **would not result in a significant cumulative impact** on intersection operations; and Alternatives B, D, and E **would not result in a significant cumulative impact** on intersection operations.

There would be no mechanism by which to implement or enforce avoidance or mitigation measures to minimize Alternative A cumulative impacts on intersection operations in 2040.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative C to further reduce to the extent feasible the cumulative effects on intersection operations in 2040.

For the purposes of NEPA, design features of Alternatives B, D, and E would avoid or minimize cumulative effects related to intersection operations in 2040.

Cumulative Impact 3.6-13: Cumulative impacts on roadway segment operations

Based on the 2040 (design year) analysis provided in Section 3.6, Alternative A and Alternative C transportation improvements and mixed-use development, including replacement housing, are projected to degrade roadway segment operations in the project study area to unacceptable LOS levels. Alternatives B and D transportation improvements and mixed-use development, including replacement housing, and Alternative E would not degrade roadway segment operations. Therefore, for the purposes of CEQA and TRPA, Alternative A **would make a considerable contribution to a significant cumulative impact**; with implementation of Mitigation Measure 3.6-2 Alternative C **would result in a significant cumulative impact** on roadway segment operations; Alternatives B, D, and E **would not result in a significant cumulative impact** on roadway segment operations.

There would be no mechanism by which to implement or enforce avoidance or mitigation measures to minimize Alternative A cumulative impacts on roadway segment operations in 2040.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternative C to further reduce to the extent feasible the cumulative effects on roadway segment operations in 2040.

For the purposes of NEPA, design features of Alternatives B, D, and E would avoid or minimize cumulative effects related to roadway segment operations in 2040.

Cumulative Impact 3.6-14: Cumulative impacts on vehicle miles traveled

Based on the 2040 (design year) analysis provided in Section 3.6, Alternatives B, C, and D transportation improvements and mixed-use development, including replacement housing, would result in a small increase in VMT as a result of the realignment of US 50. Nevertheless, these alternatives would remain consistent with the VMT per capita goal of RTP EIR/EIS Alternative 3, which was determined to have a beneficial impact on VMT. Improvements for Alternative E would only affect pedestrian traffic. Alternative A would have no impact for the purposes of NEPA, CEQA, and TRPA. For the purposes of CEQA and TRPA, Alternatives B, C, D, and E **would not result in a significant cumulative impact** to vehicle miles traveled.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to VMT in 2040.

Cumulative Impact 3.6-15: Cumulative impacts on bicycle and pedestrian facilities

Based on the 2040 (design year) analysis provided in Section 3.6, Alternatives B, C, D, and E would not disrupt or interfere with existing or planned bicycle/pedestrian facilities; rather, Alternatives B, C, and D would enhance the existing infrastructure and create a bicycle and pedestrian network with enhanced connectivity. Alternative E would enhance pedestrian facilities, but would not create additional bicycle facilities. Alternative A would have no impact for the purposes of NEPA, CEQA, and TRPA. For the purposes of CEQA and TRPA, Alternatives B, C, D, and E **would not result in a significant cumulative impact** to bicycle and pedestrian facilities.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to bicycle and pedestrian facilities.

Cumulative Impact 3.6-16: Cumulative impacts on transit

Based on the 2040 (design year) analysis provided in Section 3.6, Alternatives B, C, D, and E would not disrupt or interfere with existing transit facilities and would enhance the existing transit infrastructure. Alternative A would have no impact for the purposes of NEPA, CEQA, and TRPA. For the purposes of CEQA and TRPA, Alternatives B, C, D, and E **would not result in a significant cumulative impact** to transit.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to transit.

Cumulative Impact 3.6-17: Cumulative construction-related impacts

Construction impacts are site specific and construction impacts of the project would not combine with construction impacts of the cumulative projects. For the purposes of CEQA and TRPA, **no significant cumulative impact** would result.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative construction-related impacts.

Cumulative Impact 3.6-18: Cumulative impacts on vehicular, bicycle, and pedestrian safety

Based on the 2040 (design year) analysis provided in Section 3.6, Alternatives B, C, D, and E would enhance the existing infrastructure and improve safety throughout the vehicular, bicycle, and pedestrian network within the study area. Therefore, for the purposes of CEQA and TRPA, all build alternatives **would have a cumulative beneficial impact** on improving vehicular, bicycle and pedestrian safety.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to vehicular, bicycle, and pedestrian safety.

Vehicular traffic would increase within the study area under Alternative A, thus impacting bicycle safety and the existing above-state-average traffic accidents and injuries occurring at the US 50/Lake Parkway Loop intersection. Therefore, for the purposes of CEQA and TRPA, Alternative A **would result in a significant cumulative impact** on vehicular, bicycle and pedestrian safety.

There would be no mechanism by which to implement or enforce avoidance or mitigation measures to minimize Alternative A cumulative impacts on vehicular, bicycle, and pedestrian safety.

Cumulative Impact 3.6-19: Cumulative impacts on emergency access

Alternatives B, D and E would reduce congestion along existing US 50 and thereby improve long-term emergency access within the study area, therefore Alternatives B, D and E **would not result in a significant cumulative impact** to emergency access for the purposes of CEQA and TRPA. Alternative A would result in traffic conditions worsening along existing US 50 between Pioneer Trail and Lake Parkway, and Alternative C would result in increased congestion and reduced emergency access to a segment of existing US 50. Alternative C would be required to implement Mitigation Measure 3.6-2, but impacts from Alternative C on emergency access would remain significant. Therefore, Alternatives A and C **would make a substantial contribution to a significant cumulative impact** to emergency access for the purposes of CEQA and TRPA.

There would be no mechanism by which to implement or enforce avoidance or mitigation measures to minimize Alternative A cumulative impacts on emergency access.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative C to further reduce to the extent feasible the cumulative effects on emergency access.

For the purposes of NEPA, design features of Alternatives B, D, and E would avoid or minimize cumulative effects related to emergency access.

Cumulative Impact 3.6-20: Cumulative daily vehicle trip ends (DVTE) impacts

Based on the 2040 (design year) analysis provided in Section 3.6, Alternatives B, C, and D with potential mixed-use development would generate a substantial number of new DVTE. Therefore, Alternatives B, C, and D mixed-use development, including replacement housing, **would make a substantial contribution to a significant cumulative impact** for the purposes of CEQA and TRPA. Alternatives A and E would include no modifications to the existing conditions and would have **no impact** for the purposes of CEQA and TRPA. Alternatives B, C, and D transportation improvements would not generate any additional DVTEs and, therefore, **would not result in a significant cumulative impact** on DVTEs for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternatives B, C, and D to further reduce to the extent feasible the cumulative effects related to DVTE impacts.

For the purposes of NEPA, design features of Alternatives B, D, and E would avoid or minimize cumulative effects related to DVTE impacts.

Visual Resources/Aesthetics

Probable future projects considered are those in the vicinity that would result in visual impacts on, or as viewed from, the visual study area defined in Section 3.7. Other projects proposed in this study area that would result in visual change have the possibility to contribute to a cumulative impact if they would be in the same views as changes caused by the project alternatives. Future projects in Table 3.19-2 that are within the geographic scope of the cumulative effects analysis include the Edgewood Lodge and Golf Course Realignment Project, Linking Tahoe: Active Transportation Plan, South Tahoe Greenway, Van Sickle Bi-State Park Master Plan, and Zalanta at the Village (Chateau at the Village, Project B Phase 1). All are in the vicinity of or along US 50 or Lake Parkway and could be seen in the same context as the US 50/South Shore Community Revitalization Project. Each project would, in some way, change the existing visual conditions in the study area. Other future projects are not located within the same viewshed as the project and the potential for cumulative impacts with these projects would not occur.

Cumulative Impact 3.7-1: Cumulative degradation of scenic quality and visual character

Future projects within the geographic scope of the cumulative effects analysis would not individually have adverse effects on scenic quality or visual character. The Edgewood Lodge and Golf Course Realignment Project would maintain current scenic conditions as viewed from within the US 50/South Shore Community Revitalization Project. The Linking Tahoe: Active Transportation Plan and South Tahoe Greenway would likely maintain or improve scenic quality and visual character. The periphery of Van Sickle Bi-State Park directly adjoins a small portion of Lake Parkway. The Van Sickle Bi-State Park Master Plan proposes changes to areas inside the park that are not in view from Lake Parkway. Zalanta at the Village (Chateau at the Village, Project B Phase 1) would substantially improve scenic quality and visual character of the immediate area as compared to existing conditions. While the study area remains in nonattainment of scenic thresholds, the project and the cumulative projects should improve overall scenic quality in the area. The project is intended to provide impetus to property owners to invest in redevelopment of their properties and these new projects would be required to meet higher scenic standards than the existing structures. The result over the long term should be an overall improvement in scenic quality.

Alternative A would have no impact on scenic quality and visual character and, therefore, it **would not contribute to a cumulative impact** for the purposes of NEPA, CEQA, and TRPA.

Most effects on scenic quality in the study area from implementation of Alternatives B, C, and D transportation improvements would result in less-than-significant impacts either because no changes in visual conditions would occur, changes that would occur would be visually beneficial, or changes would be compatible with existing conditions. Effects on visual character of the residential neighborhood between Montreal Road and Pioneer Trail from Alternatives B, C, and D transportation improvements and on the tourist core from Alternative E would result in a significant project impact, because they would substantially degrade visual character in the immediate area. Alternatives B, C, and D transportation improvements would be required to implement Mitigation Measure 3.7-1a and Alternative E would be required to implement Mitigation Measure 3.7-1b; however, the impact on degradation of scenic quality and visual character from implementation of the project would remain significant and unavoidable at the project level and no other measures would be feasible to reduce the impact to a less-than-significant level. Although the project would result in a project-level significant and unavoidable impact, the potential visual effects of other projects identified in Table 19-2 would not combine with the project to result in a cumulatively considerable degradation of scenic quality and visual character in the Rocky Point neighborhood. Additionally, the cumulative projects and the build alternatives, including Alternative E, would likely improve scenic conditions in other portions of the study area; therefore, the cumulative projects would also not combine with Alternative E to result in a cumulatively considerable degradation of scenic quality and visual character in the tourist core. For these reasons, the build alternatives **would not make a considerable contribution to a significant cumulative impact** on scenic quality and visual character for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative effects on scenic quality and visual character.

Cumulative Impact 3.7-2: Cumulative interference with or disruption of scenic vistas or scenic resources

As described above, cumulative projects and the build alternatives would improve scenic quality and visual character of the immediate area as compared to existing conditions. The cumulative projects in Table 19-2 would not cumulatively combine with each other to interfere with any overlapping scenic vistas or scenic resources because the projects are not located within close proximity to each other and some of the projects do not have enough mass, or would not result in new substantial above ground structures, such that they could cumulatively combine with each other to interfere with the overlapping scenic vistas or scenic resources. Therefore, the cumulative projects would not result in a cumulative impact on interference with or disruption of scenic vistas or scenic resources.

Alternative A would have no impact on scenic vistas and scenic resources. Alternatives B, C, and D would have less-than-significant or beneficial effects on scenic vistas and scenic resources. As a result of project features, views of scenic resources would change but, those features would not block or interrupt these

views and would have potential to improve visual quality by removing older, unattractive development. Alternative E would result in a project-level significant and unavoidable impact, after implementation of Mitigation Measure 3.7-2, on two TRPA-listed scenic resources (Scenic Resources 32.1 and 32.3). However, the potential effects on scenic vistas or scenic resources of cumulative projects identified in Table 19-2 would not combine with any of the build alternatives to result in a cumulatively considerable interference with or disruption of scenic vistas or scenic resources. Therefore, the project's contribution **would not be cumulatively considerable** for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of Alternatives B, C, and D would avoid or minimize cumulative effects related to scenic vistas and scenic resources.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative E to further reduce to the extent feasible the cumulative effects on scenic vistas and scenic resources.

Cumulative Impact 3.7-3: Cumulative increase in light and glare

New projects would not result in substantial night lighting and glare, because standard design practices would limit illumination. Also, codes, regulations, and design standards pertaining to lighting associated with any new developments would limit illumination. Design standards would control exterior materials of all new buildings and minimize reflectivity. Therefore, for the purposes of CEQA and TRPA, **no cumulative adverse impacts** from light and glare as a result of the US 50/South Shore Revitalization Project and cumulative projects listed in Table 19-2 within the geographic scope of the cumulative effects analysis would occur.

For the purposes of NEPA, design features of Alternatives B, C, D, and E would avoid or minimize cumulative effects related to light and glare.

Cultural Resources

Because the project would result in no impacts on unique ethnic values or existing religious or sacred uses, the cumulative impact analysis focuses only on potential cumulative impacts on historic resources, archaeological resources, and human remains.

Cumulative Impact 3.8-1: Cumulative impacts on historical resources

The cumulative context for historical resources is the Lake Tahoe Basin. The cultural reports prepared for the US 50/South Shore Community Revitalization Project identified three resources in or near the study area (Friday's Station, Pony Express Rider statue, and site 26 Do 451) as being eligible for or already listed in the NRHP. The reasonably foreseeable projects in the cumulative list and the US 50/South Shore Community Revitalization Project would not adversely affect these resources as they would not cause the physical destruction, alteration, or removal of these resources and would not change the character of the properties or cause their neglect, transfer, lease, or sale. Therefore, for the purposes of CEQA and TRPA, implementation of the build alternatives **would not result in a cumulatively significant impact** on historical resources.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects such that there **would not be an adverse cumulative effect** on historical resources.

Cumulative Impact 3.8-2: Cumulative impacts on unique archaeological resources

The cumulative context for archaeological resources is the Truckee-Tahoe Basin portion of the Washoe territory. There are no known archaeological resources that would be damaged or destroyed by the build alternatives (Alternatives B, C, D, and E) or the reasonably foreseeable projects included in the cumulative list. Thus these alternatives would have **no impact** on known archaeological resources. Project construction related to the build alternative or the cumulative projects could encounter previously undiscovered or unrecorded archaeological sites and materials during project-related preconstruction or construction-related ground disturbing activities. These activities could damage or destroy these archaeological resources. However, implementation of Mitigation Measures 3.8-2a, 3.8-2b, and 3.8-2c would reduce potentially significant impacts on archaeological resources because mitigation would be developed and implemented in

coordination with the appropriate federal, state, and/or local agency(ies) to avoid, move, record, or otherwise treat the resource appropriately, in accordance with pertinent laws and regulations. For the purposes of CEQA and TRPA, by providing an opportunity to avoid disturbance, disruption, or destruction of archaeological resources, implementation of the build alternatives **would not result in a cumulatively significant impact** on unique archeological resources.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative effects on unique archeological resources.

Cumulative Impact 3.8-3: Cumulative impacts on human remains

Because of the likelihood that any undiscovered or unknown human remains would be Native American in origin, the cumulative context for human remains is the Truckee-Tahoe Basin portion of the Washoe territory. The Truckee-Tahoe Basin has been inhabited by prehistoric and historic people for thousands of years. The loss of any one archaeological site or human remains 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 proposed US 50/South Shore Community Revitalization Project, in combination with other development in the Truckee-Tahoe Basin could contribute to the disturbance of human remains due to project-related construction activities. However, with implementation of Mitigation Measure 3.8-3, adverse effects on undiscovered or unknown human remains would be avoided. With implementation of these measures, the project would not contribute to a cumulative loss of undiscovered or unknown human remains, and the US 50/South Shore Community Revitalization Project contribution to the cumulative impact **would not be cumulatively considerable** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative effects on undiscovered or unknown human remains.

Cumulative Impact 3.8-4: Cumulative impacts on tribal cultural resources

The cumulative context for archaeological resources is the Truckee-Tahoe Basin portion of the Washoe territory. Construction and excavation activities associated with the build alternatives and the reasonably foreseeable projects in the cumulative list could result in sediment disturbance and removal, which can adversely affect archaeological resources, including tribal cultural resources. There are no known tribal cultural resources that would be damaged or destroyed by Alternatives B, C, D, and E and thus these alternatives would have no impact on known tribal cultural resources. Because Alternatives B, C, D, and E would include excavation and other ground-disturbing activities, these alternatives could result in adverse physical effects on unknown tribal cultural resources. This impact would be potentially cumulatively considerable for Alternatives B, C, D, and E. There would be no impact under Alternative A. However, implementation of Mitigation Measures 3.8-4a and 3.8-4b would reduce potentially significant impacts on tribal cultural resources because mitigation would be developed and implemented in coordination with the appropriate federal, state, and/or local agency(ies) to avoid, move, record, or otherwise treat the resource appropriately, in accordance with pertinent laws and regulations. For the purposes of CEQA and TRPA, by providing an opportunity to avoid disturbance, disruption, or destruction of tribal cultural resources, implementation of the build alternatives **would not result in a cumulatively significant impact** on unique tribal cultural resources.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative effects on tribal cultural resources.

Floodplains

Cumulative Impact 3.9-1: Cumulative 100-year flood hazard and floodplain impacts

The cumulative impacts of floodplain development should be considered in the context of the local watershed. The project could result in modification of the floodplain of Edgewood Creek, within the Edgewood Creek watershed. The potential flood hazard risks to people and property are low within the Edgewood Creek watershed since very little development has been located within floodplain areas. The

exception to this is the Edgewood Lodge and golf course, which utilizes the outlet structure of Friday Station Pond to regulate the flows of Edgewood Creek and protect Edgewood property. Although the implementation of the project would require some alteration of the 100-year floodplain of Edgewood creek, the project would be required to meet Douglas County design standards for development within floodplains. These standards prohibit any floodplain encroachment that would raise the Base Flood Elevation of the 100-year flood by more than 1 foot (Douglas County Code Section 20.50.160). This standard applies to the project as well as to cumulative projects within the Edgewood Creek Watershed which include: the Edgewood Lodge and Golf Course Realignment Project; the Gondola Vista project; the Linking Tahoe: Active Transportation Plan; the Van Sickle Bi-State Park Master Plan; and the Zalanta at the Village project. Because strong protections exist that prevent development projects from adversely impacting floodplains or exposing downstream properties to increased risk, implementation of the project and other cumulative projects within the Edgewood Creek watershed **would not result in a cumulatively significant impact** on a 100-year floodplain for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to floodplain impacts.

Water Quality and Stormwater Runoff

Cumulative impacts on water quality are considered in the context of the Lake Tahoe Region. Rapid development during the 1960s is believed to be the cause of the Lake's decline in clarity (Lahontan RWQCB and NDEP 2010) and the existing adverse cumulative condition. Lake Tahoe was listed as an impaired water under Section 303(d) of the Clean Water Act, and a Total Maximum Daily Load (TMDL) was established to reverse the downward trend in water quality and bring Lake clarity back to levels seen in 1967–1971. Regulatory agencies have recognized the threats to water quality in the Lake Tahoe Region and have adapted their policies to reflect the TMDL requirements and protect this unique natural resource. As such, a significant cumulative threat to water quality is known to be present in the Region.

Cumulative Impact 3.10-1: Cumulative degradation of surface water quality due to construction activities

Construction of the project and the cumulative projects, through construction-related disturbance, changes to stormwater runoff patterns, or pollutant loading in stormwater runoff (including melt water from snow storage areas), have the potential to increase the volume of stormwater runoff, thereby increasing the concentrations of fine sediment particles, nutrients, and other pollutants in the surface water and groundwater of the Lake Tahoe Basin. Improper snow storage in unprotected areas or near SEZs can also introduce pollutants into surface water and groundwater. These potential effects are minimized through compliance with a suite of protective regulations. Any project exceeding 1 acre in size is required to develop a SWPPP that identifies water quality controls consistent with Lahontan RWQCB (for California projects) or NDEP (for Nevada projects) and TRPA regulations. The SWPPP must include construction site BMPs, a spill prevention plan, daily inspection and maintenance of temporary BMPs, and post-construction BMPs to protect water quality during the life of the project. Because of the strong protective water quality regulations within the Lake Tahoe Region, the potential effects of the project would be minimized such that the project **would not result in a cumulatively considerable contribution** to the degradation of surface water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to degradation of surface water quality due to construction activities.

Cumulative Impact 3.10-2: Cumulative degradation of surface water quality due to operational activities

The project and the cumulative projects, through increases in land coverage, have the potential to increase the volume of stormwater runoff, thereby increasing the concentrations of fine sediment particles, nutrients, and other pollutants in the surface water and groundwater of the Lake Tahoe Basin. Improper use of fertilizers and snow storage in unprotected areas or near SEZs can also introduce pollutants into surface water and groundwater. TRPA, Lahontan Regional Water Quality Control Board, and Nevada Division of Environmental Protection require all projects to include permanent water quality BMPs that control sources of sediment and urban pollutants. Any project with a landscaping or vegetation component must develop a

fertilizer management plan and snow storage areas must be located away from SEZs and equipped with any necessary BMPs. Additionally, because retrofitting of existing development with water quality BMPs has been difficult to enforce, water quality improvements are often implemented through new development or redevelopment processes, where these BMPs are required as a condition of permit approval. The project would also include additional measures that would result in water quality benefits, including stormwater improvements on the portion of US 50 between the intersection of Lake Parkway to State Route 207, stormwater improvements on Stateline Avenue, and installing sediment traps at all existing drainage inlets within the project site. Because of the strong protective water quality regulations within the Lake Tahoe Region and with the added benefits from water quality improvements made by the project, the potential effects of the project would be minimized such that the project **would not result in a cumulatively considerable contribution** to the degradation of surface water quality for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to degradation of surface water quality due to operational activities.

Cumulative Impact 3.10-3: Cumulative stormwater runoff

As discussed above, the increases in impervious surfaces resulting from the project and many of the cumulative projects would result in a corresponding increase in the volume of runoff generated within each project site. Stormwater runoff acts as a vector to carry urban pollutants into surface waters. Additionally, concentrated runoff can cause erosion and generate additional sediment. Although these projects would increase impervious surfaces, TRPA requires that each individual project be designed to infiltrate the 20-year, 1-hour design storm event. In special circumstances where this is not feasible, the project must provide documentation that its stormwater is fully infiltrated by an off-site facility (TRPA Code of Ordinances Section 60.4). Because the project would be required to fully infiltrate runoff on-site or demonstrate that its runoff can be accommodated by shared stormwater infrastructure off-site, the impacts of the project would be minimized. Although the project would affect several parcels occupied by Rocky Point Stormwater Project facilities, Mitigation Measure 3.10-3 would require the project applicant to demonstrate the continued functionality of those facilities at their reduced size and, if a design solution renders those improvements no longer necessary, to return the public funds used to purchase the parcels. Therefore, the project **would not result in a cumulatively considerable contribution** to existing water quality degradation in the Lake Tahoe Region for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative effects related to stormwater runoff.

Cumulative Impact 3.10-4: Cumulative potential to affect the quality, flow, or direction of groundwater

Groundwater resources can be affected by infiltration of polluted stormwater in areas of shallow groundwater, such as SEZ or riparian habitats. TRPA regulates excavation beyond 5 feet in depth that could intercept the seasonal groundwater table. The project site and many of the cumulative project areas would include shallow groundwater habitats or excavation beyond 5 feet. However, all runoff or water discharged to soils would be required to meet the TRPA effluent limits described in Section 60.1.3 of the TRPA Code of Ordinances. In cases with a shallow groundwater table and where a direct hydrologic connection exists between groundwater and surface water, discharge to groundwater must meet surface water discharge standards. TRPA's prohibition on excavation beyond 5 feet in depth is intended to prevent interception of groundwater in a way that could alter the rate or direction of flow. The project and all cumulative projects would be required to prepare a soils/hydrologic report that demonstrates that no groundwater interference would occur or that measures are incorporated to maintain groundwater flows, avoid impacts on SEZ vegetation, and prevent any groundwater from leaving the project area as subsurface flow. Because TRPA regulations are in place to prevent groundwater contamination and to prevent interference with the rate or direction of groundwater flow, the project **would not result in a cumulatively considerable contribution** to cumulative impacts on groundwater resources for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to groundwater.

Geology, Soils, Land Capability, and Coverage

Impacts related to seismic and other geologic hazards (Impact 3.11-3) are localized in nature; they do not accumulate to cause broader environmental consequences and **cumulative impacts would not occur**. Therefore, these issues are not discussed further for the purposes of NEPA, CEQA, and TRPA.

Cumulative Impact 3.11-1: Cumulative soil compaction and land coverage

The Bailey land classification system (Bailey 1974) provides structure for land development within the Lake Tahoe Basin. This system emphasizes prevention of resource damage by directing development toward the most resilient soils and protecting the natural functions of soils. Development before TRPA adopted the Bailey System resulted in excess land coverage in land capability districts (LCDs) 1b and 2 (TRPA 2012c), creating a cumulative adverse condition.

The project and many of the cumulative projects would create additional land coverage within the study area; however, all projects within the Basin would be required to comply with TRPA land coverage regulations. In cases where excess coverage is permitted (such as within Town Centers or for linear public facilities, public health and safety facilities, or water quality control facilities), all coverage exceeding the base allowable would be purchased and transferred from within hydrologically related areas or retired from sensitive lands. In addition, all land coverage within LCD 1b (Stream Environment Zones) must be mitigated at a ratio of 1.5 acres of restoration for every 1 acre of disturbance (in accordance with TRPA Code Section 30.5.3). Although development before the implementation of the Bailey System resulted in an adverse cumulative condition relative to land coverage, TRPA's existing regulatory framework is structured to protect soil resources and reduce land coverage within sensitive LCDs. Therefore, the project and the cumulative projects **would not result in a cumulatively considerable contribution** to cumulative soil compaction and land coverage issues within the Lake Tahoe Basin for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to soil compaction and land coverage.

Cumulative Impact 3.11-2: Cumulative erosion and alteration of topography during construction

The project and the cumulative projects would result in soil disturbance that could cause erosion; however, all construction projects in the Tahoe Region must meet requirements and regulations of TRPA, Lahontan RWQCB, NDEP, and local agencies. In addition, all construction projects located in California with greater than 1 acre of disturbance are required by Lahontan RWQCB to submit an NPDES permit, which includes preparation of a SWPPP that includes site-specific construction site monitoring and reporting. In Nevada, projects are required to comply with NDEP's Stormwater General Permit, which also includes a requirement for the preparation and implementation of a SWPPP. Project SWPPPs are required to describe the site, construction activities, proposed erosion and sediment controls, and maintenance requirements for temporary BMPs. Temporary BMPs to protect water quality would be required during all site development activities.

The robust regulatory requirements of TRPA and other federal, state, and local agencies ensure that the project and the cumulative projects would implement erosion and sediment controls such that individual projects would not contribute to soil erosion impacts. Therefore, the project and cumulative development **would not result in a cumulatively considerable contribution** to adverse soil erosion conditions for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to erosion and alteration of topography during construction.

Hazards, Hazardous Materials, and Risk of Upset

Cumulative Impact 3.12-1: Cumulative exposure of people or the environment to hazards because of the routine use, storage, or transport of hazardous materials or from accidental release or upset

Although some hazardous materials releases can cover a large area and interact with other releases (e.g., atmospheric contamination, contamination of groundwater aquifers), incidents of hazardous materials contamination are more typically isolated to a small geographic area. These relatively isolated areas of contamination typically do not combine in a cumulative manner with other sites of hazardous materials contamination. On the project site and in its vicinity, there are no identified incidents of widespread hazardous materials contamination with different sources of contamination interacting on a cumulative basis. Future projects that would include construction activities and add new residences, commercial uses, and infrastructure similar to those identified for the project (see Table 3.19-2) may use, store, and generate hazardous materials; however, these projects would be subject to existing federal, state, and local hazardous materials regulations, limiting the potential for releases and contamination and requiring clean-up when such events occurred. Given these conditions, there **would not be a significant cumulative impact** related to hazardous materials for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to hazardous materials.

The project would result in the routine use, storage, and transport of hazardous materials as part of the construction and operation of the project. The project would be required to comply with existing federal, state, and local hazardous materials regulations would apply, limiting the potential for releases and contamination and requiring clean-up when releases/contamination do occur. Also, as described above, interactions among multiple hazardous materials releases on a cumulative basis typically require close proximity between the releases. In addition, the potential for the project to expose people or the environment to hazardous materials would be reduced through proper safety precautions and compliance with applicable regulations as described in Impact 3.12-1. Therefore, the project **would not result in a cumulatively significant impact** related to the exposure of people and the environment to hazards for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to the exposure of people and the environment to hazards.

Cumulative Impact 3.12-2: Cumulative exposure to recognized environmental conditions (RECs)

The geographic area for cumulative impacts related to exposure to RECs would be limited to the study area and areas immediately adjacent to the project site. There are no identified incidents of widespread hazardous materials contamination with different sources of contamination on the project site or in its vicinity that would combine to create a cumulative impact.

While Impact 3.12-2 identifies a potentially significant impact related to exposure to RECs or encountering previously unknown contaminants onsite, the impact associated with encountering onsite RECs or unknown contaminants is site-specific and would be limited to the immediate project site; therefore, it would not combine cumulatively with other contamination. The project's potentially significant project-level impacts related to recognized environmental conditions would be reduced to a less-than-significant level with implementation of Mitigation Measures 3.12-2a, 3.12-2b, 3.12-2c, and 3.12-d. For these reasons, the project **would not result in a cumulatively significant impact** related to recognized environmental conditions for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative effects related to recognized environmental conditions.

Cumulative Impact 3.12-3: Cumulative exposure of people or structures to a significant risk involving wildfires

The Tahoe Region is a high fire hazard area, with past fires resulting in loss of life, major losses of property, and substantial damage to habitat and environmental resources. Past fire suppression and other forest land management has allowed fuels to accumulate in many areas, contributing to the severity of wildfires when they do occur. Past development in the forested landscape has increased the risk to life and property when fires do occur, and increased the potential for ignition of wildland fires through increased human presence and activity. Future projects included in the cumulative project list will continue this trend to varying degrees. Past and present fuels management projects minimize wildland fire risk; however, even with these projects, the combined effects of past, present, and reasonably foreseeable future projects have resulted in a significant cumulative risk related to wildland fire hazard.

The project includes construction of homes, businesses, or other occupied structures; however, the project would be located within an already developed area. The project does not include uses that would increase ignition risk and it is in an area with a local fire department. Project construction and operation would comply with all applicable regulations regarding fire prevention, fire suppression, and fire-safe construction. Therefore, even though the project is located in an area with moderate to high fire risk, the project does not make a considerable contribution to wildland fire hazards. Therefore, the project **would not result in a cumulatively considerable contribution** to existing, cumulative wildland fire hazards for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to existing wildland fire hazards.

Air Quality

Cumulative Impact 3.13-1: Cumulative short-term, construction-generated emissions of criteria air pollutants and precursors

Due to the temporary and relatively short-term nature of construction activities, emissions of ROG, NO_x, CO, PM₁₀, and PM_{2.5} would be considered local impacts that would generally be limited to the project site. Nonetheless, the regional setting is used to describe the existing air quality conditions, which would also be true for the project site.

The Lake Tahoe Air Basin (El Dorado and Placer Counties in California) and the Nevada Counties (Washoe, Carson, Douglas) are in attainment or designated unclassified for all National Ambient Air Quality Standards (National AAQS). The LTAB is designated nonattainment for ozone and PM₁₀ per California AAQS. Thus, no existing adverse cumulative condition occurs on the Nevada side of the Basin whereas a cumulative adverse condition does occur on the California side of the Basin with respect to ozone and PM₁₀. CO is an attainment pollutant for both national and state standards within the Lake Tahoe Basin. No existing cumulative adverse impact exists.

Construction activities associated with the transportation improvements and mixed-use development, including replacement housing, would result in exceedance of applicable daily NO_x levels and would result in fugitive dust emissions of PM₁₀ and PM_{2.5}. However, implementation of Mitigation Measures 13.1-1a would reduce estimated NO_x emissions by 20 percent, 25 percent, or 60 percent depending on the construction activities that take place and specific measures implemented, as outlined by the measure. Mitigation Measure 3.13-1b would ensure that fugitive dust emissions are contained on the project construction site. Provided that exhaust emissions would be reduced to a less than significant level, CO emissions would also not be considered significant.

Based on Table 3.19-2, there are numerous developments within the Tahoe Basin where construction activities could potentially overlap with construction of the project. Of these projects, the closest to the project site include, Beach Club, Bijou Park Creek Watershed Management/Southwest Corner Project, and Gondola Vistas. Of these projects, the Gondola Vistas development of 22 housing units is located adjacent to the project site. This project could only occur with implementation of Alternative E.

With implementation of alternatives B, C, and D the closest project that could potentially combine with the project is the Beach Club development, which includes 143 housing units. However, this project is located over 2,500 feet away from the project site (to the north along Kahle Drive) and given the local and temporary nature of criteria air pollutants and precursors associated with construction, project-generated construction emissions would not combine with emissions from construction of this or any other project. Implementation of Alternative E would allow the proposed Gondola Vistas project to occur. Nonetheless, if this project were to occur at the same time as the construction of Alternative E, given that estimated emissions from Alternative E would not exceed any applicable threshold of significance, and the relatively small size of the proposed Gondola Vistas project (i.e., up to 22 housing units), emissions from this project would also be relatively minor and therefore would not combine the Alternative E such that a cumulatively significant impact would occur.

Therefore, because project-generated construction-related emissions would not result in a significant short-term impact to air quality with implementation of Mitigation Measures 3.13-1a and 3.13-1b and would not combine with construction emissions of other foreseeable projects such that a cumulatively considerable impact would occur, the project **would not result in a cumulatively significant impact** related to short-term air quality impacts for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative effects related to short-term air quality impacts.

Cumulative Impact 3.13-2: Cumulative consistency with air quality plans and regional transportation conformity

The cumulative context with regards to long-term emissions of criteria air pollutants would include the entire Lake Tahoe Basin. The California portion of the Basin, including El Dorado County and Placer County are within the California Air Resources Board-designated Lake Tahoe Air Basin (LTAB). On the Nevada side, the Lake Tahoe Basin includes the western portions of Douglas and Carson County, and the southwest portion of Washoe County.

The LTAB (El Dorado and Placer County in California) and the Nevada Counties are in attainment or designated unclassified for all National AAQS. The LTAB is designated nonattainment for ozone and PM₁₀ per California AAQS. Thus, no existing adverse cumulative condition occurs on the Nevada side of the Tahoe Basin whereas a cumulative adverse condition does occur on the California side of the Tahoe Basin with respect to ozone and PM₁₀.

The TMPO RTP/SCS (i.e., Mobility 2035) and the Regional Plan are the two primary plans in place to direct growth and development within the cumulative context of the project. The intent of the RTP/SCS is to accommodate the expected growth in the Region in a way that improves traffic flow and mobility of residents and visitors to the Region, and reduces regional and localized traffic congestion. The Regional Plan is the primary guiding document for land use decisions and development allocation in the Basin.

The project helps achieve the traffic flow and mobility goals of the RTP/SCS. Basin-wide VMT and mobile-source emissions associated with VMT were modeled and included in the TMPO RTP/SCS. Mobile-source emissions associated with the RTP/SCS were found to decrease over the plan implementation period, because of increasingly stringent vehicle emission standards. These emissions estimates were based on outputs from the regional transportation model for plan buildout and represent a future year of 2035. Because long-term regional emissions would decrease over the plan period, RTP/SCS implementation would not conflict with attainment maintenance efforts and would contribute to TRPA 's attainment and maintenance of air quality standards and thresholds. In addition, although the project-specific traffic study considered a future build-out year of 2040, similar trends of decreasing emissions would be anticipated beyond the 2035 plan year. Thus, because the Project is included within the RTP/SCS list of projects and was contemplated in the RTP/SCS EIR/EIS, implementation of the project **would not result in a cumulatively considerable contribution** to significant long-term operational regional air quality impacts for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to significant long-term operational regional air quality impacts.

Cumulative Impact 3.13-3: Cumulative transportation conformity with respect to localized, long-term mobile-source carbon monoxide emissions

CO is an attainment pollutant for both national and state standards within the Lake Tahoe Basin. No existing cumulative adverse impact exists. As discussed under Impact 3.13-3, the project would not result in any potential for local CO concentrations at any affected intersection during operation. This would not change with the addition of the reasonably foreseeable projects listed in Table 3.19-2. Further, based on the traffic study conducted for the project, maximum peak-hour trips would not exceed applicable screening levels of 31,600 vehicles during project operation or in the future cumulative year (i.e., 2040). Additionally, modeling results shown in Appendix J indicate that project-related CO emissions would not cause or contribute to any new or worsened localized violations of the federal 1-hour or 8-hour CO ambient standards on a cumulative basis. Implementation of the project **would not result in a cumulatively considerable contribution** to long-term operational regional air quality impacts with respect to CO emissions for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to long-term operational regional air quality impacts with respect to CO emissions.

Cumulative Impact 3.13-4: Cumulative exposure of sensitive receptors to air toxics

Due to the highly dispersive properties of air toxic contaminant (TAC) emissions, associated impacts would be generally limited to the project site (construction-related TACs and mobile source air toxics [MSAT]) and the affected intersections and roadway segments (operational-related MSAT), generally within 1,000 feet of TAC/MSAT sources.

For construction activities, diesel PM is the primary toxic air contaminant of concern. Construction-related activities would result in short-term project-generated emissions of diesel PM from the exhaust of off-road heavy-duty diesel equipment. On-road diesel-powered haul trucks and worker commute vehicles (MSAT other than diesel PM are associated with gasoline engines) traveling to and from the construction area to deliver materials and equipment are less of a concern because they would not stay on the site for long durations. As discussed under Impact 3.13-4, construction would be relatively short and associated TAC and MSAT emissions would disperse rapidly from the source.

As discussed above, numerous projects are proposed within the Tahoe Basin that could be constructed during the same time frame as the project (e.g., Gondola Vistas, Beach Club, and Bijou Park Creek Watershed Management/Southwest Corner). However, these projects are relatively small in comparison to the project and therefore emissions and construction duration would be less as compared to the project. Further, due to the local nature of health impacts associated with MSAT, the receptors exposed to the highest concentrations of toxics for the longest period of time would experience the greatest impact. Thus, given that the other future planned projects are located at various distances from the project site (with the exception of Alternative E and Gondola Vista), different receptors would be exposed to MSAT emissions. Nonetheless, exposure time and concentration would be minimal. Therefore, because construction periods would be relatively short, and due to the highly dispersive properties of MSAT, no one receptor would be exposed to excessive concentrations of MSAT for extended periods of time.

With implementation of Alternative E, the Gondola Vista development could occur, which would result in construction activities directly adjacent to the project. However, as described above, a project of this size (i.e., up to 22 housing units) would not result in substantial MSAT emissions and construction duration would likely be relatively short (i.e., less than 3 years). Therefore, because MSAT impacts would be limited to the project site, construction-related TAC/MSAT emissions would not be substantial, and construction duration would be short-term, no one receptor would be exposed to substantial TAC/MSAT emissions for extended periods of time.

As described in Impact 3.13-4, the amount of MSAT emitted by the build alternatives would be proportional to the VMT. While the highway realignment would result in a small increase in VMT when through trips are analyzed on their own, it is consistent with the community revitalization objectives of the approved RTP Alternative 3 and its associated beneficial reduction in regional VMT. Thus, because Alternatives B, C, and D would contribute to an overall regional reduction in VMT, higher levels of MSAT are not expected from these alternatives compared to Alternative A. Also, emissions would likely be lower than present levels in the design year as a result of the EPA's national control programs (FHWA 2016). Local conditions may differ from national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

With regards to operational-related MSAT emissions, impacts would be limited to the affected intersections and roadways segments and would be a function of daily vehicle volumes. Based on the traffic study conducted for the project, peak-summer daily traffic volumes (ADT) would not exceed applicable screening levels of 100,000 vehicles during project operation or in the future cumulative year (i.e., 2040). Implementation of the project **would not expose nearby receptors to MSAT concentrations such that a cumulatively significant health risk impact would occur** for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to exposing nearby receptors to TAC concentrations such that an adverse cumulative health risk effect would occur.

Greenhouse Gas Emissions and Climate Change

Climate change is expected to result in a variety of effects in the study area including increased frequency and intensity of wildfires; changes to timing and intensity of precipitation resulting in increased risk from landslides associated with ground saturation, increased stormwater runoff, and increased intensity of storm events that result in increased snow loading and high winds. However, there are numerous programs and policies in place, as well as design measures, that would protect against these climate change risks. These would not change for the project with the addition of the reasonable foreseeable projects listed in Table 3.19-2, and the potential cumulative impact would not change. Therefore, the vulnerability of the study area to climate change risks is not addressed further.

Environmental impacts from greenhouse gas emissions, i.e., contributions to climate change, are inherently cumulative in nature and are discussed in Impact 3.14-1 in Section 3.14, "Greenhouse Gas Emissions and Climate Change."

Noise and Vibration

The geographic scope for analyzing the cumulative impacts of noise and vibration is the study area. The project-level analysis in Section 3.15, "Noise and Vibration," is divided into the existing-plus-project (2020) scenario and the cumulative-plus-project (2040) scenario. The cumulative-plus-project analysis involves impacts of the potential construction of mixed-use development, proposed with Alternatives B, C, and D, which would take place beyond 2020. As such, the cumulative-plus-project analysis contained in Section 3.15 also constitutes a cumulative impact analysis because it incorporates long-term impacts of the cumulative projects identified in Table 3.19-2. Therefore, this discussion of cumulative noise and vibration impacts summarizes the cumulative-plus-project analysis provided in Section 3.15.

Cumulative Impact 3.15-1: Short-term construction noise levels

Alternative A would not include any noise-generating construction or demolition activity for the project itself; therefore, there would be **no cumulatively considerable contribution** to construction noise impacts with Alternative A for the purposes of CEQA and TRPA.

Because of the reasons stated above, for the purposes of NEPA, there **would not be an adverse cumulative contribution** to construction noise impacts from Alternative A.

Construction and demolition activity that would occur with Alternatives B, C, and D transportation improvements and mixed-use development, including replacement housing, would take place during the less noise-sensitive time of day and comply with the requirements of TRPA's Best Construction Practices Policy for the Minimization of Exposure to Construction-Generated Noise and Ground Vibration. Therefore, for the purposes of CEQA and TRPA, implementation of Alternatives B, C, and D **would not result in a cumulatively considerable contribution** to construction noise impacts.

For the purposes of NEPA, design features of the Alternatives B, C, and D would avoid or minimize cumulative effects related to construction noise impacts.

Alternative E would include construction activity during noise-sensitive evening nighttime hours that could result in exceedances of applicable TRPA land use-based noise thresholds at noise sensitive receptors, as well as exceedances of interior noise standards at nearby hotels and residences. Implementation of Mitigation Measure 3.15-1 for Alternative E would be unlikely to adequately reduce noise levels, resulting in a **cumulatively considerable contribution to a significant and unavoidable impact** for Alternative E for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative E to further reduce to the extent feasible the cumulative effects related to construction noise impacts.

Cumulative Impact 3.15-2: Ground vibration during construction

Alternative A would not include any construction or demolition activity that generates ground vibration for the project itself, therefore, there would be **no cumulatively considerable contribution** to construction ground vibration with Alternative A for the purposes of CEQA and TRPA.

For the purposes of NEPA, design features of Alternative A would avoid or minimize cumulative effects related to ground vibration.

Pile driving activity performed during construction of the pedestrian bridge with Alternatives B, C, and D, with and without activity on the redevelopment sites, could expose nearby buildings to ground vibration levels that exceed Federal Transit Administration's (FTA's) vibration 80-vibration decibel (VdB) standard for human response at residential land uses. This would be a significant impact for Alternatives B, C, and D. However, implementation of Mitigation Measure 3.15-2a would reduce the ground vibration impact for Alternatives B, C, and D to a level that **would not result in a cumulatively considerable contribution to impacts** for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternatives B, C, and D to further reduce to the extent feasible the cumulative effects related to ground vibration.

Pile driving activity performed during construction of the Skywalk under Alternative E could expose nearby buildings and structures to ground vibration levels that exceed FTA's vibration standard of 0.20 inches/second peak particle velocity (PPV) for structural damage and FTA's vibration standard of 80 VdB for human response at residential land uses. Implementation of Mitigation Measure 3.15-2b would reduce vibration, but it is not certain that measures would reduce ground vibration levels at nearby structures to less than FTA's vibration standard. This would be a significant and unavoidable impact of Alternative E. None of the projects listed in Table 19-2 or shown on Exhibit 19-2 are located close enough to contribute to the vibration impacts associated with Alternative E. Therefore, for the purposes of CEQA and TRPA, Alternative E **would result in cumulatively considerable contributions to a significant and unavoidable impact** for ground vibration.

For the purposes of NEPA, additional mitigation measures have been incorporated into Alternative E to further reduce to the extent feasible the cumulative effects related to ground vibration.

Cumulative Impact 3.15-3: Cumulative traffic noise exposure at existing receptors

Alternative A would not result in changes to traffic noise levels along US 50 or local roadways and, therefore, would have **no impact** to noise-sensitive receptors for the purposes of NEPA, CEQA, and TRPA.

Based on the cumulative-plus-project analysis in Section 3.15, with Alternatives B, C, and D, noise-sensitive receptors would be exposed to noise levels greater than the applicable FHWA noise abatement criteria. Existing noise-sensitive receptors in California would experience substantial increases in traffic noise under Caltrans criteria (i.e., increase of 12 decibels [dB] or more); be exposed to noise levels that exceed TRPA's applicable land use-based community noise equivalent level (CNEL) threshold; and experience a CNEL increase equal to or greater than 3 dB, which is a TRPA significance criterion and a CEQA significance criterion for receptors located in California. With all four action alternatives, multiple noise-sensitive receptors would be exposed to traffic noise levels that exceed the applicable traffic noise standard established by the City of South Lake Tahoe and existing hotels would be exposed to interior noise levels that exceed the interior noise standard of 45 CNEL. Mitigation Measures 3.15-3a, 3.15-3b, and 3.15-3c would reduce these impacts under Alternatives B, C, and D, respectively, reducing the impacts to less than the TRPA Noise thresholds, but which are considered significant and unavoidable for the purposes of NEPA and CEQA environmental compliance. Therefore, the Alternatives B, C, and D **would result in cumulatively considerable contributions to a significant and unavoidable impact** for the purposes of CEQA and TRPA.

Mitigation Measure 3.15-3d would apply to Alternative E and would reduce impacts to a less-than-significant level, and **would not result in a cumulatively considerable contribution** for Alternative E for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative effects related to traffic noise exposure at existing receptors.

Cumulative Impact 3.15-4: Cumulative noise/land use compatibility of mixed-use redevelopment sites

Alternatives A and E would not include the potential future redevelopment of any areas within the project site. Therefore, for the purposes of NEPA, CEQA, and TRPA, there would be **no impact** pertaining to the exposure of new land uses to excessive noise levels under Alternatives A and E.

Based on the cumulative-plus-project analysis in Section 3.15, common outdoor activity areas could be included on the mixed-use redevelopment sites that would potentially be developed under Alternatives B, C, and D. These common outdoor activity areas could be exposed to traffic noise levels that exceed the City of South Lake Tahoe's 60 CNEL standard. This would be a potentially significant impact for purposes of NEPA and CEQA compliance. Noise-reducing Mitigation Measure 3.15-4 would reduce this impact to a less-than-significant level, however. Therefore, for the purposes of CEQA and TRPA, Alternatives B, C, and D **would not result in cumulatively considerable contributions** to noise/land use compatibility of the mixed-use redevelopment sites.

For the purposes of NEPA, additional mitigation measures have been incorporated into the Alternatives B, C, and D mixed-use development, including replacement housing, to further reduce to the extent feasible the cumulative effects related to noise/land use compatibility of the mixed-use redevelopment sites.

Biological Environment**Cumulative Impact 3.16-1: Cumulative disturbance or loss of common vegetation communities and wildlife habitats**

The geographic context for analyzing the cumulative effects on vegetation communities, wildlife habitats, and other biological resources is the Tahoe Region. As described in Impact 3.16-1, under three of the build alternatives (Alternatives B, C, and D), the proposed US 50/South Shore Community Revitalization Project would result in the removal or disturbance of 0.5 to 1.7 acres of common natural vegetation communities and habitats – Jeffrey pine and low sagebrush. This conversion, when combined with the cumulative projects within these vegetation types, could contribute to the cumulative reduction of these vegetation communities

within the region. Because these habitats are common, abundant, and widely distributed locally and regionally, implementing any of the action alternatives, when combined with past, present, and reasonably foreseeable future projects, would not threaten, regionally eliminate, or contribute to a substantial reduction in the distribution or abundance of habitat for common vegetation communities and wildlife habitats in the region. Additionally, the impact is reduced by ongoing forest restoration projects that will result in long-term improvement to the quality and functions of forest habitats in some locations. Therefore, for the purposes of CEQA and TRPA, the project-related minor loss of common vegetation communities **would not result in a cumulatively considerable contribution** to the overall cumulative effect on common vegetation communities and wildlife habitats in the Tahoe Region.

For the purposes of NEPA, design features of the build alternatives would avoid or minimize cumulative effects related to the overall cumulative effect on common vegetation communities and wildlife habitats in the Tahoe Region.

Cumulative Impact 3.16-2: Cumulative disturbance or loss of sensitive habitats (jurisdictional wetlands, riparian vegetation, SEZ, aquatic habitat)

The geographic context for analyzing the cumulative effects on sensitive habitats is the Tahoe Region. Construction of Alternatives B, C, and D would result in direct removal and disturbance of sensitive habitats, including waters of the United States, riparian habitat, and SEZs. Decades of growth and development, Comstock-era logging, hydrologic modification, livestock grazing, and fire suppression activities in the Tahoe region have resulted in an overall significant cumulative effect on these sensitive habitat types. As of 2011, it was estimated that 75 percent of marsh habitat and 50 percent of meadow habitats in the Tahoe Basin have experienced some level of functional degradation (TRPA 2012c). Attainment status for meadow and wetland habitats are somewhat worse than TRPA threshold targets and riparian deciduous habitats in the Tahoe Basin are considerably worse than TRPA threshold targets (TRPA 2016).

As described in Impact 3.16-2, construction or expansion of roadway alignments, roadway features (e.g., curbs, gutters, retaining walls), and other project elements could result in minor vegetation removal or trampling, fill of wetlands, hydrologic changes, deposition of dust or debris, soil compaction, or other disturbances that could temporarily affect the condition and function of sensitive habitats. Additionally, any project-related construction adjacent to wetlands or other sensitive habitat could similarly indirectly or directly affect those resources unless effective best BMPs and other appropriate resource protection measures are implemented. Construction activities under any build alternative would be required to comply with existing federal, state, and local regulations and permitting requirements that protect wetland, riparian, and other sensitive habitats. Within the Tahoe Basin, project construction would be required to comply with TRPA policies regarding SEZs. Implementation of Mitigation Measures 3.16-2a, 3.16-2b, and 3.16-2c would require that sensitive habitat is avoided to the extent feasible and that sensitive habitats that cannot be avoided are restored following construction. If the habitat cannot be restored, the project proponent would be required to compensate for unavoidable losses in a manner that results in no net loss of sensitive habitats and meets TRPA mitigation requirements for impacts on SEZs. Based on the no net loss standard, for the purposes of CEQA and TRPA, the project **would not result in a cumulatively considerable contribution** to the overall significant cumulative effect on sensitive habitats in the Tahoe Region.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative effects related to the overall significant cumulative effect on sensitive habitats in the Tahoe Region.

Cumulative Impact 3.16-3: Cumulative tree removal

The geographic context for analyzing the cumulative effects on forest land is the Tahoe Region. Tree removal in the Tahoe Region began in the late 1800s as logging to support silver mining in Nevada, and since the early 1900s has been primarily related to reduce fire fuels or to enhance forest health. In addition, conversion of forest land to non-forest uses has occurred in the project region as a result of habitat conversions, residential and commercial development, and utility and infrastructure development.

As described in Impact 3.16-3, Alternatives B, C, D, and E would result in substantial tree removal, as defined by TRPA Code Section 61.1.8. However, Mitigation Measure 3.16-3 would require that a tree removal, protection, and replanting plan is prepared, which would ensure that all necessary protection measures are implemented and thus ensuring that Code requirements are met. In terms of the environmental effect of project alternatives, trees removed as part of the action alternatives are only a small proportion of the amount of trees located in the Tahoe Region (i.e., less than 0.1 percent) and tree replanting would compensate for the contribution of this project to cumulative tree removal. The project's effects would not result in substantial changes in stand structure or composition or in the distribution of forest land in the Region. Therefore, implementation of any of the action alternatives would not substantially reduce the size, continuity, or integrity of forest land in the project area or interrupt the natural processes that support forest land and **would not result in a cumulatively considerable contribution** to overall tree removal impacts in the Region for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative effects on overall tree removal impacts in the Region.

Cumulative Impact 3.16-4: Cumulative introduction and spread of invasive plants

Past projects and activities have resulted in the introduction and spread of various noxious weeds and invasive species in the project region, resulting in habitat degradation and other adverse effects on biological resources. Existing and foreseeable future projects have the potential to continue this trend, although current policies, regulations, and programs currently minimize the potential for the further spread of noxious weeds and invasive species and the introduction of new species. The current presence and spread of noxious weeds and invasive species in the project region is considered a significant cumulative impact. Implementing Alternatives B, C, or D has the potential to introduce and spread noxious weeds and invasive species during project construction and post-construction revegetation activities. Nearby source populations could passively colonize disturbed ground, or attach to personnel or equipment and be transported to the project area from an infested area. Soil, vegetation, and other materials transported to the project area from off-site sources for BMP, revegetation, or fill for project construction could contain invasive plant seeds or plant material that could become established in the project area. Additionally, invasive species currently present in or near the project area have the potential to be spread by construction disturbances. However, through implementation of Mitigation Measure 3.16-4, invasive plant species management practices would be implemented during project construction and the inadvertent introduction and spread of invasive plants from project construction would be prevented. With this mitigation measure, the project would not contribute substantially to the establishment and spread of noxious weeds and other invasive plant species in the project region, and therefore, **would not contribute considerably** to an overall significant cumulative impact for the purposes of CEQA and TRPA.

For the purposes of NEPA, additional mitigation measures have been incorporated into the build alternatives to further reduce to the extent feasible the cumulative effects related to an overall significant cumulative impact related to the introduction and spread of invasive plants.

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4 OTHER NEPA-, CEQA-, AND TRPA-MANDATED SECTIONS

4.1 EFFECTS FOUND NOT TO BE SIGNIFICANT

As part of the scoping and environmental analysis carried out for the project and as discussed in Chapter 3, the build alternatives would result in no adverse impacts for the purposes of CEQA, TRPA, and NEPA related to the following environmental issue areas and, therefore, they do not warrant further evaluation.

- ▲ **Agricultural resources.** According to the California Department of Conservation (DOC), there are no lands considered to be important farmland on the project site (DOC 2014) or lands subject to Williamson Act contracts (DOC 2016). There are also no agricultural land easements in the project site designated by the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NCRS) under the Agricultural Conservation Easement Program. Thus, the project alternatives would not convert important farmland, conflict with Williamson Act contracts, or otherwise affect agricultural land. There would be no impacts related to agricultural resources.
- ▲ **New parks and recreation facilities.** The project alternatives would not construct new recreation facilities and, thus, would not result in an impact related to creating additional recreation capacity, conflicts between recreation uses, or creating an adverse physical effect on the environment associated with construction of recreation facilities.
- ▲ **Interfere with waterborne, rail traffic, or air traffic.** No alternative would result in increasing, creating, or interfering with waterborne, rail traffic, or air traffic.
- ▲ **Hazards due to roadway design.** None of the build alternatives would install sharp curves or dangerous intersections, or result in incompatible uses of roadways, such as by slow-moving farm equipment.
- ▲ **Paleontological resources.** A review of the Geologic Map of the Lake Tahoe Basin (Saucedo 2005) indicates that the Area of Potential Effect (APE) is located within an area of Cretaceous age (145 to 66 million years old) granodiorite and Pleistocene age (2.6 million to 11,700 years old) lake terrace deposits. Small pockets of Holocene (11,700 years ago to present) alluvium and floodplain deposits can be found near streams.

The value or importance of different fossil groups varies depending on the age and depositional environment of the rock unit that contains the fossils, their rarity, the extent to which they have already been identified and documented, and the ability to recover similar materials under more controlled conditions (such as for a research project). Marine invertebrates are generally common; the fossil record is well developed and well documented, and generally they would not be considered a unique paleontological resource. Identified vertebrate marine and terrestrial fossils are generally considered scientifically important because they are relatively rare. Some invertebrate fossils have been found on the south shore of Lake Tahoe; however, there are no documented occurrences of vertebrate fossils within the Lake Tahoe Basin (U.C. Berkeley Museum of Paleontology [UCMP] 2017).

A review of the UCMP database indicates there are no recorded fossil sites in the vicinity of the study area (UCMP 2017). The majority of the study area has been heavily influenced by the Pleistocene era glaciations, which scoured the mountain slopes; mixing, and transported granitic and volcanic debris, and further minimizing the potential for fossils to be present in these locations. Isolated remnants of ancient, metamorphosed sedimentary seafloor deposits exist within the Lake Tahoe Basin but do not occur within the study area (Saucedo 2005). The metamorphosed remnant located closest to the study area is found approximately 2.5 miles to the north east at Castle Rock, near Daggett Pass. For these reasons, none of the alternatives would result in an adverse effect on unique paleontological resources.

- ▲ **Geology, soils, land capability and coverage.** The study area does not contain expansive soils or slopes that could become unstable or generate landslides or avalanche. Additionally, TRPA regulations prohibit the construction of septic tanks or wastewater disposal systems within the Lake Tahoe Basin.
- ▲ **Avalanche hazards.** The project site does not contain areas with a high risk of avalanche.
- ▲ **Mineral resources.** Impacts on mineral resources (loss of a known mineral resource or a locally-important mineral resource recovery site) were dismissed from further evaluation, because there are no known mineral resources within the project site (USGS 2015) and because mining is not an identified allowable use in the study area by the Tourist Core Area Plan or Douglas County Code Section 20.703.090 and 20.703.130 (City of South Lake Tahoe 2013:C-2 – C-12).
- ▲ **Vector-borne disease.** The US 50/South Shore Community Revitalization Project does not include treatment wetlands or detention basins of sufficient capacity that could influence vector-borne disease risks. Therefore, there would not be hazards associated with increased potential for vector-borne disease as a result of the project.
- ▲ **Airports.** The build alternatives are not located close enough to a public airport or a private airstrip to create a conflict or safety hazard. The Lake Tahoe Airport is located approximately 4 miles southwest of the project site. The Minden-Tahoe Airport is located over 9 miles east of the project site. The nearest private airstrip (Bailey Ranch) is located north of Carson City and over 9 miles east of the project site. The project site is not within the designated approach or departure routes of any airports or airstrips. Because the location of the project site is distant from the nearest public or private airstrip or heliport, it would not result in an airport safety hazard for people residing or working at the project site.
- ▲ **Hazardous materials near schools.** The build alternatives are not located within 0.25 mile of an existing or proposed school. Bijou Community School is located over 1 mile southwest of the project site. Zephyr Cove Elementary School and Whittell High School are located over 1 mile northeast of the project site. Therefore, implementation of the build alternatives would not emit or handle hazardous materials, substances, or wastes within 0.25 mile of an existing or proposed school.
- ▲ **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) is located in many parts of California and is commonly associated with serpentine soils and rocks. The asbestos map of western El Dorado County (*Asbestos Review Areas, Western Slope, County of El Dorado, State of California*; El Dorado County 2005) shows the location of individual parcels and areas considered to be subject to elevated risk of containing NOA. The project site is not located within any of the areas known to contain NOA.
- ▲ **Odors.** Minor odors from the routine use of heavy duty diesel equipment and the laying of asphalt during construction activities would be intermittent and temporary, and would dissipate rapidly from the source with an increase in distance. Construction-related odors would be considered temporary and minor. Land uses that are major sources of odor typically include wastewater treatment and pumping facilities, sanitary landfills, transfer stations, recycling and composting facilities, and various industrial uses such as chemical manufacturing and food processing. There are no major odor sources adjacent to or in the immediate vicinity of the project site. Further, El Dorado County Air Quality Management District Rule 205-Nuisance is in place to protect citizens from harmful odors should they occur. Therefore, project implementation would not create objectionable.
- ▲ **New stationary sources of greenhouse gas (GHG) emissions due to transportation improvements.** No new stationary sources of GHG emissions would be constructed as part of the build alternatives.
- ▲ **Conflicts with a habitat conservation plan.** None of the build alternatives would be constructed within an area covered under an adopted habitat conservation Plan, natural community conservation plan, or

other approved local, regional, or state conservation plan. Therefore, project implementation would not conflict with the provisions of an adopted conservation plan.

- ▲ **Special-status species.** Section 3.16.2, “Affected Environment,” discusses the special-status plant and animal species evaluated in this EIR/EIS/EIS, and Tables M-1 and M-2 (Appendix M) summarize the potential for each of these species to occur in the study area. Generally, those plant and animal species not expected to 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 in detail, because implementation of the build alternatives would not be expected to affect those species.
- ▲ **Wildlife movement or migratory corridors.** The study area is not positioned within any known important wildlife movement or migratory corridors. Because the study area is subject to high levels of human disturbance and isolation of habitat patches because of commercial and residential development, presence of major road corridors, and recreational uses, it is not likely to function as an important corridor.

4.2 SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED

Code of Federal Regulations (CFR) Title 40 Section 1502.16 and Section 5.8.B (2) of the TRPA Code of Ordinances requires an EIS to include any significant adverse environmental effects which cannot be avoided should any of the alternatives be implemented. CEQA Section 21100(b)(2)(A) states that an EIR shall include a detailed statement setting forth “[i]n a separate section...[a]ny significant effect on the environment that cannot be avoided if the project is implemented.” State CEQA Guidelines Section 15126.2(b) requires that an EIR describe any significant impacts, including those that can be mitigated but not reduced to a less-than-significant level.

Chapter 3, “Affected Environment and Environmental Consequences,” of this EIR/EIS/EIS addresses the potential environmental effects of the project alternatives and recommends mitigation measures, as necessary, to mitigate project effects to the extent feasible. For the purposes of CEQA and TRPA, the analysis concludes that all of the alternatives, including the alternative that involves taking no action (Alternative A) would result in significant and unavoidable impacts, or adverse effects, as described below.

- ▲ Alternative A would result in five significant and unavoidable or adverse traffic and transportation effects, including impacts related to: vehicle, bicycle, and pedestrian safety; intersection level of service (LOS); and roadway LOS and emergency access in future years (2040).
- ▲ Alternative B would result in up to three significant and unavoidable or adverse effects. The Alternative B transportation improvements would result in impacts related to: dividing the Rocky Point neighborhood and the resultant effects on community character and cohesion; substantial noise increases; and visual effects on the Rocky Point neighborhood. Alternative B transportation improvements would also have a disproportionately high and adverse effect on minority and low-income populations in the Rocky Point neighborhood. The Alternative B mixed-use development, including replacement housing, would result in significant and unavoidable or adverse effects related to noise.
- ▲ Alternative C would result in up to seven significant and unavoidable or adverse effects. The Alternative C transportation improvements would result in impacts related to: dividing the Rocky Point neighborhood and the resultant effects on community character and cohesion; substantial noise increases; visual effects on the Rocky Point neighborhood; and transportation effects, including emergency access and roadway LOS. Alternative C transportation improvements would also have a disproportionately high and adverse effect on minority and low-income populations in the Rocky Point neighborhood. The Alternative C mixed-use development, including replacement housing, would result in significant and unavoidable or adverse effects related to noise and traffic.

- ▲ Alternative D would result in up to three significant and unavoidable or adverse effects. The Alternative D transportation improvements would result in impacts related to: dividing the Rocky Point neighborhood and the resultant effects on community character and cohesion; substantial noise increases; and visual effects on the Rocky Point neighborhood. Alternative D transportation improvements would also have a disproportionately high and adverse effect on minority and low-income populations in the Rocky Point neighborhood. The Alternative D mixed-use development, including replacement housing, would result in significant and unavoidable or adverse effects related to noise.
- ▲ Alternative E would result in up to five significant and unavoidable or adverse effects, including impacts related to: construction activities that would generate noise during nighttime noise-sensitive hours; a construction-related vibration impact on adjacent buildings; a decrease in the travel route rating for Roadway Travel Unit #32, and degradation of the scenic quality of the immediate area; and scenic impacts from the elevated structure having the potential to block or disrupt scenic vistas or views of individual scenic resources.

4.3 GROWTH-INDUCING IMPACTS

4.3.1 National Environmental Policy Act

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with the National Environmental Policy Act (NEPA) of 1969, require evaluation of the potential environmental effects of all proposed federal activities and programs. This provision includes a requirement to examine indirect effects, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations (40 Code of Federal Regulations [CFR] 1508.8) refer to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

4.3.2 Tahoe Regional Planning Agency

Section 3.7.2(H) of the TRPA Code of Ordinances requires that an EIS evaluate the growth-inducing impacts of a project. Growth can be induced by eliminating obstacles to growth or by stimulating economic activity in a way that encourages increases in population and housing in the region.

4.3.3 California Environmental Quality Act

CEQA Section 21000(b)(5) specifies that growth-inducing impacts of a project must be addressed in an EIR. Section 15126(d) of the CEQA Guidelines states that a project is growth-inducing if it could “foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment.” Included in the definition are projects that would remove obstacles to population growth. Examples of growth-inducing actions include developing water, wastewater, fire, or other types of services in previously unserved areas; extending transportation routes into previously undeveloped areas; and establishing major new employment opportunities.

Typically, the growth-inducing potential of a project would be considered significant if it fosters growth or a concentration of population above what is assumed in local and regional land use plans, or in projections made by regional planning authorities. Significant growth impacts could also occur if the project provides infrastructure or service capacity to accommodate growth levels beyond those permitted by local or regional plans and policies.

4.3.4 Growth-Inducing Effects

A project is considered to be growth-inducing if it fosters economic or population growth, directly or indirectly, in the surrounding environment. These impacts could result from projects that include housing construction or the removal of an obstacle to growth, such as expansion of a wastewater treatment plant, extending transportation routes into previously undeveloped areas; and establishing major new employment opportunities.

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 capital improvement projects, such as the US 50/South Shore Community Revitalization Project would not result in an increase in the planned development patterns in the Region.

The roadway features included in Alternatives B, C, D, and E are intended to enhance the current transportation network and mobility opportunities. Because existing roads would be utilized for transportation improvements associated with these alternatives, accessibility within the study area would not change such that they could influence growth. The Tahoe Region is virtually built out; therefore, the project does not propose the expansion of existing transportation or transit routes, which would remove obstacles to growth in the Region and influence growth through additional housing, population, and economic growth beyond that planned for in the Regional Plan. Section 3.4, "Community Impacts," discusses reasonably foreseeable population and employment growth associated with Alternatives B, C, D, and E.

Alternatives B, C, and D transportation improvements and mixed-use development would include construction of replacement housing equal to the number of housing units displaced by the project. Because these replacement housing units would result in no net loss of housing, meaning that the project would neither result in an increase in the number of housing units or a decrease in the number of housing units in the study area, these alternatives would not influence growth.

Alternatives B, C, and D with mixed-use development would result in localized growth of residential and commercial uses that is planned for in the Regional Plan. This development would be subject to the commodities system set forth by the Regional Plan that distributes a limited number of residential and commercial floor area (CFA) allocations. Such growth would generate additional traffic, noise, air pollutant emissions, and the need for additional public services and utilities. The effects of this growth are assessed in the resource sections of this EIR/EIS/EIS.

Alternatives B, C, and D proposes new mixed-use development, which would result in implementing growth planned for by the Regional Plan and TCAP. Construction of the project transportation improvements and potential mixed-use development would generate temporary demand for construction employees, which would be anticipated to be met by existing residents in the South Shore area or nearby areas (e.g., Minden, Gardnerville, Carson City) and would not be anticipated to indirectly cause population growth as described in Impact 3.4-2. Furthermore, there would be a potential incremental increase in permanent road maintenance work and a permanent increase in demand for commercial employees associated with the potential mixed-use development, which would also be anticipated to be met by the local workforce as described in Impact 3.4-3. For these reasons, the incremental increase in employment that could occur with the project would not result in an increase in the population that was not previously planned by the Regional Plan. Construction employment demand during implementation of the project would not influence growth.

In addition, while the transportation improvements associated with Alternatives B, C, D, and E could require relocation of existing utilities, they would not propose any new or substantially expanded public services or utilities. The mixed-use development, including replacement housing, would require the extension of utilities to serve the new development, but would not increase the capacity of the utilities and, thus, would not induce growth beyond that planned for by the project, the TCAP, SSAP, and the Regional Plan. For these reasons, substantial indirect growth-inducement would not occur from implementation of the project.

4.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA calls for the identification of an environmentally superior alternative in an EIR, but gives no definition for the term (State CEQA Guidelines Section 15126.6(e)). However, CEQA does specify that if the environmentally superior alternative is the “no project” alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

From the standpoint of minimizing environmental effects related to physical disturbances, Alternative A (No Build Alternative) would be the environmentally preferable/environmentally superior alternative. With Alternative A, no construction would take place and operations and maintenance would continue under existing programs, and there would not be substantial changes to the existing environment. However, Alternative A would not meet any of the basic project objectives described in Section 1.3, “Purpose, Need, and Objectives,” and would not achieve the water quality, bicycle and pedestrian, transit, greenhouse gas emission, and visual benefits of Alternatives B, C, and D. Implementing Alternative A would also preclude gaining the environmental and economic revitalization benefits of the build alternatives.

Table 4-1 identifies the number of significant, potentially significant, and beneficial impacts identified under each action alternative for each environmental issue area evaluated in this EIR/EIS/EIS. The significance of impacts and identification of adverse impacts, for the purposes of NEPA, after mitigation is also identified. As shown in Table 4-1, based solely on impact significance conclusions after implementation of mitigation measures, all of the alternatives evaluated in this EIR/EIS/EIS would result in significant and unavoidable impacts. All of the build alternatives would also provide beneficial effects.

The US 50/South Shore Community Revitalization Project is proposed to include a community revitalization component. It is included in the Lake Tahoe Regional Transportation Plan (RTP, also known as *Mobility 2035*) and Sustainable Communities Strategy (SCS, for the California portion of the Lake Tahoe Region) adopted in 2012 and TRPA’s Environmental Improvement Program (EIP). Consistent with the Regional Plan Goals and Policies, the EIP is designed to attain, maintain, or surpass multiple environmental thresholds through an integrated approach. Each build alternative was designed with these considerations in mind, and would contribute to various environmental improvements as described throughout this EIR/EIS/EIS.

The 2017 Regional Transportation Plan (2017 RTP), which is an update to the 2012 RTP, and its joint CEQA/TRPA environmental document have been circulated for public review. The vision and goals of the 2017 RTP were based on the 2012 RTP. The projects listed in the 2017 RTP are substantially similar to those in the 2012 RTP, and the US 50/South Shore Community Revitalization Project is included in both documents.

As shown in Table 4-1, there are significant and unavoidable impacts related to implementation of all build alternatives. Alternatives B and D have 11 beneficial impacts from the transportation improvements and six beneficial impacts from the mixed-use development, including replacement housing, chiefly related to traffic conditions along road segments and at intersections that would result from project implementation. Alternative C would similarly result in a high number of beneficial impacts (10 beneficial impacts from the transportation improvements and five beneficial impacts from the mixed-use development, including replacement housing); however, there are seven significant and unavoidable impacts from the transportation improvements and two significant and unavoidable impacts from the mixed-use development, including replacement housing, again chiefly related to traffic conditions that could not be mitigated with the current proposed mitigation measures. Alternatives B, C, and D transportation improvements would also have a disproportionately high and adverse effect on minority and low-income populations in the Rocky Point neighborhood. Alternative A, the no build alternative, would result in five significant impacts (all of which relate to traffic conditions), none of which would be resolved.

Table 4-1 Summary of Adverse Impacts (for the Purposes of NEPA) or Significant Impacts (for the Purposes of CEQA and TRPA) Before and After Mitigation

Environmental Topic	Alternative A		Alternative B				Alternative C				Alternative D				Alternative E	
			Transportation Improvements		Mixed Use Dev, Incl Replacement Housing		Transportation Improvements		Mixed Use Dev, Incl Replacement Housing		Transportation Improvements		Mixed Use Dev, Incl Replacement Housing			
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Land Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parks and Recreational Facilities	0	0	1B 1S	1B	1S	0	1B 1S	1B	1S	0	1B 1S	1B	0	0	1S	0
Community Impacts	0	0	1S	1Adv 1SU	0	0	1S	1Adv 1SU	0	0	1S	1Adv 1SU	0	0	0	0
Public Services and Utilities	0	0	1PS	0	2PS	0	1PS	0	2PS	0	1PS	0	2PS	0	1PS	0
Traffic and Transportation	5S	5Adv 5SU	9B	9B	5B 2S 1PS	5B	8B 6S	8B 4Adv 4SU	4B 3S 1PS	4B 1Adv 1SU	9B	9B	5B 2S 1PS	5B	9B 1S	9B 1Adv 1SU
Visual Resources/Aesthetics	0	0	1S 1PS	1Adv 1SU	0	0	1S 1PS	1Adv 1SU	0	0	1S 1PS	1Adv 1SU	0	0	2S	2Adv 2SU
Cultural Resources	0	0	1Adv 3PS	0	1Adv 3PS	0	1Adv 3PS	0	1Adv 3PS	0	1Adv 3PS	0	1Adv 3PS	0	1Adv 3PS	0
Floodplains	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Water Quality and Stormwater Runoff	0	0	1B 1S	1B	1B 1S	1B	1B 1S	1B	1B 1S	1B	1B 1S	1B	1B 1S	1B	0	0
Geology, Soils, Land Capability and Coverage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hazards, Hazardous Materials, and Risk of Upset	0	0	1PS	0	1PS	0	1PS	0	1PS	0	1PS	0	1PS	0	1PS	0
Air Quality	0	0	1S	0	1S	0	1S	0	1S	0	1S	0	1S	0	1S	0
Greenhouse Gas Emissions and Climate Change	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Noise and Vibration	0	0	2S	1Adv 1SU	1PS 1S	1Adv 1SU	2S	1Adv 1SU	1PS 1S	1Adv 1SU	2S	1Adv 1SU	1S 1PS	1Adv 1SU	3S	2Adv 2SU
Biological Environment	0	0	3PS	0	3PS	0	3PS	0	3PS	0	3PS	0	3PS	0	0	0
Total	5Adv 5S	5Adv 5SU	11B 1Adv 7S 9PS	11B 3Adv 3SU	6B 1Adv 6S 11PS	6B 1Adv 1SU	10B 1Adv 13S 9PS	10B 7Adv 7SU	5B 1Adv 6S 11PS	5B 2Adv 2SU	11B 1Adv 7S 9PS	11B 3Adv 3SU	6B 1Adv 5S 11PS	6B 1Adv 1SU	9B 1Adv 8S 5PS	9B 5Adv 5SU

Note: Adv = Adverse Impact; PS = Potentially Significant Impact, S = Significant Impact, B = Beneficial Impact, 0 = No Adverse Effects (NEPA)/Significant Impacts (CEQA/TRPA); SU = Significant and Unavoidable Impact

Source: Compiled by Ascent Environmental, Inc. in 2016

Alternatives B, C, and D would meet all of the project objectives and would all cause long-term significant and unavoidable impacts. Alternatives A and E would eliminate many significant impacts associated with the transportation improvements proposed under Alternatives B, C, and D, in particular the long-term effects of a realigned roadway through residential neighborhoods. However, the benefits related to realigning US 50 would not be realized with Alternatives A and E, including those involving improved emergency access and traffic conditions. Additionally, Alternative E would result in significant scenic and visual degradation of the roadway and roadway viewpoints. Thus, for the purposes of this analysis, the discussion of environmentally superior alternatives focuses on Alternatives B, C, and D.

The environmental differences between Alternatives B, C, and D are related to project design. All of these alternatives include replacement housing and a mixed-use development option intended to replace the lost residential, retail, and commercial space from acquired parcels. Each of these alternatives would provide benefits to the study area associated with traffic operations, mobility, emergency services, visual resources (as they relate to the current scenic resources identified by TRPA), and water quality impacts. The environmental effects of Alternatives B and D are similar, with variations in land acquisition and the particular resultant land use geography, but not to the extent that significance conclusions are substantially different.

In conclusion, the environmentally superior alternative would be either Alternative B or D transportation improvements, including replacement housing and the mixed-use development option, depending on decisions about the priority of types of environmental benefits and adverse effects by the lead agencies. Both of these alternatives would result in fewer long-term, significant and unavoidable environmental impacts and would provide substantial benefits to the study area. The environmental impact differences between these alternatives are not substantial enough that one is clearly superior over the other.

4.5 DEPARTMENT OF TRANSPORTATION ACT (SECTION 4[f] AND PROPOSED *DE MINIMIS* DETERMINATION)

Section 4(f) of the Department of Transportation Act of 1966 states that a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance can be approved only if there is no prudent and feasible alternative to using that land and if the program or project includes all possible planning to minimize harm resulting from the use to the park, recreation area, wildlife and waterfowl refuge, or historic site.

A Proposed *De Minimis* Finding is included as Appendix D of this Draft EIR/EIS/EIS, which includes preliminary findings regarding the use of Section 4(f) resources located within the study area that include:

- ▲ Public Parks and Recreation Areas
 - Van Sickle Bi-State Park, managed by the California Tahoe Conservancy (Conservancy) and Nevada Division of State Parks (NSP)
- ▲ Wildlife/Waterfowl Refuges
 - Public access to the TRPA-designated waterfowl management area located at Edgewood Tahoe Golf Course
- ▲ Historic Properties Listed or Eligible for the National Register of Historic Places
 - Friday's Station (National Register Inventory #86003259)
 - Pony Express Rider Statue
 - Lincoln Highway/Lake Tahoe Wagon Road/26 Do 451/KBG-4

4.5.1 Section 4(f) *De Minimis* Findings

PARKS, RECREATION AREAS, AND REFUGES

A description of existing park and recreation facilities and resources in the study area, including Van Sickle Bi-State Park, is included in Section 3.3, “Parks and Recreation Facilities.”

A determination of *de minimis* impact on parks, recreation areas, and wildlife and waterfowl refuges, may be made when all three of the following criteria are satisfied:

1. The transportation use of the Section 4(f) resource, together with any impact avoidance, minimization, and mitigation or enhancement measures incorporated into the project, does not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f).

Preliminary Finding: As described herein, the small amount of parkland to be permanently incorporated into the project right-of-way would be less than 0.1 percent of the acreage of the Van Sickle Bi-State Park. Additionally, potential impacts of the project related to visual resources and noise would not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f).

The project would result in beneficial effects related to public access and connectivity between the tourist/casino core and the park, which would be enhanced through:

- ▲ Improved signage, paths and trails for bicycles and pedestrians,
- ▲ Intersection improvements at Heavenly Village Way,
- ▲ A signalized crosswalk at Heavenly Village Way, and
- ▲ The construction of a connecting path and pedestrian bridge over the new US 50.

2. The public has been afforded an opportunity to review and comment on the effects of the project on the protected activities, features, and attributes of the Section 4(f) resource.

Preliminary Finding: This preliminary finding will be released and made available for public comment for a period of 60 days, concurrent with the public comment period for the Draft EIR/EIS/EIS. FHWA will consider all comments on the proposed *de minimis* impact finding prior to issuing a final finding.

3. The official(s) with jurisdiction over the property are informed of FHWA's intent to make the *de minimis* impact determination based on their written concurrence that the project will not adversely affect the activities, features, and attributes that qualify the property for protection under Section 4(f).

Preliminary Finding: TTD and FHWA consulted with and informed the Conservancy and NSP of the proposed *de minimis* impact finding proposed to be made by FHWA. After the public comment period ends and if Alternatives B, C, or D is selected as the preferred alternative, FHWA would seek written concurrence from the Conservancy and NSP that the project would not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f).

Based on the preliminary findings to date, Alternatives B, C, and D would result in a proposed *de minimis* impact on Van Sickle Bi-State Park.

OTHER RESOURCES EVALUATED RELATIVE TO THE REQUIREMENTS OF SECTION 4(F)

Appendix D includes analysis of wildlife/waterfowl refuges, which includes Edgewood Tahoe Golf Course, and historic properties listed or eligible for the National Register of Historic Places, which includes Friday's Station (National Register Inventory #86003259), Pony Express Rider Statue, and Lincoln Highway/Lake

Tahoe Wagon Road/26 Do 451/KBG-4. These resources are evaluated relative to the requirements of Section 4(f). Edgewood Tahoe Golf Course does not have a permanent public property interest as a wildlife or waterfowl refuge; therefore, the Edgewood Golf Course property does not qualify as this category of Section 4(f) resource. With respect to the historic properties, the project would not result in an adverse physical change to these resources and, thus, there would be no use of these resources for the purposes of Section 4(f).

4.6 ECONOMIC EFFECTS

Section 1508.14 of the CEQ regulations states that economic or social effects are not intended by themselves to require preparation of an EIS but that when an EIS is prepared and economic or social and natural or physical environmental effects are interrelated, then the document should discuss all of these effects on the human environment. Economic impacts of transportation projects include the effects of the project on factors such as personal and business income, employment, property values, and tax revenues. Transportation projects can have both positive and negative effects on local and regional economies. Section 3.4, “Community Impacts,” of this EIR/EIS/EIS addresses displacement of businesses and effects on employment as a result of the project.

The primary sources of information used in preparing this section are the *Economic Analysis of the US 50/South Shore Community Revitalization Project* (TTD 2013) and US 50 Realignment Municipal Tax Revenue Analysis Draft Memorandum (Walker, pers. comm., 2016). This section provides background information about economic conditions in the vicinity of the project site.

4.6.1 Affected Environment

ECONOMY AND EMPLOYMENT

Please see discussion of the South Shore economy, types of employment, and employment rate in Section 3.4.1. The types of businesses described below for the study area are representative of the majority of employment in the South Shore area that relies heavily on tourism and visitor services.

Study Area Sub-Districts

The study area contains of the following sub-districts that would most likely realize direct effects from the project.

Commercial triangle west of the existing US 50/Pioneer Trail intersection. The commercial triangle at this location consists of three parcels containing the following businesses:

- ▲ Subway
- ▲ Taco Taqueria
- ▲ 7 Eleven
- ▲ Powder House
- ▲ Vinny’s Pizza
- ▲ Tahoe Bottle Shop
- ▲ the Alpaca Store

Heavenly Village Center (formerly the “Crescent V”). The Heavenly Village Center is a community shopping center consisting of approximately 150,000 square feet of commercial space anchored by a Raley’s Supermarket. Currently, the rear portion of the property accommodates public parking for a fee. The Heavenly Village Center underwent redevelopment in the late 1990s and early 2000s, which led to construction of new commercial space and revitalization of existing buildings.

Heavenly Village. The 17-acre Heavenly Village was created through a comprehensive redevelopment effort undertaken by the city and a variety of other stakeholders. Heavenly Village is characterized as a lively, outdoor, walkable shopping district anchored by the Heavenly gondola and two Marriott fractional/timeshare

properties known as the Timber Lodge and Grand Residence Club. Other types of businesses in the Heavenly Village include restaurants, apparel stores, tourist-oriented retailers, and a movie theater. A parking garage is also located in Heavenly Village. Construction of Heavenly Village was completed in 2006.

Chateau at the Village. The first phase of the Chateau was completed in 2014 and includes an anchor restaurant and retail stores. The second phase of the Chateau is in progress and will include tourist accommodations and mixed retail uses referred to as the Zalanta development.

Resort-casinos. The resort-casino portion of the tourist core consists of four major casino properties (Harrah's Lake Tahoe; Harvey's Lake Tahoe; Montbleu Resort, Casino, and Spa; and Hard Rock Hotel and Casino), which provide gaming and entertainment facilities, more than 2,000 hotel rooms, and 45,000 square feet of retail/commercial space.

Other US 50 commercial. Aside from the two major shopping centers, the US 50 corridor near the state line accommodates a modest amount of commercial uses, including a gas station, convenience store, equipment rental, tourist-related retail shops, a lodging facility, and restaurants.

Tourism and Recreation

Despite the Region's heavy reliance on tourism and recreation, performance statistics for these sectors have shown relatively poor results in the South Shore over the past decade.

Lodging trends. The lodging industry in South Shore has experienced substantial difficulties in the past 10 years or so. The number of annual rooms rented has declined from 1.1 million in 2001/2002 to 720,000 in 2009/2010. The number of rooms rented showed slight improvements in 2010/2011 and 2011/2012. Additionally, occupancy and average daily rates in South Shore lodgings are significantly lower than those observed in other tourism areas in California and similar mountain resort towns in Utah and Colorado. While other resort towns in California, and California overall, saw an increase in transit occupancy tax (TOT) revenues from 2001 to 2011, TOT revenues declined by over 50 percent (TTD 2013:13 – 15).

Gaming revenues. Gaming has historically been a major driver of visitation to the South Shore. Since the proliferation of legalized gaming in California and the national recession that began in 2007, gaming revenues saw a decrease of more than 40 percent between 2007 and 2011 (TTD 2013:17).

Skier visits. In spite of challenging economic periods during the last decade, the number of annual skier visits remained steady at Lake Tahoe ski resorts. Skier visitation in Lake Tahoe is known to be closely linked with weather patterns, including both ski conditions and roadway conditions, which likely explain the high degree of variability in the number of annual skier visits. Despite this variability in skier visitation around the Basin, Lake Tahoe's ski resorts remain a popular attraction and are known for their high-quality and diverse skiable terrain as well as their relatively easy access for a population base of several million people within a 3- to 4-hour drive. In addition, local ski resorts have continued to upgrade the quality and variety of their offerings in recent years, including the gondola and Tamarack Lodge at Heavenly Mountain Resort. Heavenly Mountain Resort is also expanding summer on-mountain activities, which is intended to boost year-round visitation and associated employment opportunities (TTD 2013:17 – 18).

Retail Trends

Retail sales are an important component of economic activity and employment in the South Shore. The retail sector of the South Shore economy has also been challenged in the past few years with annual retail sales just in the City of South Lake Tahoe declining by 19 percent between 2005 and 2012 (TTD 2013:18).

National trends in retail development in recent years have tended to be less auto-oriented and have moved towards outdoor, walkable districts that offer a variety of shopping and dining options that appeal to all demographic and socioeconomic groups as well as small venues for public performances. In the South Shore, much of the retail building supply (especially in areas outside of the study area) is old and of marginal quality, and new retail development activity has been minimal for many years. While some of the South

Shore's neighborhood shopping centers have been redeveloped or repositioned, the Heavenly Village has been the only large-scale new retail product built in the South Shore area over the past 30 years. This area has been extremely successful, commands very high lease rates (as compared to other areas of the South Shore), and attracts many visitors and local residents. The grocery-anchored Heavenly Village Center located next to (and benefitting from synergy with) the Heavenly Village also is a successful retail center that commands strong lease rates, occupancy levels above 95 percent, and caters to a healthy mix of local residents and visitors. Newly constructed or rehabilitated retail product in these primary shopping locations are performing much better on the South Shore than the aging retail stock in other areas of the city and unincorporated areas (TTD 2013:18 – 19).

Best Practices

The economic study identified a number of best practices that have contributed to the successful redevelopment of tourism-oriented mountain/resort communities that could be implemented in the South Shore (TTD 2013:19 – 22). Some of these best practices include:

- ▲ Providing a complete range of dining, shopping, recreational, and entertainment options.
- ▲ Creating town centers that develop a center of activity and energy that can serve surrounding residential neighborhoods as well as the visitor population.
- ▲ Redevelopment of older resorts. Planners, policy makers, and business leaders in aging resort areas such as the South Shore must work especially hard to upgrade facilities and attractions, create new and exciting events, and implement marketing strategies to raise the profile of the area in hopes of remaining competitive. Without an updated and enhanced product to market, South Shore will continue to be classified and perceived as an “older resort.”
- ▲ Offering a variety of upscale accommodations, fine dining, shopping, and other attractions to entice visitors.
- ▲ Maintaining community identity and sense of place. Planners, policy makers, business owners, and community advocates must work to maintain the unique charm that brings visitors to a resort community.
- ▲ Public transit options. A free or enhanced transit service to connect residents and visitors to destinations within town to help improve the tourism experience and appeal to visitors that are not familiar with navigating the area and appeal to visitors' expectations for level of transit service.
- ▲ Affordable housing. Ensure sufficient housing options are available to families and households of all income levels to ensure a viable class of middle income residents as well as clean and safe housing (and reliable transit connections) for lower income service-sector employees.

4.6.2 Economic Effects of the Project

METHODS AND ASSUMPTIONS

The primary economic impact of a transportation project on businesses is a change in the level of business activity. The following are some of the factors that can influence business activity. These factors are each discussed below:

- ▲ Changes in
 - access to the business
 - traffic patterns, both locally and regionally
 - the environment near the business (e.g., noise level, air quality, or aesthetics)
 - property values

- ▲ Loss of
 - available parking
 - tax revenue

Tax Revenues

The analysis of property tax revenues and sales tax revenues below are based on the *US 50 Realignment Municipal Tax Revenue Analysis* prepared by Jesse Walker of New Economics (2016).

Business Activity

The analysis of changes in business activity below are based on key trends in retail and tourism development that may be influenced by the US 50/South Shore Community Revitalization Project. It should be noted that while it is not practical to quantify the exact economic and financial impact of a roadway realignment project because of the numerous variables and unforeseen circumstances involved, the economic study conducted a thorough evaluation of the South Shore in an effort to understand the variables that would affect the economic influence of the project, under defined conditions, to frame the likely short- and long-term implications of the project. The economic study looked at the current and historical conditions prevalent in the South Shore to identify the community's economic drivers and performance trends and its competitive position as a regional, national, and international tourism destination. The analysis included outreach to national and local experts, including local business representatives (TTD 2013:1).

The effects of the US 50/South Shore Community Revitalization Project on displacement of businesses are assessed in Impact 3.4-5 in Section 3.4, "Community Impacts." The changes in employment that would result from implementation of the project is discussed in Impact 3.4-3. For these reasons, these issues are not discussed further here.

CHANGE IN PROPERTY TAX, SALES TAX, AND TRANSIENT OCCUPANCY TAX REVENUES

Because Alternatives A and E would not acquire any property and would not result in any direct losses of tax revenues, Alternatives A and E would have no impact on property tax, sales tax, and transient occupancy tax revenues and are not discussed further for these alternatives.

None of the build alternatives would displace commercial businesses or hotel/motels in Nevada, there would be no loss of sales tax or transient occupancy tax (TOT) revenues in Douglas County, Nevada.

Alternatives B, C, and D Transportation Improvements

As discussed in Impacts 3.4-4 and 3.4-5 in Section 3.4, "Community Impacts," implementation of Alternatives B transportation improvements would result in the removal of a number of residences and several businesses and hotel/motels within the California portion of the project site. In addition to full acquisition of parcels, the transportation improvements would require partial acquisition of parcels in California and Nevada. These partial and full parcel acquisitions required for the project would result in changes to property tax, sales tax, and TOT revenues.

Property Tax Revenues

Alternatives B, C and D transportation improvements would have an effect on the assessed value (AV) of properties within and around the realigned highway and repurposed "main street" district. In California, a general tax rate of 1 percent (plus any applicable voter-approved overrides) is levied annually upon the AV of taxable properties. This revenue is then distributed to the various local agencies that provide public services, such as the City of South Lake Tahoe and the fire department. During the period in which properties are held under the same ownership, a limit of 2 percent per year is placed on the appreciation of assessed (taxable) value. However, when the property changes hands through a sale or other similar transaction, the property is reassessed to the value at which the property is sold, or at a fair market value.

In order to determine the project's impact on property taxes to local agencies, the *US 50 Realignment Municipal Tax Revenue Analysis* memo analyzed the net effect upon the AV of properties directly associated with the project (Walker, pers. comm., 2016:2). Note that this estimate does not quantify the actual amount of property tax revenues that would be generated, but instead simply measures the taxable basis upon which property taxes would be levied to determine whether the taxable basis would go up or down and by what order of magnitude.

The amount of land that would be removed from property tax rolls from full and partial acquisitions in California and Nevada are shown in Table 4-2 for each of the build alternatives. The build alternatives would result in the loss of between approximately 9 and 10.5 acres of land in California and approximately 2 to 4 acres of land in Nevada. The assessed value (AV) of property removed from tax rolls by the build alternatives would range between approximately \$11 million and \$14.4 million in California and approximately \$1.6 million and \$1.9 million in Nevada (see Table 4-3). In Fiscal-Year 2014-15, the City of South Lake Tahoe received approximately \$6.2 million in property taxes, based on a total assessed value of \$4.1 billion (Walker, pers. comm., 2016:3). The assessed value of the land removed from the tax roll from the build alternatives would represent 0.3 to 0.4 percent of the assessed value of property in the city's tax roll. Because the amount of land removed from the tax roll in Nevada would be less than the amount removed in California, the loss of property taxes in Douglas County would be estimated to be an even smaller proportion of the county's property taxes compared to the loss in the City of South Lake Tahoe. For these reasons, Alternatives B, C, and D transportation improvements would result in a very small (less than 1 percent) reduction in the amount of land in the city's and county's tax rolls.

Table 4-2 Acres of Land Acquired for the Transportation Improvements

Land Use	Full Acquisition ¹	Partial Acquisition – California	Partial Acquisition – Nevada	Total Acres
Alternative B: Triangle (Locally Preferred Action)				
Commercial	0.00	0.75	0.58	1.33
Lodging	2.20	0.14	0.00	2.34
Residential	3.53	0.15	0.09	3.77
Vacant	2.43	1.15	2.93	6.51
Total Acres	8.16	2.19	3.60	13.95
Alternative C: Triangle One-Way				
Commercial	0.00	0.18	0.68	0.86
Lodging	2.20	0.03	0.00	2.23
Residential	3.42	0.05	0.11	3.58
Vacant	2.37	0.77	1.41	4.55
Total Acres	7.99	1.03	2.20	11.22
Alternative D: Project Study Report Alternative 2				
Commercial	0.63	0.88	0.61	2.12
Lodging	0.55	0.13	0.00	0.68
Residential	3.03	0.00	0.20	3.23
Vacant	1.82	2.64	2.94	7.40
Total Acres	6.03	3.65	3.75	13.43

Note: No land would be acquired for Alternatives A and E and, therefore, are not included in this table.

¹ The project would not result in full acquisition of any parcels in Nevada.

Source: Compiled by Ascent Environmental in 2016

Table 4-3 Estimated Assessed Value of Property Removed from Tax Rolls for Transportation Improvements

Land Use	Value (dollars per acre)	Full Acquisition ¹ (dollars)	Partial Acquisition - California (dollars)	Partial Acquisition - Nevada (dollars)	Total Assessed Value (dollars)
Alternative B: Triangle (Locally Preferred Action)					
Commercial	1,900,000	0	1,425,000	1,102,000	2,527,000
Lodging	2,000,000	4,400,000	280,000	0	4,680,000
Residential	2,150,000	7,589,500	322,500	193,500	8,105,500
Vacant	100,000	243,000	115,000	293,000	651,000
Total Assessed Value	NA	12,232,500	2,142,500	1,588,500	15,963,500
Alternative C: Triangle One-Way					
Commercial	1,900,000	0	342,000	1,292,000	1,634,000
Lodging	2,000,000	4,400,000	60,000	0	4,460,000
Residential	2,150,000	7,353,000	107,500	236,500	7,697,000
Vacant	100,000	237,000	77,000	141,000	455,000
Total Assessed Value	NA	11,990,000	586,500	1,669,500	14,246,000
Alternative D: Project Study Report Alternative 2					
Commercial	1,900,000	1,197,000	1,672,000	1,159,000	4,028,000
Lodging	2,000,000	1,100,000	260,000	0	1,360,000
Residential	2,150,000	6,514,500	0	430,000	6,944,500
Vacant	100,000	182,000	264,000	294,000	740,000
Total Assessed Value	NA	8,993,500	2,196,000	1,883,000	13,072,500

NA = not applicable

¹ The project would not result in full acquisition of any parcels in Nevada.

Source: Adapted from Walker, pers. comm., 2016

Sales Tax Revenues

The right-of-way required for Alternatives B and C would not displace any commercial buildings (see Table 4-4); therefore, transportation improvements for these alternatives would not result in a direct loss of retail sales and sales tax revenues for the City of South Lake Tahoe. The right-of-way required for Alternative D would displace 7,620 square feet of commercial buildings (see Table 4-6); therefore, the Alternative D transportation improvements would result in a direct loss of retail sales and sales tax revenues for the City of South Lake Tahoe.

Table 4-4 Changes to Commercial Building Space

	Alternatives B and C (square feet)	Alternative D (square feet)
Transportation Improvements		
Commercial Space to be Removed ¹	0	7,620
New Commercial Development	0	0
Total Change in Commercial Development (+ = increase/- = decrease)	0	-7,620

Table 4-4 Changes to Commercial Building Space

	Alternatives B and C (square feet)	Alternative D (square feet)
Mixed-Use Development		
Commercial Space to be Removed ²	11,700	4,080
New Commercial Development		
Site 1	28,250	18,000
Site 2	8,000	20,000
Site 3	10,000	10,000
Total New Commercial Development	46,250	48,000
Total Change in Commercial Development (+ = increase/- = decrease)	34,550	36,300
¹ Commercial businesses displaced by Alternative D transportation improvements include Powder House, Vinny's Pizza, the Naked Fish, Tahoe Bottle Shop, and the Alpaca store (APNs 029-170-04 and 029-170-05).		
² Commercial businesses displaced by Alternatives B and mixed-use development include Subway, Taco Taqueria, 7 Eleven, Powder House, Vinny's Pizza, the Naked Fish, Tahoe Bottle Shop, and the Alpaca store (APNs 029-170-03, 029-170-04, and 029-170-05). Additional businesses displaced by Alternative D mixed-use development include Subway, Taco Taqueria, 7 Eleven (APN 029-170-03).		
Source: Adapted from Walker, pers. comm., 2016; County of El Dorado 2016		

Transient Occupancy Tax Revenues

Implementation of transportation improvements for Alternatives B, C, and D would displace several hotel/motels, including between 41 tourist accommodation units (TAUs; Alternative D) and 114 TAUs (Alternatives B and C). As discussed in Impact 3.4-4 in Section 3.4, "Community Impacts," some of the hotel/motel units in the National 9 Inn, South Shore Inn, Traveler's Inn, and Elizabeth Lodge include some SRO units that are not required to pay TOT. There are 7,026 TAUs in the city (City of South Lake Tahoe and TRPA 2015:39). Although the build alternatives would result in loss of TOT revenues for the city, the number of TAUs displaced by the project represent less than 2 percent of the available TAUs that operate in the city; therefore, the loss of TOT revenues from hotel/motels displaced by the project would not be substantial.

Conclusion

Only the transportation improvements for Alternative D would result in the loss of sales tax revenues. The three build alternatives would result in the loss of a very small proportion of TOT revenues from displacing between 41 and 114 TAUs, some of which are used as SRO units and do not pay TOT. Because there are over 7,000 TAUs in the city, the loss of TOT revenues from up to 114 TAUs would not be considered substantial. This alternative would result in the loss of property tax revenue from acquisition of land for the build alternatives. However, as described above, the proportion of property tax revenue received from these properties of the overall city and county property tax revenue would be very small. This loss of property tax revenue would not be anticipated to interfere with the city's or county's ability to provide public services. For these reasons, Alternatives B, C, and D transportation improvements would not have an adverse effect on property tax, sales tax, and transient occupancy tax revenues.

Alternatives B, C, and D Mixed-Use Development, Including Replacement Housing**Property Tax Revenues**

The amount of land that would be removed from property tax rolls from full acquisition of parcels for Alternatives B, C, and D mixed-use development, including replacement housing, is shown in Table 4-5. In addition to the removal of land from tax rolls for transportation improvements, implementation of the mixed-use development, including replacement housing, would result in the removal of approximately 2 to 3 acres of land in California from property tax rolls. The assessed value (AV) of property removed from tax rolls by Alternatives B, C, and D mixed-use development, including replacement housing, would range between approximately \$3.1 million and \$3.7 million in California. Depending on the alternative, this would result in

an estimated loss of between approximately \$30,600 and \$74,600 in property tax revenues to local public agencies in California.

Alternatives B, C, and D mixed-use development, including replacement housing, could result in additional taxable value created from the commercial development opportunities facilitated by the project. Upon development, the new AV of the buildings and land comprising the potential development sites would be levied property taxes. The estimate of additional (new) AV from the mixed-use development is approximately \$40 million for these alternatives (see Table 4-6). The net increase in AV with implementation of Alternatives B, C, and D mixed-use development, including replacement housing, would range between \$22 million and \$26 million in California.

This analysis demonstrates that any potential declines in assessed value from displaced properties would be offset by potential gains from the new development. In total, the potential effects would be relatively modest when placed in the context of total citywide property tax collections. In Fiscal-Year 2014-15, the City received approximately \$6.2 million in property taxes, based on a total assessed value of \$4.1 billion (Walker, pers. comm., 2016:3). The estimated net new AV from the project represents an increase of approximately 0.5 percent over the assessed value of property in the city.

Table 4-5 Estimated Assessed Value of Property Removed from Tax Rolls for Mixed-Use Development

Land Use	Full Acquisition (acres)	Assessed Value (dollars)
Alternative B: Triangle (Locally Preferred Action)		
Commercial	0.99	1,881,000
Lodging	0.55	1,100,000
Residential	0.34	731,000
Vacant	0	0
Total Acres	1.88	3,712,000
Alternative C: Triangle One-Way		
Commercial	1.00	1,900,000
Lodging	0.55	1,100,000
Residential	0.34	731,000
Vacant	0	0
Total Acres	1.89	3,731,000
Alternative D: Project Study Report Alternative 2		
Commercial	0.38	722,000
Lodging	0	0
Residential	1.03	2,214,500
Vacant	1.21	121,000
Total Acres	2.62	3,057,500

Source: Adapted from Walker, pers. comm., 2016

Table 4-6 Assessed Value of Potential Mixed-Use Development

Development Type	Value	Alternatives B and C ¹	Alternative D ²
Commercial	\$300/square foot	\$13,875,000	\$14,400,000
Residential ³ (Affordable)	\$115,000/unit	\$26,335,000	\$25,760,000
Total	NA	\$40,210,000	\$40,160,000

NA = not applicable

¹ Mixed-use development for Alternatives B and C would include up to 46,250 square feet of commercial building space and 229 housing units.² Mixed-use development for Alternative D would include up to 48,000 square feet of commercial building space and 224 housing units.³ Assuming all of the housing units would be affordable is a conservative, low estimate of the potential AV for the new residential development because the residential development could be a mix of affordable and market-rate housing.

Source: Adapted from Walker, pers. comm., 2016

Sales Tax Revenues

Implementation of Alternatives B and C mixed-use development would result in a loss of 11,700 square feet of commercial building space (see Table 4-4). However, the mixed-use development would construct 46,250 square feet of new commercial building space and result in a net increase in commercial building space of 34,550 square feet. Alternative D mixed-use development and the transportation improvements would result in the loss of 11,700 square feet of commercial building space. With Alternative D, the mixed-use development would construct 48,000 square feet of new commercial building space and result in a net increase in commercial building space of 36,300 square feet. The net increase in commercial building space created by these alternatives would reasonably be expected to increase sales tax revenues for the City of South Lake Tahoe over existing conditions.

Transient Occupancy Tax Revenues

The effect of implementing Alternatives B, C, and D mixed-use development would result in similar losses of TOT revenues as described above for Alternatives B, C, and D transportation improvements.

Conclusion

Alternative B, C, and D mixed-use development, including replacement housing, would result in the loss of sales tax revenue from eight commercial businesses and TOT revenues from TAUs not operating as SRO units. Because there is a large number of hotel/motels and commercial businesses throughout the city, the loss of sales tax and TOT revenues from the mixed-use development would not be considered substantial. Additionally, the loss of sales tax revenue from existing businesses would be offset by the increase in commercial area proposed by these alternatives. Furthermore, as described herein, the mixed-use development would result in a net increase in assessed value of properties in the city's tax roll. For these reasons, Alternatives B, C, and D mixed-use development, including replacement housing, would not result in an adverse impact on property tax, sales tax, and transient occupancy tax revenues.

CHANGE IN LEVEL OF BUSINESS ACTIVITY

Because Alternative A would maintain the existing US 50 alignment and would not make any other improvements that would result in effects on businesses within the study area, this alternative would not result in changes in the level of business activity.

Alternatives B, C, and D Transportation Improvements

As described above, the South Shore's tourism-based economy has suffered substantial declines in many key categories, including visitation levels, retail sales, hotel occupancy and room rates, gaming revenues, and others. These indicators reflect a structural weakness in the South Shore tourism economy, which is not likely to be corrected unless substantial steps are undertaken to improve the tourism product (i.e., visitor amenities and environment in the South Shore). As stated in Chapter 1, "Introduction," one purpose of the project is to create opportunities for redevelopment and revitalization in the study area. Improvements to

existing US 50 through the tourist core to create a safer environment for pedestrian and bicycle travel would make the study area more inviting for local residents and visitors to patronize existing businesses. Additionally, as identified in Chapter 1, one of the project objectives is to facilitate the creation of a safe and walkable district that enhances pedestrian activities and safety and improves the City of South Lake Tahoe's and Douglas County's competitiveness with other regional and national tourist destinations.

Visibility of Businesses in the Tourist Core

Transportation improvements included in Alternatives B, C, and D would realign US 50 around the tourist core and existing US 50 would become a local street. Although a large proportion of the vehicle traffic would be routed around the tourist core, access to and visibility of businesses in the tourist core would not be eliminated. Within the tourist core, the existing US 50 would be reduced to one lane in each direction with left-turn pockets. Although there would be a reduction in vehicle numbers that pass by the businesses along existing US 50 through the tourist core, the roadway changes in this area would result in slower travel speeds improving visibility of businesses for vehicles. The traffic numbers through the tourist core would decrease; however, the capture rate of the occupants of the vehicles would likely increase because the vehicle speeds are reduced and occupants are drawn toward the compelling environment and appeal that would result from the streetscape changes (e.g., sidewalk improvements and landscaping) the project would implement (TTD 2013:53). As described in the economic study, high traffic volumes and lack of adequate pedestrian facilities can be a strong deterrent to an enjoyable experience at outdoor shopping destinations and "al fresco" dining. Tourist-oriented retail is among the least vulnerable categories of retail to a reduction in visibility and, often, these types of retailers often become more successful when traffic is slowed and pedestrian activity is increased (TTD 2013:3, 39).

The types of businesses that cater most to pass-by traffic and could be most affected by the reduction in vehicle traffic include gas stations and quick service or fast food restaurants (TTD 2013:38). Within the study area, this type of business would include 7 Eleven, Subway, the Tahoe Bottle Shop, and Tahoe Tom's Gas Station and Convenience Store.

While the project would reroute US 50 around the tourist core, changing visibility to businesses along existing US 50, a more dramatic change to how vehicles pass by businesses within the commercial triangle west of the existing US 50/Pioneer Trail intersection would occur with removal of the portion of existing US 50 adjacent to these parcels. Access to these businesses would remain; however, visibility of these businesses would, in general, be reduced with the majority of traffic traveling through the new US 50/Pioneer Trail intersection located south of the 7 Eleven building. Visibility from vehicle traffic on the new US 50 would be most reduced for the Tahoe Bottle Shop and Alpaca store due to their distance from the new intersection. Although the Powder House building and the building containing the Naked Fish restaurant and Vinny's Pizza would lose visibility from traffic to the west, these businesses would not entirely lose visibility to traffic on the realigned US 50 due to their proximity to the realignment and new intersection. Because the realigned US 50 would be located behind the 7 Eleven, Subway, and Taco Taqueria building and the new intersection would be located directly adjacent, the amount of visibility of these businesses to traffic would not change.

The economic study also states that implementation of a marketing program that could be supported by transient-occupancy taxes (TOTs), increment tax, or a business improvement district would contribute to the success of the project in creating a compelling main street and drawing visitors to the study area (TTD 2013:58). Furthermore, to address local business concerns at the Heavenly Village Center about their visibility to vehicles using the realigned US 50, the economic study suggests that property owners in the project site may wish to make adaptations to the shopping center, such as new signage facilities and a more attractive entrance from the back of the center (TTD 2013:52). As described above, while traffic would be rerouted around the tourist core resulting in changes in visibility of businesses, vehicles traveling on the realigned US 50 would continue to be able to use existing driveways and other access points that would be signalized under the project to access Heavenly Village Way, and thus Heavenly Village Center and parking garage for Heavenly Village, and the Harrah's entrance driveway. Additionally, the project would also develop and implement a signage plan for parking, visitor information centers, and recreation opportunities at

appropriate locations throughout the project site (see Chapter 2, “Proposed Project and Alternatives”). Other informational and interpretive/educational/way finding signs may also be installed along the tourist core area and near the pedestrian overcrossing into Van Sickle Bi-State Park.

With Alternative C, a portion of the existing traffic would be rerouted around the tourist core. It is reasonable to assume that travel speeds through the tourist core would be higher under Alternative C than Alternatives B and D because Alternative C would include two-lane, one-way traffic with one bicycle lane and would not add medians. For these reasons, the capture rate of vehicle occupants for businesses in the tourist core would be estimated to be lower than that which could occur under Alternatives B and D. Therefore, the beneficial effects on business visibility that are described for Alternatives B and D would be less likely or would be reduced under Alternative C.

Proposed Complete Street Improvements

The realignment of US 50 would serve to reduce conflicts between pedestrians or non-motorized transportation and fast-moving, high volumes of traffic and would not increase the capacity of the roadway. As demonstrated in Impacts 3.6-1 through 3.6-3 and 3.6-11 through 3.6-13 in Section 3.6, “Traffic and Transportation,” the study area would experience an increase in vehicle traffic similar to that which would occur under the no project scenario (Alternative A). Additionally, the number of lanes in the existing US 50 through the tourist core would be reduced, bicycle lanes (or an optional cycle track) would be created, enhanced and new sidewalks, and center median would be constructed. These changes would help facilitate creation of a safer environment for pedestrians (including those with disabilities) and cyclists within the tourist core and help establish the tourist core as a complete street or main street, a vibrant, walkable, and attractive business district. (Complete streets are defined as streets designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities.) The types of transportation improvements proposed under Alternatives B, C, and D would help enhance the tourism product through the establishment of a complete street, which would complement other recent and planned redevelopment efforts (e.g., Chateau at the Village and Zalanta) as well as existing amenities for visitors and residents, including Heavenly Mountain Resort, Van Sickle Bi-State Park, and the lake (TTD 2013:47, 49, 55-56).

Physical Changes in the Tourist Core

The physical effects on the environment from implementation of the project are assessed in Sections 3.2 through 3.19 in this EIR/EIS/EIS and are briefly summarized here:

- ▲ Visual effects from the project are assessed in Section 3.7, “Visual Resources/Aesthetics.” As described in Impact 3.7-1, Alternatives B, C, and D would result in less-than-significant impacts on the scenic quality and visual character of the portion of the project site through the tourist core either because no changes in visual conditions would occur, changes that would occur would be visually beneficial, or changes would be compatible with existing conditions.
- ▲ As assessed in Impacts 3.6-1 through 3.6-4 and 3.6-12 through 3.6-14 in Section 3.6, “Traffic and Transportation,” Alternatives B and D would not result in significant impacts on vehicle miles of travel (VMT) or result in significant impacts on intersection and road segment level of service (LOS) in the study area. Impacts from Alternative C would be similar, except this alternative would result in significant impacts on intersection and road segment LOS in the study area.
- ▲ As described in Impact 3.6-7 in Section 3.6, “Traffic and Transportation,” the construction phase of the project would implement a Transportation Management Plan (TMP). Implementation of the TMP would minimize traffic flow disruption to the extent possible through the construction work zones and enhance the safety of the work zones for the traveling public and workers. Alternatives B, C, and D would not result in significant impacts on transportation disruptions associated with construction activity.
- ▲ Potentially significant impacts from construction emissions associated with Alternatives B, C, and D would be reduced to less than significant with implementation of Mitigation Measures 3.13-1a and 3.13-1b (see Impact 3.13-1 in Section 3.13, “Air Quality”). Alternative B would not have any other significant

impacts on air quality within the study area. Implementation of these alternatives would not result in a substantial adverse change to the physical environment such that businesses in the study area would be adversely affected.

- ▲ As described in Impacts 3.6-5, 3.6-6, 3.6-15, 3.6-16, and 3.6-18 in Section 3.6, “Traffic and Transportation,” Alternatives B, C, and D would result in beneficial impacts on bicycle and pedestrian facilities, bicycle and pedestrian safety, and transit.
- ▲ As assessed in Impacts 3.15-3, the impact of Alternatives B, C, and D on future traffic noise levels through the tourist core would be less than significant.

For these reasons, implementation of Alternatives B, C, and D would not result in a substantial adverse change to the environment near businesses in the tourist core. Implementation of these alternatives would not be anticipated to cause a long-term adverse change in activity at the businesses in the study area from changes in the environment. However, relative to Alternatives B and D, Alternative C would result in one-way travel within the tourist core and on the realigned highway around the tourist core, which would result in adverse effects on intersection and road segment LOS greater in magnitude.

Parking

Within the study area, large parking areas are provided at Montbleu, Harrah’s, Harvey’s, Hard Rock Hotel and Casino, Heavenly Village parking garage, and the Heavenly Village Center. Effects of Alternatives B, C, and D transportation improvements on parking are assessed in Impacts 3.6-9 and 3.6-10 in Section 3.6, “Transportation and Traffic.” As part of the project, Alternatives B, C, and D would construct replacement parking for businesses that would be affected by partial acquisitions near the existing US 50/Pioneer Trail intersection. As described above, the project would enhance signage in the project site, which would include signage for existing parking areas. This would attempt to enhance visitors’ and residents’ perceptions of parking opportunities in the project site. Changes in parking resulting from these alternatives would not affect parking in the project site that could cause an adverse change in business activity in the project site associated with parking.

Other Opportunities for Enhancement of the Tourist Core

The Economic Analysis identified a number of factors that would contribute to the success of the project in increasing the number of visitors and residents that are attracted to the study area (TTD 2016:58 – 60). Many of these factors are not proposed as part of the project, such as creation of a business district and reorientation of retail, are the types of activities that businesses within the study area would implement themselves. However, the project would help facilitate future implementation of other recommendations in the Economic Analysis, including completion of streetscape improvements, providing expanded opportunities for events, and enhancing public transit.

As described in Chapter 2, “Proposed Project and Project Alternatives,” existing US 50 is well served by BlueGo, the South Shore area’s fixed-route bus service and commuter bus service connecting the area with Carson City and the Carson Valley. BlueGo’s Stateline Transit Center is located in the center of the tourist core on Transit Way. With Alternatives B, C, and D, the transportation improvements would reduce the number of travel lanes through the tourist core, making transit access more user-friendly with widened shoulders. These build alternatives would also include the construction of new bus shelters at existing bus stop locations where features are limited to signs and in some cases benches. These changes that would occur as part of the project help enhance transit opportunities in the tourist core that would contribute to encouraging visitors and residents to increase non-automobile use.

One way in which the study area could bolster visitation and more effectively compete with other tourist areas would be to provide a gathering place for special events and for locals and visitors to interact. Feedback from local businesses demonstrated interest in the possibility of additional events, concerts, festivals, and similar programs to draw visitors and give residents a reason to come to the tourist core (TTD 2013:26, 46). In the past, the resort-casino portion of the tourist core has closed down for special events; however, this led to traffic circulation problems. Compared to existing conditions, the realignment of US 50

and narrowing of the existing US 50 proposed by Alternatives B and D would be better suited to closing a portion of the tourist core for special events while continuing to meet the needs of vehicle traffic in the study area.

Effects on Retail Sales

The Economic Analysis identifies research that shows that while realignments can often have short-term, adverse impacts on the local economy, sales often improve in the longer term (TTD 2013:39, 51). During the short-term, construction and transitional period, potential retail sales losses are estimated to range between \$900,000 to \$5.5 million per year, accounting for just 1.6 percent of total citywide retail sales (TTD 2013:53). Outreach with businesses in the study area conducted for the Economic Analysis shows that many of these businesses (73 percent of survey respondents) have been operating for more than a decade, 20 percent have been operating between 6 and 10 years, and a small proportion (7 percent) have been operating for less than 2 years (TTD 2013:40). The longevity of businesses in the study area demonstrates they have endured challenging economic times.

The Economic Analysis estimated existing annual retail sales, short-term changes in retail sales, and long-term changes in retail sales for Heavenly Village and the Heavenly Village Center (see Table 4-7). As described above, Alternatives B, C, and D would develop and implement a TMP during construction that would include all reasonable and feasible measures to minimize traffic disruption and maintain access to businesses during construction. However, the construction activities could still be perceived as a deterrent to business activity in the study area and would be estimated to result in a loss of between 1 and 6 percent of existing retail sales in the short-term. While there would be short-term losses of existing retail sales, businesses in the study area would benefit in the long-term, by approximately 16 to 25 percent, from the improvements within the tourist core.

Table 4-7 Short-Term and Long-Term Effects of the Project on Retail Sales in Heavenly Village and the Heavenly Village Center

	Estimated Existing Annual Retail Sales (dollars)	Change in Retail Sales ¹	
		Low End of Range (dollars) (percent change)	High End of Range (dollars) (percent change)
Potential Short-Term Transitional Impacts	100,040,000	-920,000 (-1%)	-5,510,000 (-6%)
Potential Long-Term Retail Impacts		+16,390,000 (+16%)	+25,220,000 (+25%)
1 "+" = increase and "-" = decrease			
Source: TTD 2013:54			

The Economic Analysis did not estimate existing annual retail sales or short-term and long-term changes in retail sales for other retail located along existing US 50 through the tourist core outside of the Heavenly Village Center and Heavenly Village. However, the short-term and long-term effects on retail sales shown in Table 4-7 demonstrate the scale of the effect the project could have on these other retailers. For these reasons, it can be reasonably assumed that long-term economic effects on these retail businesses would be anticipated to exceed the short-term losses that could occur during construction of the project.

Because the resort-casinos are highly visible from various portions of the South Shore, they are not dependent on visibility from existing US 50 specifically (TTD 2013:56). For these reasons, the resort-casinos would not be anticipated to be adversely affected by the project.

Conclusion

As described above, the project would implement a Transportation Management Plan (TMP) that would use all reasonable and feasible measures to minimize traffic disruption and maintain access to businesses during construction; however, reduced business activity from temporary discouragement of access to businesses within the tourist core could not be eliminated.

The project would result in a permanent change in visibility of businesses within the project site. However, the types of transportation improvements proposed as part of the project, including complete streets improvements through the tourist core, streetscape improvements, providing expanded opportunities for events, and enhancing public transit could make the project site more attractive to visitors and local residents. These types of changes are estimated to result in a long-term increase in business activity that would exceed the short-term losses in retail sales associated with construction activities. Therefore, Alternatives B, C, and D transportation improvements would not have an adverse impact on long-term business activity within the study area.

Alternatives B, C, and D Mixed-Use Development, Including Replacement Housing

Because construction of the potential mixed-use development would be limited to within their respective sites, Alternatives B, C, and D mixed-use development, including replacement housing, would not interfere with short-term business activity in the study area.

The direct effects of these alternatives are discussed in Impact 3.4-8 in Section 3.4, “Community Impacts,” which indicates an increase in the level of business activity in the study area. Additionally, the mixed-use development, including replacement housing, would likely enhance the walkability and tourism product in the tourist core by providing residences close to shopping and jobs and by providing additional commercial businesses. For these reasons, Alternatives B, C, and D mixed-use development, including replacement housing, would not have an adverse effect on long-term business activity within the study area.

Alternative E: Skywalk

Construction of Alternative E would require lane closures and temporary full closure of US 50, which would be a significant and unavoidable traffic-related impact (see Impact 3.6-6 in Section 3.6, “Traffic and Transportation”). Alternative E would develop and implement a TMP to minimize construction effects on access to businesses, the closure of US 50 and continued construction in the tourist core would likely contribute to a loss in short-term retail sales in the tourist core.

Implementation of Alternative E would result in development of a raised concrete deck over the entire width and length of existing US 50 between Stateline Avenue and the northern end of the Montbleu Resort and Casino that would be used by pedestrians along the tourist core near the resort-casinos. Alternative E does not involve realignment of US 50 that could change long-term visibility of businesses in the tourist core; however, unlike Alternatives B, C, and D, Alternative E does not develop any complete street improvements or provide new opportunities for enhancing the tourism product. For these reasons and because Alternative E would not result in many changes in the tourist core beyond the raised pedestrian walkway, this alternative would not have an adverse effect on long-term business activity within the study area.

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5 COMMENTS AND COORDINATION

5.1 INTRODUCTION

Early and ongoing coordination with the public and agencies is an essential part of the environmental process. It helps the lead agencies determine the necessary scope of environmental documentation, and identify potential impacts and avoidance, minimization, and/or mitigation measures, if needed. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including: meetings for the Project Development Team (PDT), interagency coordination, Community Review Committee, Business Review Committee, and the public. This chapter summarizes the results of the Tahoe Transportation District's (TTD) public and agency coordination efforts.

5.2 PUBLIC SCOPING

5.2.1 Notice of Preparation/Notice of Intent

The scoping process for the US 50/South Shore Community Revitalization Project was initiated with the preparation and distribution of a Notice of Preparation (NOP) of the environmental impact report (EIR) and Tahoe Regional Planning Agency (TRPA) environmental impact statement (EIS) and the publication of a Notice of Intent (NOI) to prepare a National Environmental Policy Act (NEPA) EIS in the Federal Register. The formal scoping process period was initiated on November 2, 2011, and ended on December 16, 2011.

The NOP was posted at the State Clearinghouse (No. 2011112009) and was circulated to public agencies and other interested parties in compliance with Section 15082 of the California Environmental Quality Act (CEQA) Guidelines and TRPA Rules of Procedure on November 2, 2011. The NOP notified the public of the preparation of the joint EIR/EIS/EIS; the scoping meeting dates, times, and locations; and how to provide comments on the project.

The NOI was published on November 1, 2011, in the Federal Register in compliance with 40 Code of Federal Regulations 1508.28. The NOI included the background of the project, the project purpose and need, a brief description of the proposed alternatives, information regarding the scoping meeting locations, and how to provide comments on the project.

Copies of the NOP and NOI are provided in Appendix A, "NOP/NOI and Scoping Report."

5.2.2 Scoping Meetings

In addition to the NOP/NOI, two public scoping meetings were held as part of the scoping process. The meetings were held as follows:

- ▲ November 10, 2011. TTD Board, Tahoe Regional Planning Agency, 128 Market Street, Stateline, Nevada (Beginning at 1:00 p.m.).
- ▲ December 7, 2011. TRPA Advisory Planning Commission (APC), Tahoe Regional Planning Agency, 128 Market Street, Stateline, Nevada (Beginning at 9:30 a.m.).

5.2.3 Comments Received During Scoping

A total of 28 written comment letters and nine oral comments were received from state, regional/local agencies, community groups, members of the general public, and other interested parties via letters, emails, and recorded scoping meeting comments. Comments received pertain to the following resources. Appendix A includes a more detailed summary of comments received:

- ▲ public services and utilities;
- ▲ alternatives;
- ▲ floodplains;
- ▲ land use;
- ▲ community impacts;
- ▲ environmental justice;
- ▲ parks and recreational facilities;
- ▲ visual resources/aesthetics;
- ▲ water quality and stormwater runoff;
- ▲ geology, soils, land capability and coverage;
- ▲ hazards, hazardous materials, and risk of upset;
- ▲ greenhouse gas emissions and climate change;
- ▲ noise and vibration;
- ▲ traffic and transportation/
pedestrian and bicycle facilities;
- ▲ biological resources; and
- ▲ cumulative impacts.

The Scoping Summary Report (2012), attached in Appendix A, documented the scoping process and contains the following documents and more detailed information regarding the scoping process and comments submitted on the project:

- ▲ summary of the written and oral comments received in response to the NOP and NOI,
- ▲ copies of the NOP and NOI,
- ▲ scoping meeting materials,
- ▲ formal scoping letters, and
- ▲ public hearing comment summary.

5.3 CONSULTATION AND COORDINATION WITH AGENCIES

5.3.1 Section 4(f) Consultation

Impacts on publicly owned parks are discussed in detail in Section 3.3, “Parks and Recreational Facilities.” TTD has consulted with the Nevada Division of State Parks (NDSP) and the California Tahoe Conservancy (Conservancy), who jointly managed Van Sickle Bi-State Park, as it relates to the project’s effect on the land, activities, features, or attributes of the park, a resource that qualifies for protection under Section 4(f) of the Department of Transportation Act of 1966. Coordination with the public agencies that own and manage a public park resource is a Section 4(f) requirement.

Meetings with NDSP and the Conservancy were held on:

- ▲ January 10, 2014;
- ▲ October 20, 2014;
- ▲ August 11, 2015; and
- ▲ January 21, 2016.

Meeting attendees that participated in at least one of the Section 4(f) meetings include:

- ▲ Carl Hasty, District Manager, TTD;
- ▲ Adam Spear, General Counsel, TTD;
- ▲ Russ Nygaard, Transportation Capital Program Manager, TTD;
- ▲ Larry Vinzant, Senior Environmental Protection Specialist, Federal Highway Administration (FHWA), California Division;
- ▲ Cesar Perez, Senior Transportation Engineer, FHWA-California Division;
- ▲ Abdelmoez (Del) Abdalla, Environmental Program Manager, FHWA-Nevada Division;
- ▲ Brett Gainer, Office of the Chief Counsel, FHWA;

- ▲ Will McClure, Civil Rights Program Manager, FHWA-California Division;
- ▲ Dave Tedrick, Senior Environmental Protection Specialist, FHWA-California Division;
- ▲ Jake Nelson, Environmental Planner, California Department of Transportation (Caltrans);
- ▲ Pedro Rodriguez, Project Manager, Nevada Department of Transportation (NDOT);
- ▲ Mark Davis, Chief of Planning and Development, NDSP;
- ▲ Dana Dapolito, Conservation Staff Specialist, NDSP;
- ▲ Tim Hunt, Chief of Planning and Development, NDSP;
- ▲ Bob Mergell, Deputy Administrator, NDSP;
- ▲ Eric Johnson, Division Administrator, NDSP;
- ▲ Penny Stewart, Supervising Environmental Planner, Conservancy; and
- ▲ Sue Rae Irelan, Associate Environmental Planner, Conservancy.

The purpose of these meetings was to discuss: the necessity of using a narrow strip of park property in the relocated highway right-of-way, potential Section 4(f) issues related to Van Sickle Bi-State Park, project design features to address concerns raised by NDSP and the Conservancy, illustrations of project elements in the context of Van Sickle Bi-State Park, and TTD's Joint Planning Exception request under Section 4(f) Guidelines. Through the coordination process, design features have been included in the project alternatives so that the project would not adversely affect the activities, features, and attributes that qualify the park for protection under Section 4(f). The outcome of the Section 4(f) process is a proposed *de minimis* finding, in accordance with FHWA procedures.

A summary of the FHWA proposed *de minimis* finding is provided in Chapter 4, "Other NEPA-, CEQA-, and TRPA-Mandated Sections." Appendix D includes documentation of the Section 4(f) preliminary determination.

5.3.2 SHPO Consultation

Consultation with the California State Historic Preservation Office (SHPO) and Nevada SHPO has been initiated for cultural resources in the Area of Potential Effect (APE), as documented in the California Archaeological Survey Report (ASR), Nevada ASR, California Historical Resources Evaluation Report (HRER), and the Nevada HRER.

5.3.3 Native American Consultation and Coordination

The Native American Heritage Commission (NAHC) was contacted to request a search of its sacred lands file, along with contact information for Native American representatives who might have details about cultural resources in the study area. In its response, dated March 12, 2012, the NAHC stated that its search of the sacred lands file had failed to identify any Native American cultural resources within the project site limits or immediate project vicinity. The NAHC also provided a list of Native American representatives, recommending that these individuals be contacted for information regarding cultural resources.

On March 29, 2012, letters describing the project with a map depicting the APE were sent to each of the Native American individuals and organizations on the contacts list provided by the NAHC, requesting any information or concerns they might have regarding cultural resources in the APE. Follow-up telephone calls were placed on April 13, 2012, after no response to the letters had been received. One individual, Mr. Darrel Cruz, Tribal Historic Preservation Officer of the Washoe Tribe of Nevada and California, was contacted. During an April 16, 2012, telephone conversation, Mr. Cruz stated that the study area has been disturbed by urban improvements, that he does not know of any cultural resources within the project site, and that the areas along creeks near the project site are archaeologically sensitive. Mr. Cruz requested that the tribe be "kept involved" as the project progresses and stated that the tribe is available to monitor if archaeological testing or construction excavation takes place.

In accordance with California Assembly Bill (AB) 52 (Statutes of 2014), tribal cultural resources were added as a resource subject to review under CEQA, effective January 1, 2015, so they are considered in this EIR/EIS/EIS. Because the NOP for the US 50/South Shore Community Revitalization Project was issued in 2011, before the effective date of the consultation provisions of AB 52, the procedural prescriptions of the statute regarding consultation do not apply to this project. Nonetheless, communication with the Washoe Tribe of California and Nevada, as noted above, has been undertaken as part of the environmental analysis (see above and Section 3.8, “Cultural Resources”).

5.4 COMMUNITY OUTREACH MEETINGS

A summary of the types of community outreach meetings and other public outreach efforts, beyond those meetings conducted as part of the scoping process, is provided in Table 1-2 of Section 1.5, “Summary of Public Involvement,” of this document. Beginning in 2011, outreach efforts consisted of the following:

- ▲ PDT meetings;
- ▲ public workshops to gain public input on the project design;
- ▲ meetings with community members and business community members;
- ▲ presentations to the South Lake Tahoe City Council and Douglas County Board of County Commissioners;
- ▲ service club presentations;
- ▲ one-on-one meetings with stakeholders, business owners, and community groups;
- ▲ flyer distribution; and
- ▲ media alerts.

Prior to these efforts, when preparing the US Highway 50/Stateline Area Transportation Study, TRPA and other members of the PDT recognized that community involvement in the planning of the project was a key component. Property and business owners, local organizations, and the general public were provided an opportunity to respond to questionnaires and attend stakeholder meetings on the project, along with two rounds of community workshops held on October 15, 2003 and on March 4, 2004.

5.5 PROJECT DESIGN AND DEVELOPMENT

The public outreach efforts and coordination with agency stakeholders, community groups, and business owners that has occurred as part of the environmental review process has influenced the development of alternatives assessed in this EIR/EIS/EIS. The following alternatives and design features arose from this process:

- ▲ The development of Alternative B and Alternative C arose during PDT meetings. These alternatives were developed to avoid displacement of businesses that would occur as part of Alternative D.
- ▲ Alternative E was developed in response to elected officials’ and public concerns related to displacement of residents of the Rocky Point neighborhood southwest of the Heavenly Village Center. An objective of the alternative was to determine if an alternative could feasibly avoid all displacement. Additionally, Alternative E was also designed to address conflicts between pedestrians and vehicle traffic on US 50 through the resort-casino portion of the tourist core.
- ▲ In response to public comments received during scoping and concerns expressed by the Conservancy and NDSP regarding access to Van Sickle Bi-State Park after the highway realignment, Alternatives B through D propose a new pedestrian bridge extending over the relocated US 50 alignment between the tourist core and the park at a point just west of the Harrah’s entrance driveway.

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CHAPTER 5, COMMENTS AND COORDINATION

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As appropriate, a notice of the public release of the Draft EIR/EIS/EIS shall be sent to the following agencies and organizations:

Federal Agencies

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