Initial Study/Proposed Mitigated Negative Declaration and Initial Environmental Checklist
Upper Truckee Marsh Sewer Facilities Protection Project

Prepared for:

South Tahoe Public Utility District

AECOM

April 2014

Initial Study/Proposed Mitigated Negative Declaration and Initial Environmental Checklist
Upper Truckee Marsh Sewer Facilities Protection Project

Prepared for:

South Tahoe Public Utility District
1275 Meadow Crest Drive
South Lake Tahoe, CA 96150

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3.31.14

April 2014

DATE: **April 1, 2014**

TO: **Responsible Agencies, Community Organizations, and Interested Parties**

SUBJECT: **Notice of Availability and Intent to Adopt a Mitigated Negative Declaration by the South Tahoe Public Utility District for the Upper Truckee Marsh Sewer Facilities Protection Project**

The South Tahoe Public Utility District (District) has prepared an initial study and proposed mitigated negative declaration (IS/MND) in accordance with the California Environmental Quality Act (CEQA, Public Resources Code Section 21000 et seq.) and the CEQA Guidelines (Title 14 California Code of Regulations Section 15000 et seq.), and an initial environmental checklist (IEC) in accordance with Chapter 3 of the Tahoe Regional Planning Agency (TRPA) Code of Ordinances and Article VI of the TRPA Rules of Procedure, for the proposed Upper Truckee Marsh Sewer Facilities Protection Project. The proposed project is located along the District's sewer line easement near the Bellevue Pump Station facility in South Lake Tahoe, California.

The IS and IEC identify and analyze the potentially significant adverse environmental effects of the proposed project. Based on the IS, it has been determined that a Mitigated Negative Declaration is appropriate for the project. The lead agency intends to consider adoption of an IS/MND and approval of the proposed project following completion of the 30-day public review period consistent with the provisions of CEQA and the CEQA Guidelines.

Based on the IEC, it is anticipated that TRPA will be able to make the finding pursuant to TRPA Code of Ordinances Section 3.3.2(B) that mitigation measures incorporated into the project would preclude the potential for significant effects on the environment, and that a mitigated finding of no significant effect (FONSE) will be prepared in accordance with TRPA's Rules of Procedure.

Project Title: Upper Truckee Marsh Sewer Facilities Protection Project

Lead Agency: South Tahoe Public Utility District

Project Location: Trout Creek, located along the District's sewer line easement near the Bellevue Pump Station facility in South Lake Tahoe, California

Project Description: The District is proposing the proposed project, which involves implementing an adaptive management plan (AMP) to protect its existing force and gravity sewer mains along with its Bellevue Pump Station facility in South Lake Tahoe, California. The sewer facilities are located on property owned by the California Tahoe Conservancy at the north margin of the Upper Truckee Marsh. The study area includes 96 acres along Trout Creek and is generally bounded by U.S. Highway 50 on the south, the Al Tahoe neighborhood on the northeast, Lake Tahoe to the north, and the Upper Truckee Marsh to the south and west.

During the record-snowmelt year of 2011, a portion of the Trout Creek channel near the Bellevue Pump Station completely filled with sand and small gravel, causing the stream to overflow northward approximately 70 feet onto the District's easement. This process is continuing upstream and flow paths are developing over an approximately 300-foot-long reach, diverting water out of the existing channel. Flows are now recollecting and flowing directly over the easement. Continued flow over the easement threatens to undermine the force and gravity sewer mains and the pump station facility and restricts the District's access to the facilities.

The intent of the AMP is to protect the sewer infrastructure from flooding and reduce the risk of a sewer spill. The AMP consists of measures designed both to prevent permanent establishment of Trout Creek over the sewer lines and adjacent to the pump station facility and to encourage flows to establish new paths to the south, away from the District's facilities.

Public Review: The purpose of the Draft IS/MND and IEC is to fully disclose to the public and decision makers the environmental consequences of implementing the proposed project and describe the mitigation measures recommended to reduce significant and potentially significant impacts, in accordance with Section 15205(d) of the CEQA Guidelines, Chapter 3 of the TRPA Code of Ordinances, and Article VI of the TRPA Rules of

Procedure. An IEC is normally submitted concurrently with submittal of a project application to TRPA, but is included with the Draft IS/MND to ensure preparation of the most comprehensive environmental review document with the broadest overview of environmental impacts and consistency in mitigation measures. A complete TRPA application package for the first phase of the proposed project will be submitted to TRPA subsequent to the close of the environmental review process and as early as summer 2014. The Draft IS/MND and IEC is available for a 30-day public review period from April 1, 2014, to April 30, 2014.

If you wish to mail written comments, they must be postmarked by: April 30, 2014. Electronic comments must be emailed to the address shown below by April 30, 2014. Comments should be addressed to:

South Tahoe Public Utility District
Attn: Ivo Bergsohn
1275 Meadow Crest Drive
South Lake Tahoe, CA 96150
(530) 543-6204
Ibergsohn@stpud.dst.ca.us

After comments are received from the public and reviewing agencies, the District will consider those comments and may take one of the following actions: (1) adopt the mitigated negative declaration and approve the proposed project; (2) undertake additional environmental studies; or (3) abandon the project.

Public Meetings: The District's Board of Directors will take comments on the IS/MND and IEC at their regularly scheduled Board Meeting on Thursday, April 17, 2014 (2:30 p.m.) and will consider adopting the MND at the following scheduled Board Meeting on Thursday, May 1, 2014 (2:30 p.m.) to which the public and all interested parties to this matter are invited. The meetings will be held in the Main Boardroom of the District's administrative offices at the address provided.

To Obtain a Copy of the Initial Study/Mitigated Negative Declaration and Initial Environmental Checklist: The Draft IS/MND and IEC are available for public review at the following locations:

South Tahoe Public Utility District
1275 Meadow Crest Drive
South Lake Tahoe, CA 96150
(530) 544-6474

South Lake Tahoe Library
1000 Rufus Allen Blvd.
South Lake Tahoe, CA 96150
(530) 573-3185

The complete IS/MND and IEC for this project will also be available for viewing online on the plan documents page of the District's website (www.stpud.us).

Information on where to obtain or review reference materials used in the preparation of this Draft IS/MND and IEC is also available by contacting Ivo Bergsohn.

Your views on the merits of this proposal and/or the adequacy of the subject environmental assessment will be welcomed by the District. Thank you.

DRAFT

PROPOSED MITIGATED NEGATIVE DECLARATION

PROJECT: **Upper Truckee Marsh Sewer Facilities Protection Project**

LEAD AGENCY: **South Tahoe Public Utility District**

PROJECT DESCRIPTION

This combined Initial Study and Mitigated Negative Declaration (IS/MND) evaluates the environmental effects of the proposed Upper Truckee Marsh Sewer Facilities Protection Project. The project involves implementing an adaptive management plan (AMP) to protect its existing force and gravity sewer mains along with its Bellevue Pump Station facility in South Lake Tahoe, California. The AMP consists of measures designed both to prevent permanent establishment of Trout Creek over the sewer lines and adjacent to the pump station facility and to encourage flows to establish new paths to the south, away from the District's facilities.

The proposed project is located on property owned by the California Tahoe Conservancy at the north margin of the Upper Truckee Marsh. The study area includes 96 acres along Trout Creek and is generally bounded by U.S. Highway 50 on the south, the Al Tahoe neighborhood on the northeast, Lake Tahoe to the north, and the Upper Truckee Marsh to the south and west.

FINDINGS

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

1. The proposed project would have no effects related to mineral resources, population and housing, or public services.

2. The proposed project would have a less-than-significant impact on aesthetics, agriculture and forestry resources, biological resources, geology and soils, greenhouse gas emissions, hydrology and water quality, land use and planning, recreation, and utilities and service systems.

3. Mitigation is required to reduce potentially significant impacts related to air quality, cultural resources, hazards and hazardous materials, noise, and transportation/traffic.

The following mitigation measures would be implemented by the South Tahoe Public Utility District (District) to avoid or minimize environmental impacts. Implementation of these mitigation measures would reduce the environmental impacts of the proposed project to a less-than-significant level.

- **Mitigation Measure AQ-1: Reduce Construction-Related Emissions of Fugitive Dust**

  The District and their construction contractor will comply with EDCAQMD Rule 202, Visible Emissions; Rule 205, Nuisance; Rule 223, Fugitive Dust–General Requirements; and Rule 223-1, Fugitive Dust–Construction, Bulk Material Handling, Blasting, Other Earthmoving Activities, and Carryout and Trackout Prevention. In addition, the contractor will implement the following fugitive dust control measures:

- Apply dust suppression measures in a sufficient quantity and frequency to maintain a stabilized surface and prevent visible dust emissions from exceeding 100 feet in length in any direction. Apply water to at least 80 percent of the surface areas of all open storage piles on a daily basis when there is evidence of wind-driven fugitive dust.

- Install control measures immediately adjacent to the paved surface to prevent track-out from exiting vehicles.

According to EDCAQMD, implementation of these control measures is sufficient to reduce construction-related emissions to a less-than-significant level. With implementation of these measures, the proposed project's construction activities would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, implementing Mitigation Measure AQ-1 would reduce this impact to a less than significant level.

► **Mitigation Measure CUL-1: Avoid Potential Effects on Previously Undiscovered Resources**

If buried or previously unidentified resources are discovered during project activities, all work within a 30-foot radius of the find will cease. The District will hire a professional archaeologist meeting the Secretary of the Interior's Professional Standards for Archaeologists to assess the discovery and recommend what, if any, further treatment or investigation is necessary for the find. Any necessary treatment/investigation will be completed before project activities continue in the vicinity of the find. If the find is related to tribal uses, the Washoe Tribe of Nevada and California will be contacted and invited to consult with the hired professional archaeologist or monitor any further necessary treatment or investigation if needed.

Implementing Mitigation Measure CUL-1 would reduce the impact of the proposed project on previously undiscovered historical resources to a less than significant level.

► **Mitigation Measure CUL-2: Avoid Potential Effects on Previously Undiscovered Burials**

In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, the District and its contractor(s) will immediately halt potentially damaging excavation in the area of the burial and will notify the El Dorado County Coroner and a professional archaeologist to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). After the coroner's findings have been made, the archaeologist and the NAHC-designated Most Likely Descendant will determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities of El Dorado County for acting upon notification of a discovery of Native American human remains are identified in Section 5097.9 of the California Public Resources Code.

California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The District will ensure that the procedures for the treatment of Native American human remains contained in California Health and Safety Code Sections 7050.5 and 7052, and California Public Resources Code Section 5097, are followed.

Implementing Mitigation Measure CUL-2 would reduce the impact associated with the project's potential to disturb human remains to a less than significant level.

► **Mitigation Measure HAZ-1: Implement Mitigation Measure TRA-1: Prepare a Traffic Control Plan**

The District's contractor shall be responsible for providing an approved traffic control plan subject to review and comment by TRPA and the CSLT before construction. The plan will address project construction traffic

and parking, and emergency access. At a minimum, the traffic control plan will discuss truck haul routes, truck turning movements at the project staging area, traffic control signage, potential bicycle and pedestrian traffic conflicts, and monitoring of the in-place traffic control plan to implement traffic control revisions, if necessary.

Implementing Mitigation Measure HAZ-1 would reduce construction-related emergency response and evacuation impacts to a less than significant level.

- **Mitigation Measure NOI-1: Reduce Noise Levels from On-site Construction Equipment**

  The following noise-reducing construction practice will be implemented to reduce impacts on noise-sensitive receivers during construction of the project:

  - Before construction, all residences within 650 feet of construction areas will be notified in writing of the proposed construction activities. Construction scheduling and contact information will be clearly displayed on pedestrian signage.

  Also, implementation of the following mitigation measures normally considered during construction activities is recommended to reduce construction noise exposure:

  - Plan noisier operations during times of highest ambient noise levels.
  - Keep noise levels relatively uniform; avoid excessive and impulse noises. Operate equipment to minimize banging, clattering, buzzing, and other annoying types of noises, especially near residential and other noise-sensitive areas.
  - Turn off idling equipment.
  - To the extent feasible, configure the construction site in a manner that keeps noisier equipment and activities as far as possible from noise-sensitive locations and nearby buildings.
  - Use construction equipment manufactured or modified to reduce noise and vibration emissions, such as electric instead of diesel-powered equipment.

  Implementing Mitigation Measure NOI-1 would reduce temporary noise impacts during construction to a less-than-significant level.

- **Mitigation Measure TRA-1: Prepare a Traffic Control Plan**

  The District's contractor shall be responsible for providing an approved traffic control plan subject to review and comment by TRPA and the CSLT before construction. The plan will address project construction traffic and parking, and emergency access. At a minimum, the traffic control plan will discuss truck haul routes, truck turning movements at the project staging area, traffic control signage, potential bicycle and pedestrian traffic conflicts, and monitoring of the in-place traffic control plan to implement traffic control revisions, if necessary.

  Implementing Mitigation Measure TRA-1 would reduce construction-related traffic impacts to a less than significant level.

Questions or comments regarding this IS/MND may be addressed to:

South Tahoe Public Utility District
Attn: Ivo Bergsohn
1275 Meadow Crest Drive
South Lake Tahoe, CA 96150
(530) 543-6204

The address for e-mail questions or comments is: Ibergsohn@stpud.dst.ca.us.

APPROVAL OF INITIAL STUDY/MITIGATED NEGATIVE DECLARATION:

Certification by Those Responsible for Preparation of this Document. The District has been responsible for the preparation of this Mitigated Negative Declaration and the incorporated Initial Study. I believe this document meets the requirements of the California Environmental Quality Act, is an accurate description of the proposed project, and that the lead agency has the means and commitment to implement the project design and mitigation measures that will assure the project does not have any significant, adverse effects on the environment. I recommend approval of this document.

Ivo Bergsohn, PG, CHG, Hydrogeologist — Date
South Tahoe Public Utility District

(*To be signed upon completion of the public review process and preparation of a final project approval package including responses to comment, if any, on the environmental document and any necessary modifications to project design measures.)

Approval of the Project by the Lead Agency. Pursuant to Section 21082.1 of the California Environmental Quality Act, the South Tahoe Public Utility District has independently reviewed and analyzed the initial study and mitigated negative declaration for the proposed project and finds that the initial study and mitigated negative declaration for the proposed project reflect the independent judgment of the South Tahoe Public Utility District. The lead agency finds that the project design features will be implemented as stated in the mitigated negative declaration.

I hereby approve this project.

Eric Schafer, President — Date
South Tahoe Public Utility District

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Appendices

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Exhibits

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ACRONYMS AND OTHER ABBREVIATIONS

µin/sec	microinch(es) per second
AB	Assembly Bill
AFB	Air Force Base
AMP	adaptive management plan
APN	Assessor's Parcel Number
ARB	California Air Resources Board
Basin Plan	*Water Quality Control Plan for the Lahontan Region*
BMP	best management practice
B.P.	Before Present
ca.	circa
CAAQS	California ambient air quality standards
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
cfs	cubic feet per second
City General Plan	*2030 South Lake Tahoe General Plan Policy Document*
CLUP	Comprehensive Land Use Plan
CNEL	community noise equivalent level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
Conservancy	California Tahoe Conservancy
CRHR	California Register of Historical Resources
CSLT	City of South Lake Tahoe
dB	decibel(s)
dBA	A-weighted decibel(s)
dbh	diameter at breast height
DFG	California Department of Fish and Game
DGS	California Department of General Services
District	South Tahoe Public Utility District
DOF	California Department of Finance

ACRONYMS AND OTHER ABBREVIATIONS

DTSC	California Department of Toxic Substances Control
DVTE	daily vehicle trip ends
EDCAQMD	El Dorado County Air Quality Management District
EIP	Environmental Improvement Program
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
Farmland	Farmland of Statewide Importance
FEMA	Federal Emergency Management Agency
FIRM	flood insurance rate map
FTA	Federal Transit Administration
GHG	greenhouse gas
GWP	global warming potential
IEC	initial environmental checklist
in/sec	inch(es) per second
IPES	Individual Parcel Evaluation System
IS	initial study
Lahontan RWQCB	Lahontan Regional Water Quality Control Board
lb/day	pound(s) per day
L_{dn}	day-night average sound level
L_{eq}	energy-equivalent sound level
$L_{eq}(h)$	1-hour equivalent sound level
LGP	low ground pressure
LiDAR	Light Detection and Ranging
L_{max}	maximum sound level
L_{min}	Minimum sound level
L_n	sound level exceeded “n” percent of the time
LOS	level of service
LTAB	Lake Tahoe Air Basin
LUST	leaking underground storage tank

ACRONYMS AND OTHER ABBREVIATIONS

M	moment magnitude
mgd	million gallons per day
mg/L	milligrams per liter
MND	mitigated negative declaration
mph	miles per hour
MT	metric ton(s)
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission
NHC	Northwest Hydraulic Consultants
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	U.S. Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTU	nephelometric turbidity unit(s)
PAS	Plan Area Statement
$PM_{2.5}$	respirable particulate matter with an aerodynamic diameter of 2.5 micrometers or less
PM_{10}	respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
ppb	part(s) per billion
PPV	peak particle velocity
PRC	California Public Resources Code
proposed project	Upper Truckee Marsh Sewer Facilities Protection Project
Reclamation	U.S. Bureau of Reclamation
RMS	root mean square
ROG	reactive organic gases
RWQCB	regional water quality control board
SEZ	Stream Environment Zone
SIP	state implementation plan
SLTFD	South Lake Tahoe Fire Department
SLTPD	South Lake Tahoe Police Department

ACRONYMS AND OTHER ABBREVIATIONS

SO_2	sulfur dioxide
SQIP	Scenic Quality Improvement Program
SR	State Route
SWPPP	storm water pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee; toxic air contaminant
TMDL	total maximum daily load
TRPA	Tahoe Regional Planning Agency
U.S. 50	U.S. Highway 50
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	vibration decibel(s)
VMT	vehicle miles traveled

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1 INTRODUCTION

The South Tahoe Public Utility District (District) is proposing the Upper Truckee Marsh Sewer Facilities Protection Project (proposed project), which involves implementing an adaptive management plan (AMP) to protect its existing force and gravity sewer mains along with its Bellevue Pump Station facility in South Lake Tahoe, California. The sewer facilities are located on property owned by the California Tahoe Conservancy at the north margin of the Upper Truckee Marsh. The study area includes 96 acres along Trout Creek and is generally bounded by U.S. Highway 50 on the south, the Al Tahoe neighborhood on the northeast, Lake Tahoe to the north, and the Upper Truckee Marsh to the south and west.

During the record-snowmelt year of 2011, a portion of the Trout Creek channel near the Bellevue Pump Station completely filled with sand and small gravel, causing the stream to overflow northward approximately 70 feet onto the District's easement. This process is continuing upstream and flow paths are developing over an approximately 300-foot-long reach, diverting water out of the existing channel. Flows are now recollecting and flowing directly over the easement. Continued flow over the easement threatens to undermine the force and gravity sewer mains and the pump station facility and restricts the District's access to the facilities.

The intent of the AMP is to protect the sewer infrastructure from flooding and reduce the risk of a sewer spill. The AMP consists of measures designed both to prevent permanent establishment of Trout Creek over the sewer lines and adjacent to the pump station facility and to encourage flows to establish new paths to the south, away from the District's facilities.

1.1 LEAD AGENCY AND PUBLIC REVIEW

The District is the project sponsor and lead agency for the proposed project under the California Environmental Quality Act (CEQA). The District is preparing this Initial Study (IS) and proposed Mitigated Negative Declaration (MND) in compliance with CEQA and the State CEQA Guidelines, and an Initial Environmental Checklist (IEC) in accordance with the Tahoe Regional Planning Agency (TRPA) Code of Ordinances.

The purpose of this joint IS/MND and IEC is to fully disclose to the public and decision makers the environmental consequences of implementing the proposed project, and to describe the mitigation measures recommended to reduce significant and potentially significant impacts, in accordance with Section 15205(d) of the State CEQA Guidelines, Chapter 5 of the TRPA Code of Ordinances, and Article VI of the TRPA Rules of Procedure. An IEC is normally submitted to TRPA concurrently with a project application, but the IEC is included here to ensure the preparation of the most comprehensive environmental review document with the broadest overview of environmental impacts and consistency in mitigation measures. A complete TRPA application package for the first phase of the proposed project will be submitted to TRPA after the close of the environmental review process, as early as spring 2014.

On March 10th, 2014, the District convened a meeting at its main office in South Lake Tahoe, California, to provide an opportunity for neighboring property owners to review and comment on preliminary engineering plans developed for the AMP – Year 1 Improvements. Prior to review of these plans, these property owners voiced concerns regarding potential visual impacts, vegetation types proposed for planting along adjoining property lines, and potential locations for planting of willow fences and groves.

The joint IS/MND and IEC is available for a 30-day public review period from April 1, 2014 to April 30, 2014. Written comments sent via U.S. Mail must be postmarked by April 30, 2014. Electronic comments may be e-mailed to the address shown below by April 30, 2014. Comments should be addressed to:

South Tahoe Public Utility District
Attn: Ivo Bergsohn
1275 Meadow Crest Drive
South Lake Tahoe, CA 96150
(530) 543-6204

The address for e-mail comments is Ibergsohn@stpud.dst.ca.us.

After comments are received from the public and reviewing agencies, the District will consider the comments and may take one of the following actions: (1) adopt the MND and approve the proposed project, (2) undertake additional environmental studies, or (3) abandon the project.

This joint IS/MND and IEC are available for public review at the following locations:

South Tahoe Public Utility District
1275 Meadow Crest Drive
South Lake Tahoe, CA 96150
http://www.stpud.us/

South Lake Tahoe Library
1000 Rufus Allen Blvd.
South Lake Tahoe, CA 96150

1.2 PURPOSE AND LEGAL AUTHORITY

This document contains an IS prepared pursuant to CEQA (Public Resources Code Section 21000 et seq.), and in accordance with the State CEQA Guidelines (Title 14, Section 15000 et seq. of the California Code of Regulations), as amended. The purposes of this IS are to determine whether implementing the Upper Truckee Marsh Sewer Facilities Protection Project would result in potentially significant effects on the environment, and to incorporate mitigation measures into the project as necessary to eliminate the project's potentially significant effects or reduce them to less-than-significant levels. The IS is intended to support adoption of an MND by the District for the proposed project. The proposed MND is also contained in this document.

As provided in CEQA Section 21064.5, an MND may be prepared for a project subject to CEQA when an IS has identified potentially significant effects on the environment, but:

(1) revisions in the project plans or proposals made by, or agreed to by, the applicant [or lead agency] before the proposed MND and IS are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur; and

(2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment.

Consistent with the State CEQA Guidelines, this IS indicates that, after incorporation of mitigation measures, no significant or potentially significant effects would result from the proposed project. Therefore, the project does not require preparation of an environmental impact report (EIR), and adoption of a MND would be appropriate for CEQA purposes.

This document also contains an IEC prepared pursuant to Chapter 5 of the TRPA Code of Ordinances and Article VI of the TRPA Rules of Procedure. Based on the IEC included in this document and discussions with TRPA staff members, it is anticipated that TRPA will be able to make the finding pursuant to Section 5.2.B(2) that mitigation measures incorporated into the project would preclude the potential for significant effects on the environment, and that a mitigated finding of no significant effect will be prepared in accordance with TRPA's Rules of Procedure.

1.3 SUMMARY OF FINDINGS

Chapters 3 and 4 of this document contain the analysis and discussion of potential environmental impacts of the proposed project. The District has agreed to adopt each mitigation measure described in Chapters 3 and 4. A mitigation monitoring and reporting plan will be prepared for those mitigation measures needed to reduce environmental impacts to less-than-significant levels. The following summarizes the findings of the CEQA IS and TRPA IEC checklist, respectively.

1.3.1 CEQA INITIAL STUDY (IS)

Based on the issues evaluated in Chapter 3, it was determined that the proposed project would have no impact related to the following issue areas:

- Mineral Resources
- Population and Housing
- Public Services

Impacts of the proposed project were determined to be less than significant for the following issue areas:

- Aesthetics
- Agricultural Resources
- Biological Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Land Use and Planning
- Recreation
- Utilities and Service Systems

Impacts of the proposed project related to the following issue areas would be less than significant with the incorporation of the identified mitigation measures:

- Air Quality
- Cultural Resources
- Hazards and Hazardous Materials
- Noise
- Transportation/Traffic
- Mandatory Findings of Significance

1.3.2 TRPA INITIAL ENVIRONMENTAL CHECKLIST (IEC)

Based on the issues evaluated in Chapter 4, it was determined that the proposed project would have no adverse effects related to the following issue areas:

- Land
- Water Quality
- Vegetation
- Wildlife
- Light and Glare
- Land Use
- Natural Resources
- Population
- Housing
- Public Services
- Energy
- Utilities
- Human Health
- Scenic Resources/Community Design
- Recreation

The proposed project would have no adverse effects with incorporation of identified mitigation measures for the following issue areas:

- Air Quality
- Noise
- Risk of Upset
- Transportation/Circulation
- Archeological/Historical Resources
- Findings of Significance

1.4 PROJECT APPROVALS AND PERMITS

The following list identifies potential permits and other potential approval actions from Federal, State, regional, and local agencies for which this joint IS/MND and IEC may be used for these agencies' decision-making processes. State or local responsible and State trustee agencies will have the opportunity to review this document during the public and agency review period and will use this information in consideration and issuance of any other required permits or approvals.

The following approval actions and permits may be under the purview of regulatory agencies other than the District.

FEDERAL ACTIONS/PERMITS

- **U.S. Army Corps of Engineers:** Department of the Army permit under Section 404 of the Clean Water Act for discharges of dredged or fill material into waters of the United States.

- **U.S. Fish and Wildlife Service:** Endangered Species Act consultation and issuance of incidental-take authorization for the take of Federally listed endangered and threatened species under Section 10 of the Act, if take of a species is anticipated; or informal consultation for Endangered Species Act consistency for Lahontan cutthroat trout.

STATE ACTIONS/PERMITS

- **California Department of Fish and Game, North Central Sierra Region:** Potential California Endangered Species Act consultation and issuance of take authorization (Fish and Game Code Section 2081), streambed alteration agreement (Fish and Game Code Section 1602), and protection of raptors (Fish and Game Code Section 3503.5).

- **Lahontan Regional Water Quality Control Board (Region 6):** Section 401 Clean Water Act certification or waste discharge requirements.

- **State Water Resources Control** Board: Water Quality Order No. 2003-0003-DWQ Statewide General Waste Discharge Requirements (WDRs) for Discharge to Land with a Low Threat to Water Quality (General WDRs).

LOCAL ACTIONS/PERMITS

- **California Tahoe Conservancy:** As the property owner a license agreement will be required for the proposed project.

- **El Dorado County Air Quality Management District:** Rule 223, which requires actions to prevent, reduce, or mitigate fugitive dust emissions to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (human-made) fugitive dust sources.

- **City of South Lake Tahoe:** An encroachment permit for use of Bellevue Avenue for staging and access.

- **Tahoe Regional Planning Agency**: TRPA Code of Ordinances. TRPA's construction permitting requirements include the Grading Permit (with CSLT conditions incorporated), Land Capability and Coverage Verifications, and Historic Determination.

1.5 DOCUMENT ORGANIZATION

This joint IS/MND and IEC is organized as follows:

Proposed Mitigated Negative Declaration. The MND is included at the beginning of this document and presents a summary project description, the determination that no significant effects on the environment would occur after incorporation of mitigation measures, and a list of the adopted mitigation measures.

Chapter 1, "Introduction." This chapter describes the purpose and organization of this document and the public review process.

Chapter 2, "Project Description." This chapter identifies project objectives and describes the proposed project in detail.

Chapter 3, "CEQA Environmental Checklist and Explanations." This chapter presents an analysis of environmental issues identified in the CEQA Environmental Checklist, and determines for each issue whether implementing the proposed project would result in no impact, a less-than-significant impact, a less-than-significant impact with mitigation incorporated, or a potentially significant impact. An EIR is required if any impacts from a proposed project are determined to be potentially significant. For this project, however, mitigation measures have been incorporated where needed to reduce all potentially significant impacts to less-than-significant levels.

Chapter 4, "TRPA Initial Environmental Checklist and Explanations." This chapter analyzes the environmental issues identified in the TRPA IEC and determines for each issue whether implementing the proposed project would result in an adverse effect with mitigation incorporated, or no adverse effect. A TRPA Environmental Impact Statement is required if any impacts from the proposed project are determined to be adverse and cannot be mitigated. For this project, however, mitigation measures have been incorporated where needed to reduce all potentially adverse effects.

Chapter 5, "List of Preparers." This chapter identifies report preparers.

Chapter 6, "References." This chapter lists the references used in preparation of this IS/MND and IEC.

2 PROJECT DESCRIPTION

2.1 INTRODUCTION

The proposed project involves implementing an adaptive management plan (AMP) to protect the District's existing force and gravity sewer mains and its Bellevue Pump Station facility in South Lake Tahoe, California (Exhibit 2-1). This joint document evaluates the environmental effects of the proposed project and serves as an IS/MND in accordance with CEQA and an IEC in accordance with the TRPA Code of Ordinances and Rules of Procedure. The District is the CEQA lead agency for the project.

2.2 BACKGROUND AND NEED

2.2.1 PROJECT LOCATION

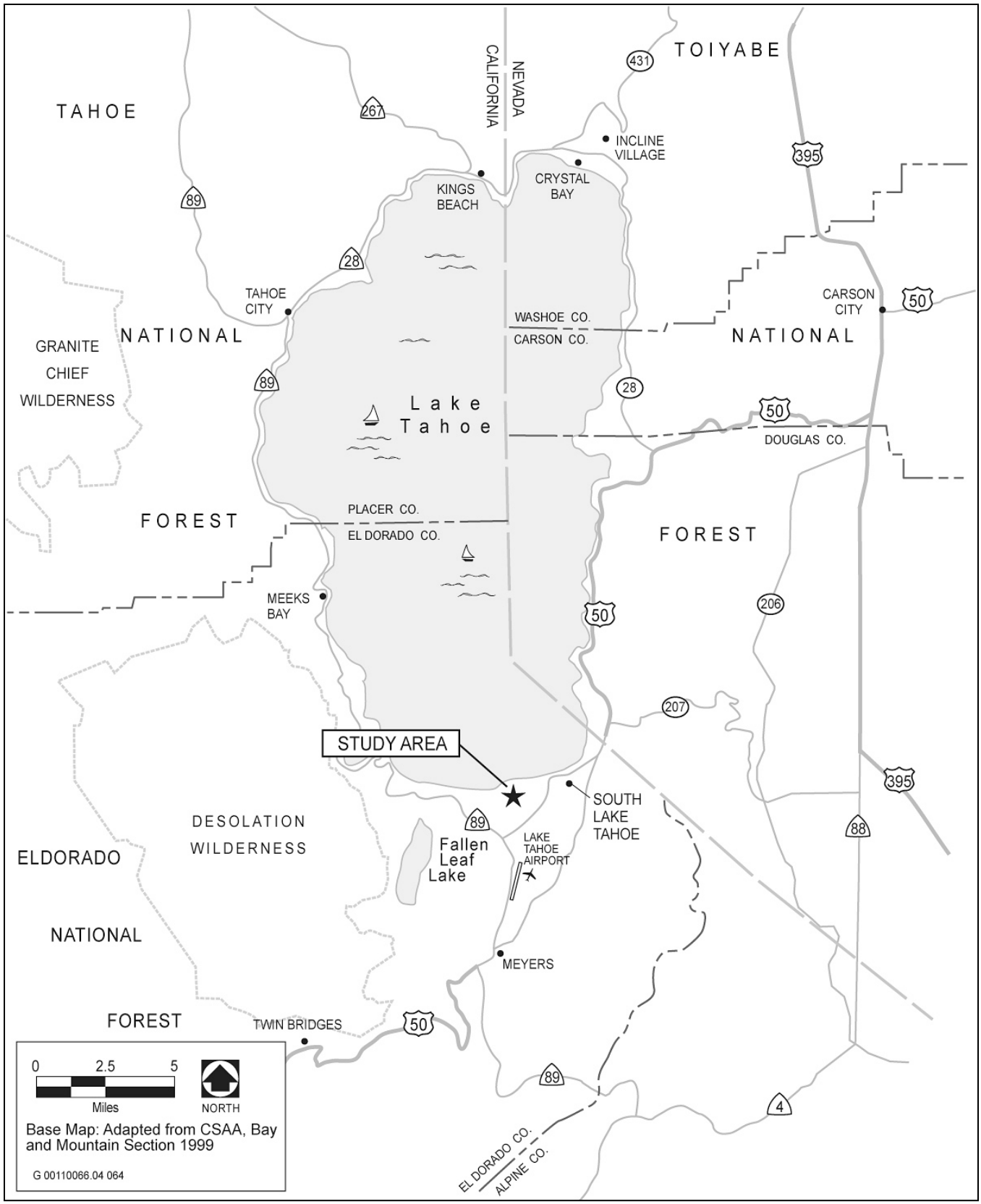
The study area encompasses 96 acres along Trout Creek that are generally bounded by U.S. Highway 50 (U.S. 50) on the south, the Al Tahoe neighborhood on the northeast, Lake Tahoe to the north, and the Upper Truckee Marsh to the south and west (Exhibit 2-2).

2.2.2 PROJECT BACKGROUND

The District owns and operates the Bellevue Pump Station, an 8-inch-diameter gravity sewer main, and a 10-inch-diameter force sewer main along the northern margin of the Upper Truckee Marsh (Exhibit 2-3). The pipelines are located in a 12-foot-wide sewer easement between Oakland Avenue and Bellevue Avenue along the northeastern boundary of property owned by the California Tahoe Conservancy (Conservancy). The force main generally lies within 4 feet of the ground surface; the gravity main lies below the force main and has numerous laterals that enter from the private properties along the north side of the Upper Truckee Marsh. The Bellevue Pump Station and associated force main serves approximately 640 residential units and have an estimated flow of about 223,000 gallons per day. The 8-inch gravity main serves approximately 150 units and has a design flow of approximately 47,000 gallons per day.

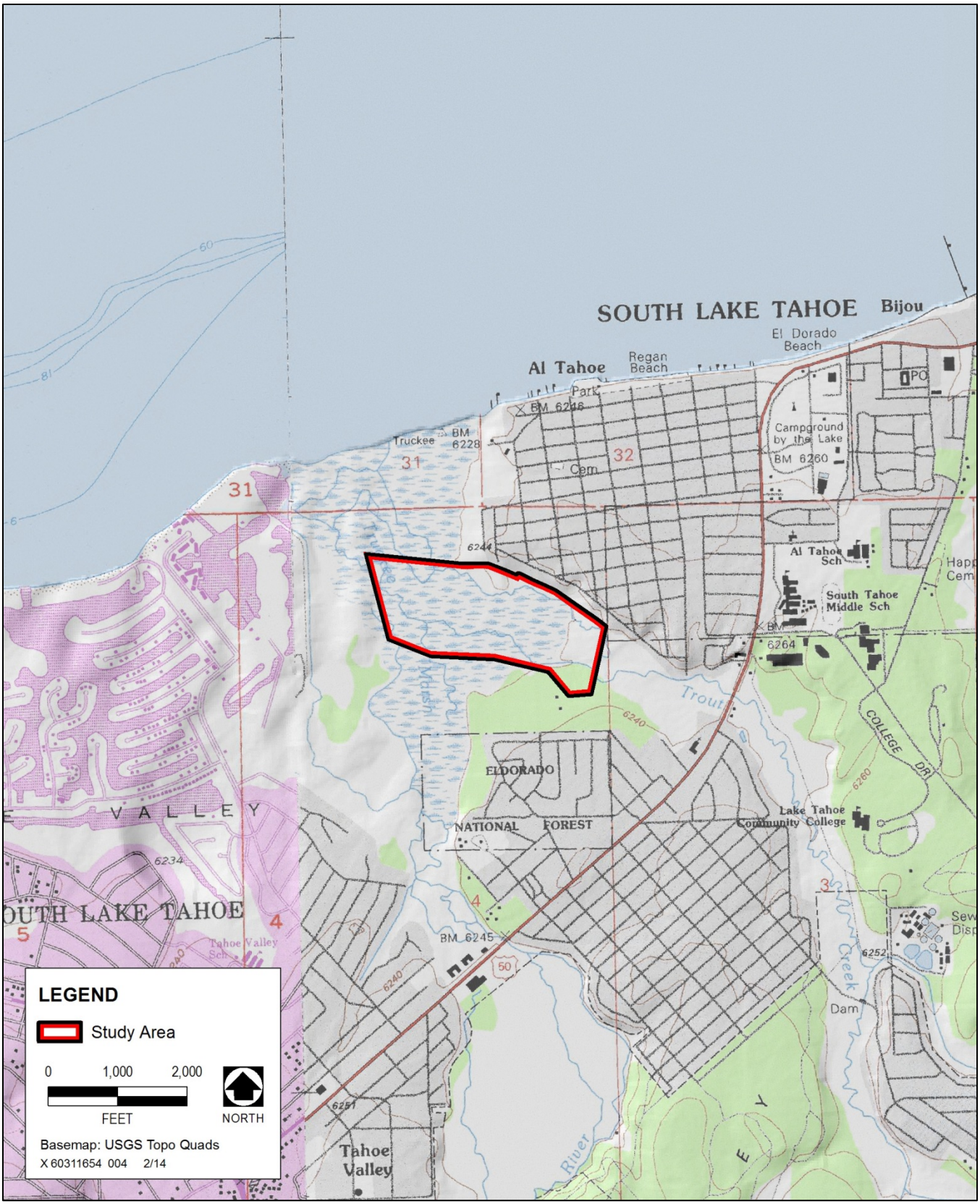
During the record-snowmelt year of 2011, the Trout Creek channel near the Bellevue Pump Station completely filled with sand and gravel in transport, causing flows to go over the right bank (looking downstream) and inundate the District's easement. The channel has remained completely plugged since this event, and the process is continuing upstream, causing overflow pathways to develop over an approximately 300-foot reach. During the summer and fall of 2013, even low flows were diverted out of the main channel onto the meadow surface, and more defined flow paths developed over and adjacent to the District's easement. Continued flow over the easement threatens to undermine the force and gravity sewer mains and the pump station facility and restricts the District's access to the facilities.

The District and engineering consultant reviewed historical information, existing field conditions and developed several preliminary alternatives for protecting the facilities and reviewed them with the landowner (the Conservancy) and Lahontan Regional Water Quality Control Board (RWQCB) staff. The alternatives considered included relocating the sewer lines, excavating to replace or relocate the channel, and filling the easement area. All of these options have substantial cost or environmental disadvantages. Through these efforts, the District, Conservancy, and Lahontan RWQCB agreed that employing an adaptive management approach that uses natural



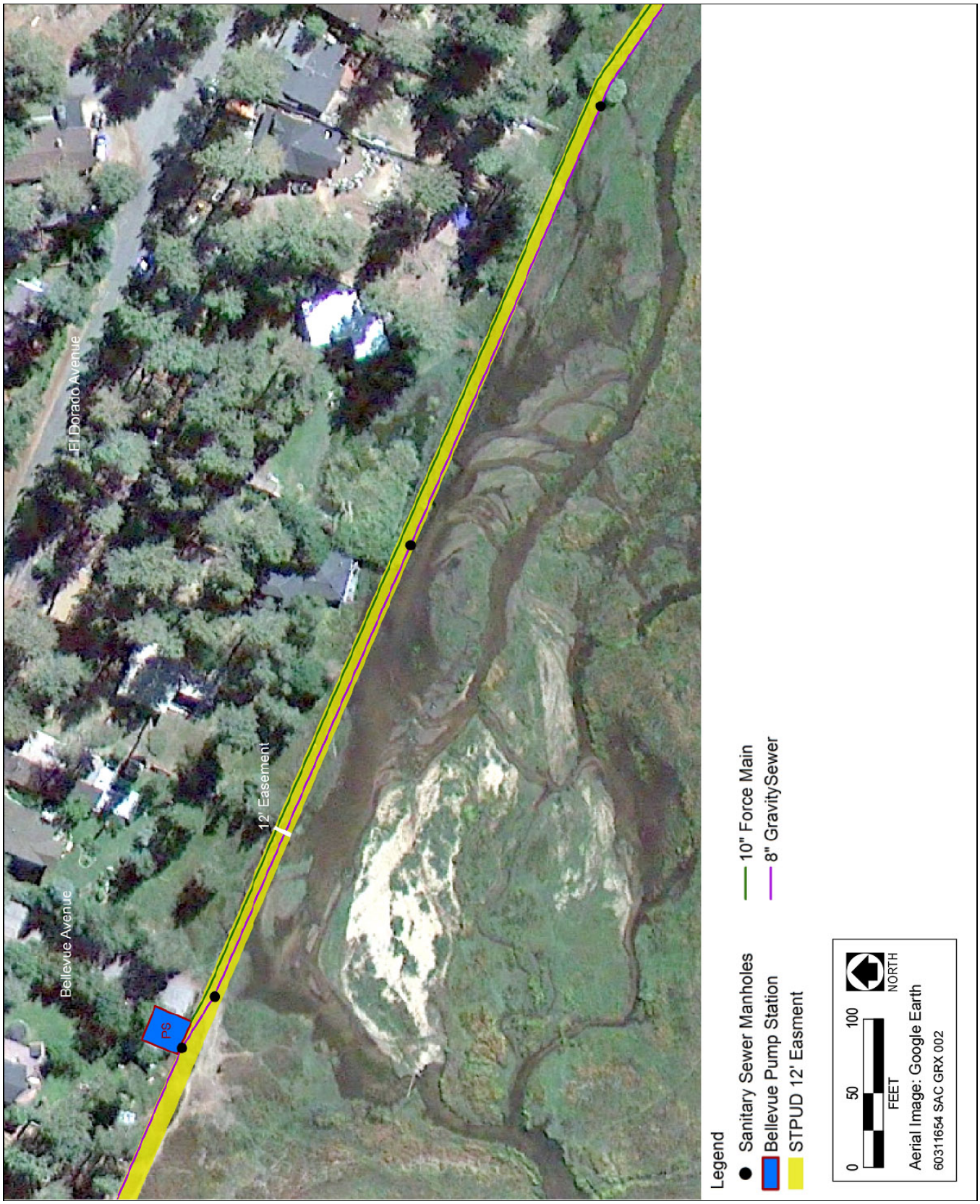
Source: Data compiled by AECOM in 2014

Exhibit 2-1 **Project Vicinity Map**



Source: Data compiled by AECOM in 2014

Exhibit 2-2 **Study Area Map**



Source: STPUD 2014, NHC 2014, TRPA 2014, Adapted by AECOM 2014

Exhibit 2-3 **Upper Truckee Marsh Sewer Facilities**

processes to encourage normal and high flows from Trout Creek away from existing sewer facilities located within the District's easement is the preferred alternative.

The facilities have been operated by the District since 1960, and until 2011, they were subject to only periodic shallow inundation during high flows. The easement has only been accessed during dry periods while District personnel have performed required inspection and maintenance activities to protect sensitive Stream Environment Zone (SEZ) resources. The District has successfully operated the facilities within an SEZ for more than 50 years, and returning to pre-2011 conditions would be an acceptable condition for operation of the facilities.

2.2.3 NEED FOR THE PROJECT

Under current conditions, the District no longer has access to the easement, including manholes on the gravity sewer. Exhibit 2-4 shows a photograph of the easement looking west toward the Bellevue Pump Station in July 2013. Surface inundation of the easement persisted through the summer and fall of 2013, preventing access for routine maintenance. This condition poses a risk to the facilities and to water quality because:

- manholes are subject to constant inundation, increasing potential infiltration and inflow to the pump station and the risk of overloading the station;
- inundated manholes are subject to potential loss of concrete strength at the manhole collars and increased risk of damage from flood debris;
- access for routine maintenance is restricted, limiting the District's ability to perform regular inspections, increasing the probability of a plug; and
- access for emergency operations is restricted, limiting the District's ability to control potential surcharges, increasing the probability of overflow in the case of a plug or other problem.

In the future, if the channel's filling and overflow process is not stopped, flows are expected to incise a new channel within the easement, which would threaten exposure of the District's sewer lines. The proximity of a new channel to the Bellevue Pump Station also presents a direct threat to the operation of the pump station because erosion could damage the pump station inlet structure and cause catastrophic flooding and failure of the pump station. Exposure of the sewer lines and local flooding could result in a break in either the gravity or force main and could disrupt pumping operations. Either of these conditions could result in the discharge of raw sewage into Trout Creek, the Upper Truckee Marsh, and Lake Tahoe.

Because a new channel has not yet formed, the District has an opportunity to develop less intensive measures that encourage initial channel formation away from the easement. An adaptive management approach is needed to work incrementally toward the desired outcome, reduce the risk of unintended consequences of the measures, and to provide flexibility to respond to natural hydraulic, erosion, and sedimentation processes as they occur. Similar measures could be implemented over a longer period to reduce the risk of future channel encroachment on the easement. The District therefore proposes to implement an AMP to protect the existing force and gravity sewer mains along with its Bellevue Pump Station facility. The goal of the proposed project is to protect the sewer infrastructure from flooding, reduce the risk of sewage discharge, and restore access to the District's easement by implementing the AMP.

Source: Photo taken by Northwest Hydraulic Consultants in 2012

Exhibit 2-4 **View of District Easement and Pump Station, Looking West**

The purpose of the AMP is to:

- define desired outcomes and performance metrics;
- describe management measures to be implemented, recognizing that flexibility and adjustments are required under the adaptive management approach;
- describe the overall adaptive management strategy for phased implementation, decision making, and reporting;
- identify potential temporary impacts and mitigation measures associated with AMP implementation; and
- provide a detailed design for the initial actions to be taken in 2014 (Year 1 Plan).

2.3 PROJECT OBJECTIVES

The primary objective of the AMP is to reduce risk to the sewer facilities while protecting resources in the Upper Truckee Marsh. The AMP includes the following desired outcomes to help achieve the primary objective:

- Inundation on the marsh surface in the vicinity of Bellevue Pump Station becomes similar in timing and duration to areas upstream and downstream where a defined channel currently exists.

- Topography along the north edge of the marsh in the vicinity of the sewer line is more variable and the highest points are raised slightly compared to existing topography, discouraging future channel formation over the sewer lines.

- Any new channel that forms in the vicinity of the District's facilities is no closer than the Trout Creek channel as it existed prior to 2011 (approximately 60 feet from the easement).

- Channel flow paths that encourage flows towards the center of the marsh become more active and those that encourage flow to the edge of the marsh and Bellevue Pump Station become less active such that more flooding during short recurrence interval events occurs in the center of the marsh.

- Woody riparian vegetation is increased in the vicinity of the sewer lines in a configuration that discourages future channel formation over or along the sewer lines.

- Herbaceous vegetation in areas affected by the proposed project has similar species composition and vigor as the surrounding marsh.

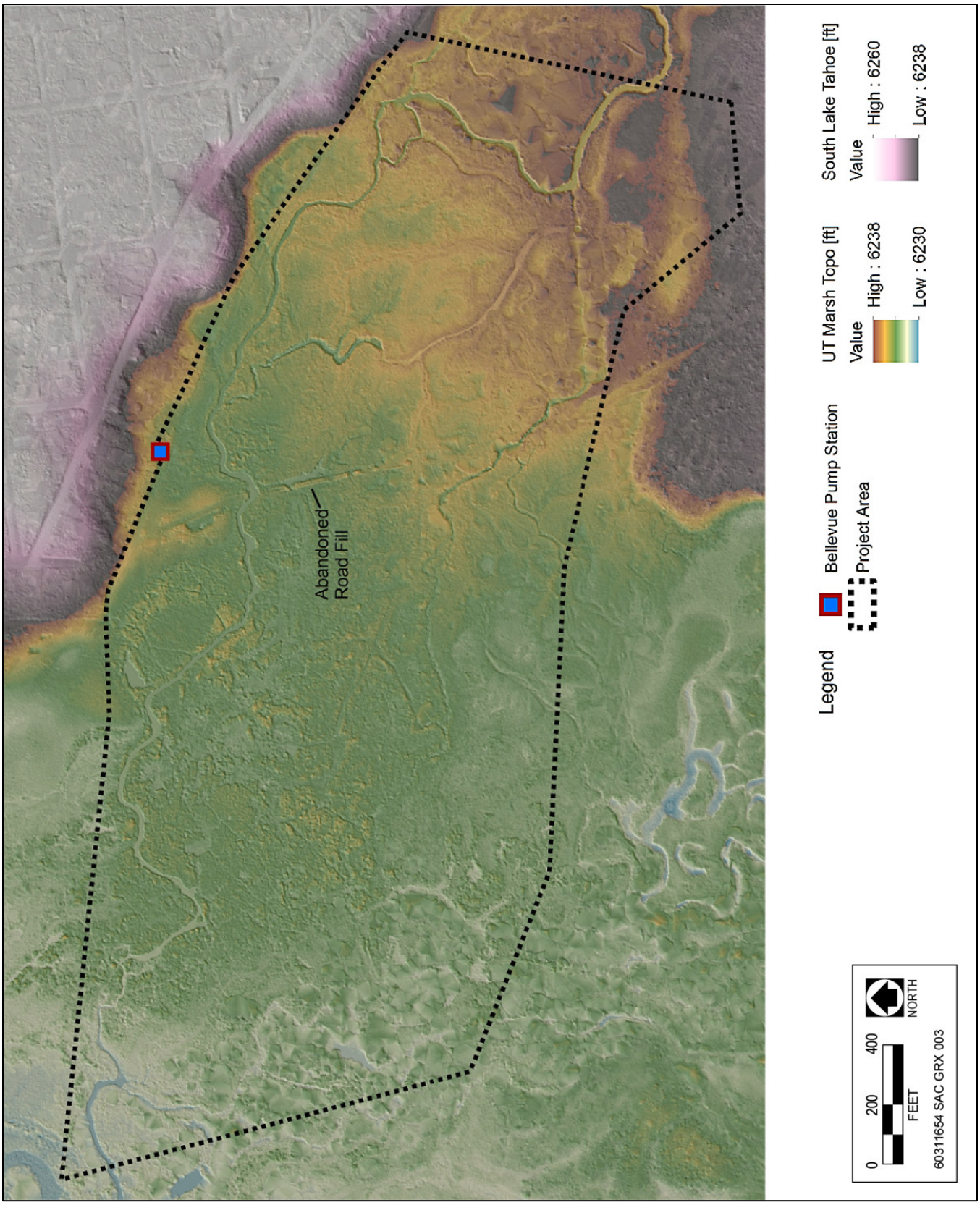
- Improve natural stream flow and sediment distribution across the marsh through the selective removal of artificial impediments (abandoned road fill, relict excavations) presently crossing Trout Creek.

These outcomes would be achieved through implementation of adaptive management measures described in Section 2.5.1, below.

2.4 REGIONAL AND LOCAL SETTING

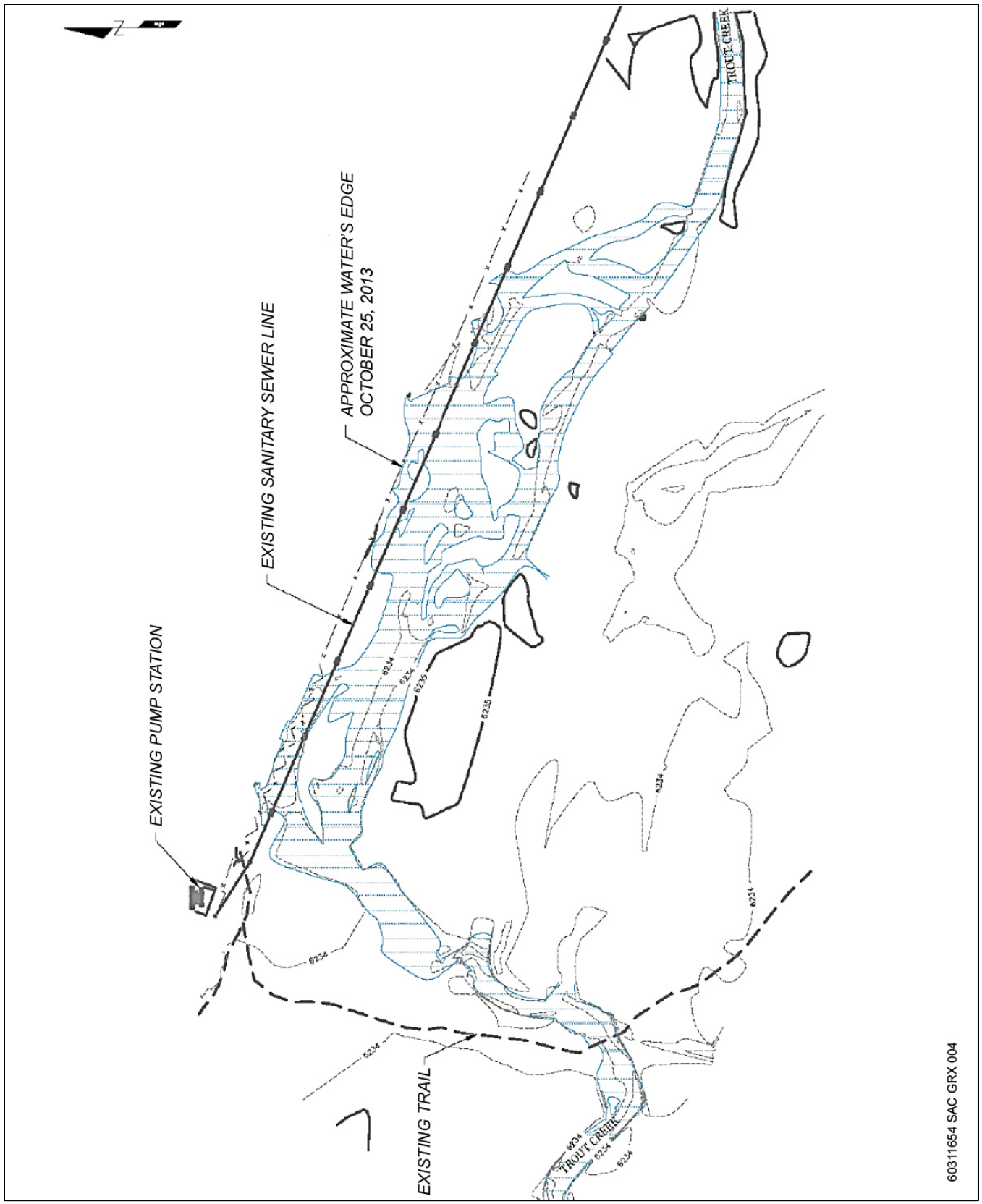
The District's sewer facilities are located in the area known as the Upper Truckee Marsh, a broad meadow/marsh complex formed at the shore of Lake Tahoe by the confluence of the Upper Truckee River and Trout Creek. Most of the study area is classified under the TRPA Land Capability Classification system as Land Capability District 1b, SEZ. The marsh provides regionally important ecological, water quality, aesthetic, and recreational values. The adjacent residential area north of the easement is located mostly in Land Capability Districts 6 and 7. The dominant land use to the north is single-family residences. The back yards of residences along the easement are at or near the meadow elevation; some are subject to inundation during high flows or, under current conditions (post–2011 avulsion), during the entire year. Elevations increase rapidly north of the easement, rising to 15–20 feet above easement elevations along El Dorado Avenue.

Exhibit 2-5 shows topography in the study area generated from a TRPA Light Detection and Ranging (LiDAR) data set (TRPA 2010), illustrating the low relief in the SEZ and rapidly rising ground to the north. The exhibit represents 2010 conditions and does not include recent changes near the Bellevue Pump Station caused by the Trout Creek channel avulsion. A distinctive linear feature in the Exhibit 2-5 topography is an abandoned road fill that shows as a northwest-southeast trending alignment crossing the meadow surface west and downstream of the Bellevue Pump Station. As described below, the proposed project includes removal of this feature from within the study area. Exhibit 2-6 shows topography and the current location of Trout Creek over the District's easement near Bellevue Pump Station based on an August 2013 field survey.



Source: nhc 2014, TRPA 2010, Adapted by AECOM 2014

Exhibit 2-5 **2010 LiDAR Topography of the Study Area**



Source: NHC 2014, Adapted by AECOM 2014

Exhibit 2-6 **October 25, 2013, Topographic Mapping of the Study Area**

2.5 PROJECT CHARACTERISTICS

The AMP is a set of measures that would encourage channel formation in a more favorable location, would raise the easement area slightly and increase its hydraulic roughness to make it more resistant to channel avulsions, and could improve flood conveyance and sediment transport. The AMP approach is designed to use natural processes to the extent practical to accomplish the project objectives. Measures are to be implemented and monitored incrementally to minimize impacts at any one time. Each phase would consist of measures that would minimize excavation and fill and would be implemented largely by hand crews. The stabilization measures anticipated involve primarily minor earthwork and vegetation. No structural stabilization measures (e.g., use of riprap, rock refusals) are proposed.

2.5.1 ADAPTIVE MANAGEMENT MEASURES

This section describes the adaptive management measures that may be implemented over the term of the AMP and the ways in which they function to achieve the AMP objectives. Phasing and monitoring of the measures are described in Section 2.5.2. The following measures may be implemented as part of the AMP

- Measure 1—Construction of pilot channels off the left bank to divert some portion of routine flows to the south away from the easement.
- Measure 2—Opening of left-bank overflow paths to convey higher flow levels to the south.
- Measure 3—Planting of willow fences, stakes, poles, or wattles along preferred channel alignments to encourage scour and an increase in channel capacity.
- Measure 4—Removal of debris and fill at the entrance to the pre-1968 channel alignment.
- Measure 5—Local widening or deepening of desirable alternative flow paths to increase their capacity.
- Measure 6—Installation of hydraulic roughness elements spanning the easement and adjacent low areas to break up flow lines, and reduce local velocities to prevent channel incision and encourage sedimentation, including:
    - previously grown marsh mats;
    - planted and unplanted coir logs;
    - sedge and rush plug plantings;
    - woody riparian container plantings (e.g., Woods’rose); and
    - willow staking in various configurations, including fences and sausals (groves).
- Measure 7—Placement of hummock fill, to be vegetatively stabilized, over portions of the easement and adjacent low areas.
- Measure 8—Miscellaneous fill on the floodplain, using existing vegetation and a biodegradable perimeter for stabilization.
- Measure 9—Installation of overbank flow plugs along the right bank to reduce the amount of flow passing over or adjacent to the easement.

- Measure 10—Planting and vegetation management on unfavorable flow paths, using willow fences, stakes, poles, or wattles in channels that currently contribute or have the potential to contribute to inundation of the easement, or removing woody vegetation that creates unfavorable flow patterns.

- Measure 11—Removal of abandoned road fill, including salvaging and replacing existing sod, to the adjacent meadow grade.

- Measure 12—Intermittent fill and revegetation of the erosional depression upstream of the abandoned road fill.

Measures 1–5 focus on channel formation and maintenance of channels in favorable locations. Each of these measures is described in additional detail below.

- **Measure 1—Construction of pilot channels off the left bank.** This measure establishes low-flow paths from the filled channel to the channel downstream of the avulsion. Depending on their locations, pilot channels may connect either to the main channel or to a remnant channel that connects to the main channel. One or more of the pilot channels is expected to expand over time to become the main flow path. Pilot channel geometry would necessarily vary with topography to maintain a gravity-flow path, but excavation is expected to be no more than 4 feet wide and 1.5 feet below the existing ground. At intervals of approximately 40 feet, a salvaged sod lining would be installed as a sill in the typical section (flush with the excavated surface) to resist expansion of the channel under low flows. These sills are expected to erode under higher flows. This measure would be implemented in Year 1 to dewater the right overbank under low flows.

- **Measure 2—Opening of left-bank overflow paths.** This measure is similar to Measure 1, but excavation would be limited to the immediate area of the channel's left bank. The locations of left-bank overflow paths would be selected based on existing low points or proximity to remnant channels in the left overbank. Openings are expected to have a top width of no more than 9 feet, a depth of approximately 1 foot below the existing ground, and a length of no more than 20 feet.

- **Measure 3—Installation of willow fences and staking.** Willow fences are intended to reinforce channel banks and encourage favorable channel morphology for sediment transport and habitat on preferred channel alignments. Willow fences in the vicinity of Bellevue Pump Station would be used only in the left overbank of the channel (more than 100 feet from the north property line) and would be focused at the left bank openings to reinforce the desired flow paths. In other locations in the project area, willow fences may be used along the channel banks and at bends or splits in the main or secondary channels. Other types of willow planting may be performed, including willow staking of coir logs and live staking in areas where the density provided by a willow fence is not needed.

- **Measure 4—Removal of debris and fill at the entrance to the pre-1968 channel alignment.** This measure is intended to ensure that the split se**c**ondary channel in the project reach remains active and is a potential alignment for the main channel as it changes course in the future. The measure would involve removing artificial debris and fill at the head of the channel above the summer water surface elevation. Removal of fill, if determined desirable, would occur in subsequent years. Decisions about removing fill and implementing other measures on the secondary channel, such as willow planting and local widening or deepening, would be made based on observations of high flows in the initial years of implementation of the AMP.

- **Measure 5—Local widening or deepening of desirable alternative flow paths.** This measure is intended to remove constrictions, natural or artificial, that might restrict flows along favorable alternative flow paths and thereby limit the chance that the creek would reoccupy flow paths that put sewer facilities at risk. This measure might also be applied to previously constructed pilot channels or left-bank openings. Excavation is expected to be at a scale that can be accomplished by hand crews, less than 5 cubic yards per year. Disturbed areas would be revegetated with native graminoid (i.e., sedges, grasses, and rushes) and/or woody riparian species consistent with the setting.

Measures 6–10 focus on roughening and filling/accreting the floodplain. These measures would be applied primarily in the right overbank/floodplain in the area of the avulsion to reduce low-flow inundation, encourage main-channel formation away from the sewer, and make the sewer easement area less susceptible to inundation or erosion in future channel avulsions. However, Measures 8 and 10 may be applied in other areas of the marsh to discourage unfavorable flow paths.

- **Measure 6—Installation of hummocks and hydraulic roughness elements**. This measure is intended initially to roughen and slightly raise the right-bank floodplain to encourage the channel to re-form away from the sewer facilities. Over the course of AMP implementation, this measure would promote sediment accretion on this portion of the meadow to make it less subject to inundation during low to moderate flows, and to make it more robust in resisting inundation and channel erosion in the future, including any future channel avulsion events. The measure would result in the presence of hummocks extending less than 1 foot above the existing surface, and in increased hydraulic roughness from herbaceous and woody vegetation. A variety of construction techniques may be used, including:

    a. pre-grown marsh mats;
    b. planted and unplanted coir logs;
    c. sedge and rush plug plantings;
    d. sod salvage and placement;
    e. woody riparian container plantings (e.g., Woods' rose); and
    f. willow staking in various configurations, including fences and sausals (groves).

- **Measure 7—Placement of fill hummocks.** This measure is distinct from Measure 6 in that shallow fill would be placed before construction of the hummock. It would involve the placement of shallow fill areas in the right bank to raise elevations slightly, disrupt overbank flow paths that could lead to channel formation, and reduce the duration of inundation in the easement area. Fill would be placed to create irregular hummocks rather than a continuous or uniform raised berm. These shallow fills would typically be overlaid with marsh mats and bounded by coir logs in the same way as described above in Measure 6, so that once constructed, they would be indistinguishable from marsh mat hummocks. Fill hummocks would increase diversity in the wetland and would be low enough to maintain the existing vegetation types. Fill material would be borrowed from on-site sources such as the abandoned road fill. Source materials would be examined before placement to confirm whether they are consistent with native soils in the area. A maximum fill height of 0.5 foot is expected in any implementation year, and a maximum height of 1.5 feet is expected over the full implementation period. This is intended to ensure the consistency of the constructed hummock fills with natural variation in the marsh and their ability to support the vegetation types present under existing conditions. Low-ground-pressure (LGP) equipment may be used to place fill after suitable protection of access routes.

- **Measure 8—Miscellaneous fill placement on the floodplain.** This measure would not be independent, but would facilitate other measures that would require small amounts of excavation in areas where access for removal of excavated material would be disruptive. This measure would involve placement and confinement of very shallow fill in vegetated areas to stabilize the excavated material and incorporate it into the existing vegetated surface. Excavated material would be placed by scattering soil no deeper than 2 inches in areas of healthy existing graminoid vegetation at least 6 inches tall and lightly raking the soil into the vegetation. The filled area would be surrounded by a coir log perimeter, buried to half depth. Fill areas would be no larger than 600 square feet and would be located at least 30 feet from the bank of any active channel.

- **Measure 9—Installation of overbank flow plugs along the right bank.** This measure is intended to reduce the amount of flow passing over or adjacent to the easement by roughening or blocking existing right-bank overflow paths. This measure would also encourage flow on the left overbank initiated by Measures 1 and 2. The existing right-bank overflow points are relatively minor low points in the right top of bank, and thus require little structure to accomplish the objective. The overbank flow plugs would consist of planted coir logs with sod or marsh mats placed on the north side to reduce leakage, providing for a gentle transition back to the existing downslope grade. Minor low spots along the right bank may be treated with hydraulic roughness elements.

- **Measure 10—Planting and vegetation management on unfavorable flow paths**. This measure would involve planting willow stakes in configurations designed to form resistance or barriers to reoccupation or enlargement of flow paths that would increase risk to the sewer facilities. Willows would be planted in relatively dense clusters or rows to block flow paths. Multiple blocks may be constructed on a flow path to make it discontinuous and distribute flows onto the meadow surface. Where vegetation establishment by natural recruitment creates potentially unfavorable flow paths, vegetation would be removed or salvaged for use in other areas. An example of this measure is removal of willow saplings presently establishing on the sand bar formed in the 2011 avulsion. Willows in this area would be removed by hand excavation and any significant soil disturbance backfilled with sod clumps to prevent a willow grove from forming that could force flow to the north onto the right overbank and the District's easement.

Measures 11 and 12 would involve removal of the abandoned road fill and repair the erosional depression to restore hydrologic connectivity, restore floodplain function and capacity, and improve sediment transport in moderate flood events. These measures are expected to be completed in Year 1.

- **Measure 11—Removal of abandoned road fill.** This measure is intended to restore floodplain function and hydrologic connectivity through the removal of artificial fill. The existing fill restricts flood flows, potentially creating backwater conditions near the Bellevue Pump Station that reduce sediment transport capacity and increase the risk of avulsion. The fill also appears to have intercepted a secondary flow path and concentrated flows along the upstream face of the fill, resulting in scour along the toe of the fill and erosion of the meadow. In addition, the road fill is breached in at least one location, resulting in a scour hole and erosion on the downstream side of the fill. The portion of the existing road to the south of the channel would be removed. The road fill north of the channel is less distinct as a fill prism, and it may provide some benefit for protection of the sewer facilities by preventing channel alignments to the north of its present location. The existing road is well vegetated with the graminoid species found on the adjacent meadow surface. The existing vegetation would be removed as sod, set aside, and replaced after the road fill is excavated to a subgrade elevation that accommodates sod replacement at the adjacent meadow elevation.

- **Measure 12—Intermittent fill of erosional depression at road fill**. As noted above, an existing erosional depression has formed along the road fill because of the interception of a secondary flow path. Portions of this depression would be filled to plug the eroded flow path, and then would be revegetated either by using previously grown marsh mats or through plug planting and protection with a biodegradable erosion control blanket. The depression would be plugged intermittently, rather than filled completely, to retain some closed depressions and diversity in marsh elevations to enhance wildlife habitat. This measure would prevent further erosion, provide increased potential for sediment trapping, and enhance wildlife habitat value.

2.6 CONSTRUCTION ACTIVITIES, SCHEDULE, AND ONGOING MONITORING AND MAINTENANCE

This section describes the general construction methods that would be used for the AMP. Details for each phase of construction would be developed in plans and specifications or prescriptions for each phase based on the associated monitoring and reporting strategy described below.

2.6.1 ADAPTIVE MANAGEMENT PHASING

The AMP strategy is to implement the project in phases and follow with monitoring to assess any need for additional action. The methods used to attain project objectives rely on natural processes, including development of new flow paths and distributaries, in addition to sedimentation along the current alignment. The rate and extent to which these processes would occur is uncertain because of the difficulties inherent in predicting stream behavior and the natural hydrologic and sedimentation variability of the creek and marsh. As a result, an adaptive management approach is needed to work incrementally toward the desired outcome, reduce the risk of unintended consequences of the measures, and to provide flexibility to respond to natural hydraulic, erosion, and sedimentation processes as they occur. Monitoring would be used to determine whether sufficient progress is being made toward achieving the performance objectives to complete implementation within a 5-year period.

It is expected that several of the measures performed during Year 1 would be one-time measures. Other Year 1 measures may be implemented again in Years 2–5. Table 2-1 indicates which measures are expected to be implemented only in Year 1, and which may be implemented or repeated in subsequent years contingent upon monitoring results.

Although not expected, the potential exists for additional right-bank overflow plugs to be needed in Years 2–5. No measures are planned beyond 2018.

2.6.2 DEWATERING AND DIVERSION

Dewatering would be performed through the 5-year implementation period commensurate with the ground disturbance potential of the activity being performed. Dewatering plans would be developed separately each time ground-disturbing operations are proposed, following the guidance provided below. Principles for development of specific dewatering plans include isolating the work area through installation of biodegradable silt fencing or wattles, and possibly installation of a temporary dam across the channel at the downstream end of the study area; minimizing work in wet conditions; making provisions to pump any water that must be removed from the work area; and applying temporary best management practices (BMPs) to control sediment discharge to active or remnant channel areas.

Table 2-1 Implementation of Measures by Phase	
Year 1 Only	Years 1–5
Measure 1. Pilot channels off left bank near Bellevue Pump Station	Measure 2. Opening of left bank overflow paths (expected primarily in Years 1 and 2)
	Measure 3. Planting of favorable flow paths, including installation of willow fences, stakes, poles, and wattles along preferred channel alignments
	Measure 4. Removal of debris and fill at pre-1968 channel entrance (not in Year 1)
	Measure 5. Local widening/deepening of preferred flow paths
	Measure 6. Installation of hummocks and hydraulic roughness on right overbank (expected primarily in Years 1 and 2)
	Measure 7. Placement of fill hummocks (expected primarily in Years 1 and 2)
Measure 11. Removal of abandoned road fill	Measure 8. Miscellaneous fill (soil spreading) on floodplain
	Measure 9. Placement of right overbank flow plugs (expected primarily in Years 1 and 2)
Measure 12. Intermittent fill of depression along abandoned road	Measure 10. Planting of willow fences, stakes, poles, wattles, or sausals in undesirable flow paths
Source: NHC 2014	

It is expected that most dewatering of the right overbank area near Bellevue Pump Station would be accomplished through implementation of specific management measures in Year 1 and that the dewatering would be integral to achieving one of the principal goals of the project: to reduce the depth and duration of inundation on the easement. Therefore, the right overbank dewatering activities are permanent measures, rather than temporary measures to be used during periods when construction activities may be taking place.

During Year 1, areas of disturbance would first be isolated by installing biodegradable silt fences or wattles and building a temporary dam across the downstream end of the study area to ensure that no residual turbid water is discharged. The pilot channels (Measure 1) would then be constructed by hand crews to extend southward from the left bank. A sizeable portion of the total flow along the easement would likely be carried in this channel. Additional left-bank flow paths (Measure 2) would be opened through hand excavation, although these may not divert flow except during non-low-flow periods. A third permanent measure would consist of installing overbank flow plugs along the right bank (Measure 8); the flow plugs may be temporarily reinforced with gravel bags.

Implementing the above measures would result in progressive dewatering of the right overbank during the construction period. Depending on the effectiveness of these measures, a temporary diversion dike may be installed to force any residual flow exiting the right bank into the pilot channels. With all of the above measures in place, there would only be residual ponded water in the easement area and right overbank during summer/fall low flows. Any residual nonturbid water would be pumped to a designated irrigation disposal area in an unsaturated area of the meadow. Should there be residual continual flow or leakage, some minor excavation (lined with plastic) may be required to collect it at a centralized location, from which it could also be pumped into the disposal area. Because hand crews would implement these initial measures, it is not anticipated that water

exceeding 20 nephelometric turbidity units (NTU) in turbidity would be generated. Should that not be the case, waters in excess of 20 NTU would be disposed of as described below.

Although the easement area would be dewatered as described above, soft or wet soil conditions may persist because of high groundwater levels. Transport of materials and operation of equipment within the dewatered area has the potential to generate turbid residual water. During construction operations, wet conditions would be acceptable as long as incipient rutting does not occur, and in these conditions, construction may proceed with no removal of residual water. Should removal of residual water be needed, only occasional disposal is expected because of the limited operations that would take place and the measures used to minimize ground disturbance. Only LGP equipment (less than 5 pounds per square inch loaded) would be used, the easement (which would be the primary equipment access and would have the highest number of trips) would be protected with mats, and most remaining operations in the right overbank area would be performed with hand crews. In the event that residual water with turbidity higher than 20 NTU must be pumped, the water would be pumped through a chitosan sock into a lined sedimentation basin and then into the designated irrigation disposal area. As a contingency in Year 1, the contractor will be required to provide a temporary 4.000 gallon storage tank on the site. If the measures above do not provide sufficient capacity or water quality protection, turbid nuisance water will be pumped through a chitosan sock to the tank for initial settling, then discharged (at a maximum flow rate of 200 gpm and turbidity of 300 NTUs) to the gravity sewer..

2.6.3 STAGING AND ACCESS

Equipment access and material delivery for Year 1 activities would occur via Bellevue Avenue, which terminates at the District's Bellevue Pump Station. The nearest residential driveway is approximately 120 feet away from the entrance to the pump station. Only a limited staging area is required because of the small amount of equipment and materials needed for the work. A portion of the roadway and shoulder (estimated at 600 square feet) near the Bellevue Pump Station would be used for staging after installation of BMPs. Equipment would be refueled on the street in the area used by the District for pump station parking. For safety, pedestrian access to the meadow from Bellevue Avenue may be restricted or closed during construction.

Access into the primary area of operations for Year 1 would be through the Bellevue Avenue gate. Equipment use there would be limited to small LGP equipment. The easement itself would be protected with temporary mats or plates and would be the primary route used to transport materials into the right-overbank area. Elsewhere, as needed for equipment or foot traffic access that would cause rutting from multiple trips temporary road/walkway mats or steel plates would be laid down to minimize ground disturbance. Where rutting is not a threat, LGP equipment would be used to transport sod, marsh mats, coir logs, and other materials.

Access onto the abandoned roadway for fill removal would be provided along the north boundary of the meadow west of Bellevue Avenue for approximately 240 feet. This area would be protected by wood chips, and if needed, by plates or mats. The access would then follow the existing vegetated roadway fill to the north edge of the channel. This zone would be protected by wood chips overlain with plates or mats to avoid rutting. A temporary creek crossing would be needed for access to the southern portion of the abandoned roadway. This creek crossing is anticipated to be constructed using structural elements (logs, barrier rail) placed parallel to channel flow, and surfaced with steel plates.

For the area south of the creek, wood chips and plates would protect the zone where excavated material would be loaded into trucks. Excavation would begin at the southern terminus of the fill removal and proceed backward toward the channel. To avoid excessive compaction of meadow soils, any equipment used directly on the meadow surface along the abandoned roadway would be LGP equipment.

Wood chips and plates would be removed as construction proceeds on the fill removal south of the creek, and at the completion of fill removal on the north side of the creek. Chips would be removed to the extent feasible without damage to the meadow surface; some chips would likely remain after the completion of construction.

In Years 2 to 5, access via the Bellevue Avenue gate may be used to augment the Year 1 work with similar measures. The same access route to the area upstream of Bellevue Pump Station is anticipated to be used for these activities. No access to the road fill removal area and no stream crossing for equipment is anticipated in Years 2 to 5. The need for equipment access to the head of the pre-1968 channel for removal of debris and construction of a pilot channel would be assessed after observing spring runoff and collecting topographic information in 2014. If feasible, this work would be performed by hand crews. If equipment is determined necessary, it would be limited to small LGP equipment. Disposal of excavated material would be done using Measure 8 so that truck access is not needed. One-time access for LGP equipment would be made via U.S. 50 and Rubicon Trail and existing pedestrian access routes. No staging area is anticipated for this access route because no significant material quantities would be imported or exported. A detailed description of access and equipment staging for this work would be included in the construction documents for Year 2 or subsequent improvements.

2.6.4 GRADING

No excavation would be performed using equipment, except for removal of the abandoned road fill back to the prevailing meadow grade as described in Section 2.5.1. All other excavation would be performed by hand crews. All excavated sod would be salvaged and used as sod plugs, placed in existing low areas, or incorporated into the overbank plugs. Excess soil material excavated on or south of the left bank would be transported to the right overbank area and incorporated into fill hummocks. The use of LGP equipment is anticipated for transport of fill materials and pre-grown marsh mats. Fill would be placed primarily for construction of fill hummocks. The fill would be hand tamped to consolidate the material but would not require mechanical compaction. The fill would be composed of material removed from the abandoned roadway or excavated from the left bank area that has been verified as suitable for planting. Excess fill material would be transported off site.

Table 2-2 shows the maximum area over which excavation or fill would occur as a result of this project. These represent conservative estimates of surface area and volume over the full implementation period.

2.6.5 INSTALLATION OF VEGETATIVE MEASURES AND COIR LOGS

Section 2.5.1 describes various vegetative treatments that may be used independently or together with other treatments. All vegetative measures would be installed by hand, although as described previously, some materials (for example, marsh mats) may be transported to their locations using LGP equipment.

Marsh mats would be placed as hydraulic roughness elements or as caps on hummock fills. Plant plugs would be planted on 6-inch or 12-inch centers; the plant plugs would consist almost exclusively of Nebraska sedge and Baltic rush because these species grow rapidly and vigorously and are the dominant wetland species in the marsh. It is expected to take approximately 4 months to achieve dense growth and vigorous roots.

Table 2-2
Total Cut/Fill and Surface Area Alteration

Component	Dimension Totals (feet)	Surface Area (square feet)	Cut(-)/ Fill (+)Volume (cubic yards)
Access Routes	Varies, typically 10 to 12 feet wide	29,000	0
Pilot Channel	0.5 to 1.5 x 2–4 x 748	2,200	-50
Left-Bank Overflows	0–1 x 5–9 x 60	450	-8
Debris and Fill Removal at Pre-1968 Channel	Bank—4–8 x 40–50 Channel—0 to 1.5 x 6 x 50	1,000	-30/+15
Local Widening and Deepening on Favorable Flow Paths	Varies, typically 1–2 x 5 x 20	1,000	-45
Hummocks (vegetation only)	Varies, typically 20–30 x 40–70	4,750	0
Fill Hummocks	Varies, typically 20–30 x 30–40	4,750	+1,220
Miscellaneous Fill	Varies, typically 20–30 x 20–30	1,000	+60
Right-Bank Plugs	0.5 to 1.0 x 5–10 x 120	900	+17
Abandoned Road Fill Removal	1–2 x 20 x 350	7,000	-390
Intermittent Fill in Erosional Depression	1–2 x 15 x 75	1,150	+65
Planting Areas—Favorable and Unfavorable Flow Paths	Varies	10,000	0
Totals =	NA	72,000 Grading—28,250[1]	-523/+279 -244 net

Notes: NA = not applicable
[1] Excludes access routes and areas with vegetation planting only
Source: NHC 2014

Coir logs would be used as overbank flow plugs (Measure 9), as willow fences (Measure 10), and as part of hummocks and fill hummocks (Measures 6 and 7, respectively). They would be keyed in to half depth by salvaging the existing sod and incorporating any excavated soil into fill hummocks.

Sod plugs would be generated using sod removed during the formation of pilot channels, left-overbank flow paths, and right-overbank plugs, or the widening of alternative flow paths. These would fill in gaps between/ around marsh mats, would be incorporated into hummock fills, or would be used in right-overbank plugs.

2.6.6 EROSION CONTROL AND MINIMIZATION OF GROUND DISTURBANCE

Because of the scope and nature of proposed activities, the need for specific erosion control measures would be limited. No bare soil would be exposed at the completion of any phase of construction. The following measures would limit the potential for erosion and the introduction of sediment into Trout Creek:

- Construction would generally occur between August 1 and October 15, when creek flows are lowest and the meadow surface is driest. Planting activities not requiring ground disturbance may extend beyond October 15.
- All excavation, with the exception of fill removal from the abandoned road, would be performed by hand crews.

- Sod excavated by hand crews would be salvaged and used elsewhere. Material excavated from left-bank areas would be transported to the right-bank area and incorporated into hummock fills. Sod excavated off the abandoned road alignment would be replaced in-situ.
- Dewatering measures would limit the generation of turbid water.
- A temporary bridge would be used to cross Trout Creek to access the abandoned road. Structural support for the crossing would be placed on coarse bed material without excavation of the channel or meadow.
- Fill placement would be vegetatively stabilized. Marsh mats would be the preferred method to cover any placed fill. Locally, fill may be stabilized with erosion control fabric planted with sod or plugs.
- The meadow soils would be protected from compaction through the use of LPG equipment.
- Access routes used repeatedly would be protected using temporary measures such as wood chips, alone or in combination with steel plates, and temporary mats or walkways where LPG equipment or wheel barrows make repeated trips.

2.6.7 WATER POLLUTION CONTROL

Measures to protect water quality during and after construction have been discussed above. These measures include protecting access routes, minimizing ground disturbance by using hand crews and limiting the use of LPG equipment, minimizing the discharge of turbid water during construction, and preventing erosion and discharge of turbid runoff or floodwaters after the completion of construction activities.

Some discharge of turbid water would occur after activation of the pilot channel(s). This is unavoidable because the flowing water must come into contact with the channel. The pilot channels would be "seasoned" to reduce the initial flush of turbidity by unblocking the channel at its downstream terminus and then blocking flow with gravel bags once it reaches the downstream end. The water trapped in the channel would then be pumped to the irrigation disposal area. After 10 repetitions, the channel block would be removed. After 24 hours, turbidity in the downstream channel would be measured. If turbidity exceeds 20 NTUS, gravel bag blockages would again be installed and removed iteratively until downstream turbidity is maintained at less than 20 NTUs.

The pilot channels would include sod sills to promote stability during low flows. However, over the long term, enlargement of the pilot channels is expected; the eroded material could be transported either as suspended or bed load. Likewise, constructed left-bank overflow points would also be exposed to some erosion during high flows. Turbidity would be monitored during both construction and non-construction periods using turbidity meter stations with automated data collectors installed upstream and downstream of the work area near Bellevue Pump Station. Turbidity would be monitored during any construction activities with a potential to mobilize sediment using 20 NTU index vials and a portable field turbidity meter. Formation and enlargement of a new channel is expected during high flows. Data from the recording turbidity meters would be used to assess whether elevated turbidity levels associated with high flows decreases appropriately as flows recede, and this information would be used to determine whether any remedial measures are needed during the subsequent construction season.

2.6.8 PERFORMANCE METRICS

Performance metrics are oriented to two different themes: (1) achieving the District's goals in protecting its facilities and (2) increasing the function and values of the marsh adjoining its easement. The actions to be taken under this AMP are expected to result in subtle shifts in the physical and biological attributes of the study area. For example, the easement itself would not be filled to the extent that it is no longer inundated during normal snowmelt peaks, nor would the fill hummocks result in the creation of upland habitat on the easement. Similarly, Trout Creek, although it may occupy a new alignment south of the easement, is expected to flood at approximately the same discharge as it does currently in other areas of the marsh and would transport approximately the same quantity of bed load that it does currently.

The California Rapid Assessment Methodology (http://www.cramwetlands.org/documents) was evaluated to determine whether it could be used directly as a tool to evaluate the condition of various attributes of the marsh, and thereby serve as the basis of the adaptive management approach. To increase the resolution through which the project could be evaluated, the following project-specific performance metrics would be used:

- flow reduction on right overbank (aggradation/degradation),
- extent of inundation during low flows, and
- cover and vigor of planted wetland vegetation.

Based on the above metrics, the following success criteria were established:

- At approximately bankfull stage, as measured 700 feet upstream of the Bellevue Pump Station, not less than 90 percent of the flow shall pass through new pathways off the left bank (i.e., not more than 10 percent of the flow shall remain in the existing channel downstream of the left-bank pathways). At flows of approximately 50 cubic feet per second (cfs) as measured at the Tahoe Valley gauge, corresponding to the 80-percent-exceedance flow, there shall be no standing or flowing water on the easement. This discharge is equivalent to the mean discharge in late June, and flows for the remainder of the summer and fall are typically lower.

- Planted wetland herbaceous vegetation and sod shall be established at 80 percent of baseline cover after 1 years and 85 percent of baseline cover after 2 years and shall exhibit good vigor. Planted woody vegetation shall be established at 80 percent survival and exhibit good vigor. Willows in willow fences shall be established to provide a continuous flow barrier over 100 percent of the planted length. Wetland herbaceous native species composition shall be 90 percent of baseline after 1 year and 95 percent of baseline after 2 years. Wetland species, combining species classified as obligate and facultative, shall equal or exceed baseline after 2 years.

- Hummock fills shall maintain functional wetland characteristics for vegetation and periodic inundation, continuing to meet criteria as jurisdictional wetlands.

SUCCESS CRITERIA MONITORING

The District has established 13 monumented cross sections near the Bellevue Pump Station, three stage recorders on the existing channel, and one stage recorder in a groundwater well in Bellevue Avenue near the pump station. Continuous stage records, annual surveys, and semiannual photo monitoring would be conducted using these

established locations. In addition, flow measurements and site observations would be made to evaluate progress toward success criteria. A monitoring plan has been developed and is included as Appendix E of the AMP.

Monitoring would be performed to assess the progress toward meeting each success criterion as described below. Monitoring would be conducted annually, continuing for 2 years after the final implementation phase (maximum of 6 years after the Year 1 Plan is implemented).

- *Right overbank flow reduction.* Monitoring would consist of measuring streamflow at bankfull stage at a point approximately 700 feet upstream of the Bellevue Pump Station and at a point within the existing right overbank near the pump station.

- *Absence of inundation.* The streamflow record from the Tahoe Valley gauge would be used to document the date following the snowmelt recession on which 50 cfs is first observed. The stage recorders would then be queried to determine the water surface elevation on that date. Those elevations would be used, in conjunction with an annually updated survey at the 13 established cross sections, to map topographic changes and inundation on the easement. This information would be supplemented by photos from six established photo points in summer and late fall of each year.

- *Vegetation cover, vigor, and growth.* Vegetative cover and vigor would be monitored using transects, site observations, and photos. Monitoring would be based primarily on visual observations for each of the implemented features, but would be supplemented by transects for the abandoned road fill removal and hummocks. Transects would be monitored for baseline and constructed conditions. Three transects would be established in the road fill removal area and three would be established across constructed fill hummocks. Transect information would be supplemented by six established photo points in summer and late fall of each year. Willows would be observed, counted, and measured for mean height at each project feature. Willow observations would be supplemented by photo documentation.

THRESHOLDS FOR DEVELOPING AND IMPLEMENTING PLANS FOR YEARS 2–5

Based on monitoring, additional measures would be implemented in Years 2–5 to ensure that the project meets its objectives within the 7-year period. Thresholds to initiate additional action are listed below.

Year 2

- Less than a 60-percent reduction in right overbank flows at bankfull stage.
- Inundation of more than 30 percent of the length of the easement at 50 cfs.
- Evidence of headcut migration toward pump station.
- Substantial erosion at any location on the existing channel right-bank floodplain.
- Trends suggesting potential failure to meet criteria for planted vegetation within 2 years.

Year 3

- Less than an 80-percent reduction in right-overbank flows at bankfull stage.
- Inundation of more than 20 percent of the length of the easement at 50 cfs.
- Evidence of headcut migration toward pump station.
- Substantial erosion at any location on the existing channel right-bank floodplain.
- Trends suggesting potential failure to meet criteria for planted vegetation within 2 years.

Years 4 and 5

- Less than a 90-percent reduction in overbank bankfull channel capacity.
- Inundation of the easement at flows less than 50 cfs (as measured at the Tahoe Valley gauge).
- Trends suggesting potential failure to meet criteria for planted vegetation within 2 years.

To ensure long-term project success, the District may elect to implement additional actions even if the thresholds above do not occur, provided that the scope of the actions is within that described in the AMP. Other minor actions may be performed at any time using hand crews to repair or enhance installed measures, maintain plantings, and remove debris.

OTHER MONITORING

Additional monitoring would be performed during implementation to document baseline conditions, to ensure that resources are protected during construction, and to document conditions throughout the study area over the monitoring period. Monitoring measures are listed below.

Baseline Monitoring

- Document existing topography.
- Map the extent of inundation at Tahoe Valley discharge of 50 cfs.
- Establish permanent photo points and document existing conditions.
- Map occurrence and condition (approximate age and height) of woody riparian vegetation in the study area.
- Measure baseline cover on wetland transects in road fill and proposed hummock areas.
- Monitor stream turbidity to ascertain the range of background turbidity across the project area.

Construction Monitoring

- Conduct automated turbidity monitoring above and below the study area.
- Measure the width of the pilot channel at five points every 3 days while crews are operating.

Post Implementation: Years 2–7

- Conduct photo documentation at all photo points on three dates each year (50 cfs on recession, August 15, October 15), depending on flow conditions.
- Continuously operate three stream stage recorders (relocation may be necessary depending on channel behavior) and a groundwater stage recorder.
- Mapping of flow paths established after Year 1 implementation and the cross section measurements taken at monumented cross sections.
- Conduct topographic mapping and generation of digital surfaces to quantify aggradation and degradation on the right overbank.
- Measure transects in abandoned road fill removal and hummocks.
- Measure willow survival and growth at each project feature.

- Conduct photo documentation at photo points for wetland vegetation and at project features for woody riparian vegetation.

REPORTING

Reporting is intended to confirm that the District is in conformance with permits issued for the project and to identify approved measures to be implemented in Years 2–5. Monitoring reports would include proposed work plans for measures to be implemented later in the reporting year and a brief rationale for their selection.

Each annual monitoring report would measure the progress of the project toward meeting the success criteria stated above. The report also would provide information about channel aggradation or erosion within the confines of the area mapped during the baseline topographic survey, and would include results for the recording turbidity meters.

Annual reports would be submitted to permitting agencies by no later than July 20 during Years 2–5. Although the 50 cfs index flow corresponds approximately to a July 1 mean, that flow may not be met until considerably later during wet years. As a result, some extrapolation of the inundated area based on higher stream stages may be necessary. For post-construction years (Years 6 and 7 if implementation occurs over 5 years), the annual report would be submitted by December 1.

2.7 OTHER PROJECTS IN THE PROJECT VICINITY

The watershed and surrounding areas have been substantially altered by land use practices during the past 150 years. The opening of the Comstock silver mining boom in Nevada in 1859 prompted a surge in timber harvesting; agricultural and developed land uses also increased. From the 1900s to the present, developed land uses have continued to increase, particularly since 1960. For example, the population of South Lake Tahoe has increased five-fold since 1960 (CSLT 2003). As a result of these changes in land use, the watershed has experienced ecosystem degradation that is typical of what has occurred elsewhere in the Tahoe Basin (Murphy and Knopp 2000). The watershed has been modified from its original conditions by human activities such as logging, livestock grazing, and road construction, and by residential, commercial, and industrial developments. Many of these past actions continue to affect resources in the project vicinity and along the south shore of Lake Tahoe.

The past, present, or reasonably foreseeable, probable future projects considered in the cumulative analysis presented in Section 3.18, “Mandatory Findings” and Section 4.21, “Findings of Significance” are those projects that are located within the Trout Creek and Upper Truckee River watershed and the south shore area of the Tahoe Basin, and that have been identified as potentially affecting resources that also may be affected by the proposed project. Table 2-3 lists these related projects. A preliminary list of projects was compiled by reviewing available information regarding planned projects (including agency Web sites), and by contacting staff members from the City of South Lake Tahoe, the Conservancy, El Dorado County, Lake Valley Fire Protection District, the California Department of Parks and Recreation, TRPA, and the U.S. Forest Service. Projects were then reviewed for inclusion in the cumulative impact analysis based on three criteria:

(1) The project is reasonably foreseeable because it has an identified sponsor and has initiated CEQA, TRPA, and/or National Environmental Policy Act environmental review or other regulatory procedures.

(2) Available information defines the project in sufficient detail to allow meaningful analysis.

(3) The project could affect resources potentially affected by the proposed project.

The projects within each of these categories are listed in Table 2-3

Table 2-3
Related Projects Considered in the Cumulative Impact Analysis

Past Projects
Historic Timber Harvests and Cattle Grazing: Most forests in the watershed have been grazed and logged during the past 150 years, and an associated network of skid trails, flumes, logging roads, and railroads has been constructed during that time (Murphy and Knopp 2000). This extensive grazing, logging, and road construction altered biological, hydrologic, geomorphic, and other resources in the watershed, including in the project vicinity. Some logging occurred in the project vicinity, and the study area was grazed for more than 100 years beginning in the 1860s (Lindström 1995, 1996). Both this grazing and the network of water-impounding and diverting dams, gates, and miscellaneous earthen works affected resources in the project vicinity.
Fire Suppression: Before the late 1800s, fires were frequent in the Tahoe Basin, and were mostly of low to moderate intensity. Since that time, changes in land use and fire management have altered the frequency and intensity of fires. In particular, since about the 1920s, fire suppression has resulted in a several-fold increase in tree density and fuel loads in most forests in the Tahoe Basin (Barbour et al. 2002:461–462). These changes in forest structure have altered biological habitats and increased the frequency of high-intensity fires and the vulnerability of trees to insect outbreaks.
Species Introduction: Nonnative species have been accidentally or deliberately introduced into the aquatic and terrestrial ecosystems of the Tahoe Basin. Species that have become particularly abundant and are present in the project vicinity include cowbird, beaver, brown trout, brown bullhead catfish, cheatgrass, and Eurasian milfoil (Conservancy and DGS 2003). These species have been altering the resources of the project vicinity, the Upper Truckee River watershed, and the south shore of Lake Tahoe.
Urban Development: During the past 150 years, a portion of the watershed of the Upper Truckee River has been converted to developed land uses. Urban development has been altering hydrologic, geomorphic, and other resources in the watershed, including the project vicinity. Several development projects have adversely affected geomorphic processes, water quality, and habitats. In particular, construction of the Tahoe Keys Marina and Tahoe Keys residential area has substantially affected resources in the project vicinity, as described separately below.
Newlands Project—Tahoe City Dam: Since 1870, a dam has been operated at Tahoe City to regulate the flow of water from Lake Tahoe into the Lower Truckee River. After enactment of the Reclamation Act of 1902, the Secretary of the Interior authorized construction of the Newlands Project, and during 1909–1913, the dam at Tahoe City was reconstructed to its present configuration. This dam controls the top 6.1 feet of storage at Lake Tahoe as a Federal reservoir. The Truckee River Operating Agreement governs the operation of this dam, and consequently the surface elevation of Lake Tahoe (Reclamation 2008), which has a substantial effect on the resources of the project vicinity.
Lower West Side Wetland Restoration Project: During the summers of 2001 and 2002, approximately 12 acres of former wetland filled during Tahoe Keys construction were excavated 3–5 feet and subsequently restored as wetland and reconnected to the Upper Truckee River as part of the active floodplain. The Lower West Side Wetland Restoration Project area is located next to Tahoe Keys Marina behind Cove East Beach, west of the Upper Truckee River.
Upper Truckee Middle Reaches 3 and 4 Restoration Project: This project was implemented by CSLT with funding from the Conservancy and Reclamation and completed in 2011. The project is located along the Upper Truckee River from roughly 0.5 mile northeast of the northern runway limit of the Lake Tahoe Airport to approximately the midpoint of the runway (Reclamation et al. 2008). The objectives were to restore natural river and floodplain processes by increasing overbank flow and depositing sediment onto the floodplain, and to improve habitat for terrestrial and aquatic wildlife. The total area of disturbance associated with this project was approximately 28 acres.
Trout Creek Restoration Project: Geomorphic problems with Trout Creek stem from channelization of the lower portions of this stream during construction of a 19th-century railroad route. The straightened channel produced an incised and eroded bed, sand and sediment deposition, and degraded aquatic and riparian habitat conditions. As a part of efforts to control sediment delivery into Lake Tahoe and stabilize stream channels in the watershed, a restoration project began on Trout Creek to reconstruct natural channel sinuosity, pool-riffle sequences, substrate composition, bank stability, and hydrologic function. The project site was located on lower Trout Creek meadows, above and below the confluence with Cold Creek. Restoring the upper channelized section of stream (above Cold Creek) to control erosion and stabilize the channel involved completely replacing this upstream reach with an adjacent reconstructed sinuous channel. The channel and bank of the downstream reach (below Cold Creek) were only partly reconfigured, interspersed with existing channel forms where natural sinuosity occurred. The reconstruction project was completed during 2000–2001, with flow of the creek redirected into the new channels in summer 2001 (Herbst 2009:2–3).

Table 2-3 Related Projects Considered in the Cumulative Impact Analysis
Multiagency Erosion Control Projects: Multiple agencies have completed erosion control projects throughout the Upper Truckee River watershed and elsewhere in the Tahoe Basin to restore the clarity of Lake Tahoe. Most projects addressed erosion control and source runoff improvements, as well as the implementation of BMPs to capture fine sediment and other pollutants before they reach the lake. Erosion control projects and advance treatment methods are implemented to reduce both the volume of water running off roadways and the amount of fine sediment, nitrogen, and phosphorus discharging into Lake Tahoe. El Dorado County, the Conservancy, TRPA, Caltrans, CSLT, and USFS have implemented erosion control measures along Angora Creek, U.S. 50, North Upper Truckee Road, the Al Tahoe neighborhood, and other roadways, including forest roads and trails. Measures include redesigning and replacing inadequately sized culverts, inlets, and outfalls; implementing revegetation and other source-control measures on eroding slopes; and installing curbs and gutters, rock bowls at culvert outlets, vegetated swales, and sediment traps and other BMPs. Specific project examples in the Upper Truckee River watershed include the El Dorado SR 89, Segment 1–Luther Pass to Meyers Water Quality Improvement Project, Apalachee 3B–Water Quality Project, and U.S. 50 Caltrans Water Quality Projects.
High Meadows Forest Plan Designation; Ecosystem Restoration; and Access Travel Management Project: This USFS project was located on 1,790 acres in the upper Cold Creek watershed, part of the Trout Creek watershed (USFS 2008). Its purpose included guiding management of the property and restoring the channel of Cold Creek through the High Meadow Complex to increase water and sediment storage, to allow it to function as a wet meadow ecosystem, and to provide for current and future recreation needs and reduce the impacts associated with recreation. The project was completed in 2012.
Present and Reasonably Foreseeable Projects
Sunset Stables Restoration Project: This project proposed by the Conservancy and USFS would be located in a 739-acre management planning area near the Lake Tahoe Airport, and adjacent to and directly south of the Upper Truckee Middle Reaches 3 and 4 Restoration Project (DGS and Conservancy 2008). Its goals include restoring a more naturally functioning river and floodplain, improving water quality by restoring floodplain processes, and reducing erosion from bank failure. The project would restore, enhance, and protect aquatic and terrestrial habitat diversity and quality and provide for appropriate and compatible public access. To accomplish these goals, it would restore a portion of the 2.6-mile-long reach of the Upper Truckee River that is in the management planning area. Environmental review (IS/MND and EA/FONSI) is complete and construction of the first phase (Reach 5) began in 2012 and will be complete in 2016. Construction of the second phase (Reach 6) has not secured construction funding and would begin construction in 2015 at the earliest and last for 4 years.
Upper Truckee River Restoration and Golf Course Reconfiguration Project: This State Parks and Reclamation project would occur in the Upper Truckee River watershed at Washoe Meadows SP and Lake Valley SRA. The purpose of the project is to improve geomorphic processes, ecological functions, and habitat values of a 1.5-mile reach of the Upper Truckee River, helping to reduce the river's discharge of nutrients and sediment that diminish Lake Tahoe's clarity while providing access to public recreation opportunities in Washoe Meadows SP and Lake Valley SRA. The EIR/EIS/EIS has been completed and the project is currently on hold pending CEQA litigation. Construction could begin in 2015, and would last for 3–4 years (with most in-channel work occurring during one season).
Upper Truckee River and Marsh Restoration: This project proposed by the Conservancy, the DGS Real Estate Services Division, and Reclamation is located within the Upper Truckee Marsh, including within the study area. Its objectives include restoring natural and self-sustaining river and floodplain processes and functions; protecting, enhancing, and restoring naturally functioning fish and wildlife habitats; improving water quality through enhancement of natural physical and biological processes; protecting and, where feasible, expanding Tahoe yellow cress populations; and enhancing the quality of public access, access to vistas, and environmental education. The draft EIR/EIS/EIS is complete and the final EIR/EIS/EIS in preparation. Construction could begin in 2016 and would last for 3 years, and in-channel work could last for approximately 2.5 construction seasons.
Multiagency Erosion Control Projects: Multiple agencies including CSLT, Conservancy, and El Dorado County are completing various erosion control projects in the project vicinity including Sierra Tract, Montgomery Estates, Christmas Valley and Sawmill. Some erosion control projects also have recreation components to them. Projects include stormwater conveyance and treatment, roadside stabilization, and vegetation. Project schedule and phasing are dependent on funding opportunities.

Table 2-3 Related Projects Considered in the Cumulative Impact Analysis
U.S. 50/Stateline Corridor Project: USFS, partnering with FHWA, Tahoe Transportation District, CSLT, TRPA, the Nevada Department of Transportation, and Caltrans are evaluating alternatives for the U.S.50/Stateline Corridor Project. As identified in the TRPA EIP, recommended alternatives include water quality, intersection, roadway, pedestrian, bicycle, air, and scenic improvements. Several other projects identified in the EIP will be implemented as a packaged project. U.S. 50 is the principal highway into South Lake Tahoe. Entering the Tahoe Basin west of Echo Summit, it continues through the south shore, crosses Stateline, continues to the east shore, and exits the basin at Spooner Summit. A major portion of traffic enters the Tahoe Basin through this route, and traffic volumes are predicted to increase 27 percent over the next 20 years. Traffic delays have a major effect on the lake's environment, causing impacts on air quality, and on pedestrian, bicycle, transit, and vehicle travel. The draft EIR/EIS is currently being prepared.
Edgewood Lodge and Golf Course Improvement Project: The approximately 231-acre project site is located within the Edgewood Tahoe Golf Course and includes a small area to the east across U.S. 50. The Edgewood Lodge and Golf Course Improvement Project would involve constructing a new lodge complex with associated parking, and other improvements. The project would consist of construction of a 194-unit lodge complex, including accessory uses; expansion of the South Room at the Edgewood clubhouse; relocation of two existing lakefront residential lots; construction of a new public beach, lakefront recreation facilities, and pedestrian path; pier removal, relocation, and reconstruction; golf course and cart path modifications; and implementation of five threshold improvement projects. The final EIR was completed and the project approved. Construction could begin in 2014.
Greenway Bike Trail Project: This project by the Conservancy would be located between the intersection of Pioneer Trail and U.S. 50 in Meyers, California, and Van Sickle Bi-State Park at Stateline, Nevada. A portion of this project site is in the watershed of the Upper Truckee River and a portion is in the Trout Creek watershed. The project would also include restoration actions and fuel reduction actions along the trail route. The project would cross waterways on bridges or raised platforms, and the construction of these crossings would require some in-channel construction activities. Phase 1 (Sierra Boulevard to Van Sickle Bi-State Park) has completed environmental review and permitting (IS/MND and EA/FONSI), and pending funding and easement acquisition, Phase 1 could begin construction in 2014. The proposed future phases of the trail would need to complete environmental review and obtain construction funding. The schedule for future phases is unknown at this time.
Lake Tahoe Boulevard Enhancement Project: This project by the Conservancy, El Dorado County, and USFS would be located in the watershed of the Upper Truckee River in a corridor along Lake Tahoe Boulevard from Tahoe Mountain Road to South Lake Tahoe. It would involve constructing a 2-mile-long bike trail along the road and implementing erosion control measures. The project would not involve construction activities in the channel of a perennial waterway. Environmental review is in process. Construction could begin in 2014 and could continue for 2 years.
Multi-Agency Fuel Reduction Plan: This plan is a multiagency strategy for coordinating implementation of fuel reduction treatments in the Tahoe Basin (USFS et al. 2007). Treatment types (i.e., general prescriptions) include community defensible space–wildland urban interface, urban core, defense zone, and general forest prescriptions. All of these prescriptions reduce surface and ladder fuels, and tree density, to reduce flame lengths and the likelihood of crown fire. Treatment methodologies include thinning, pruning, prescribed burning, and masticating and chipping. The strategy identifies a substantial portion of the Upper Truckee River watershed as priority areas for treatment. These treatments would not involve construction activities in the channel of perennial waterways. Fuel reduction treatments are ongoing and the plan identifies priority areas for treatment during the next 5 and 10 years.
Angora Fire Restoration and Redevelopment: Much of the Tahoe Mountain/North Upper Truckee neighborhood has been mostly redeveloped since the Angora Fire in summer 2007 destroyed 254 structures. Provisions allowing property owners to pursue the replacement of previously existing development included expedited permitting for landowners and granting of fee waivers and allocation requirements. Coverage that was preexisting, including coverage located within SEZs and on steep slopes, may be redeveloped. Various agencies including the Conservancy, El Dorado County, and USFS implemented erosion control techniques and channel reconstruction and meadow/wetland restoration measures, and helped to remove hazardous trees in the area. Angora Fire restoration and redevelopment may continue at a much slower rate than immediately after the fire.

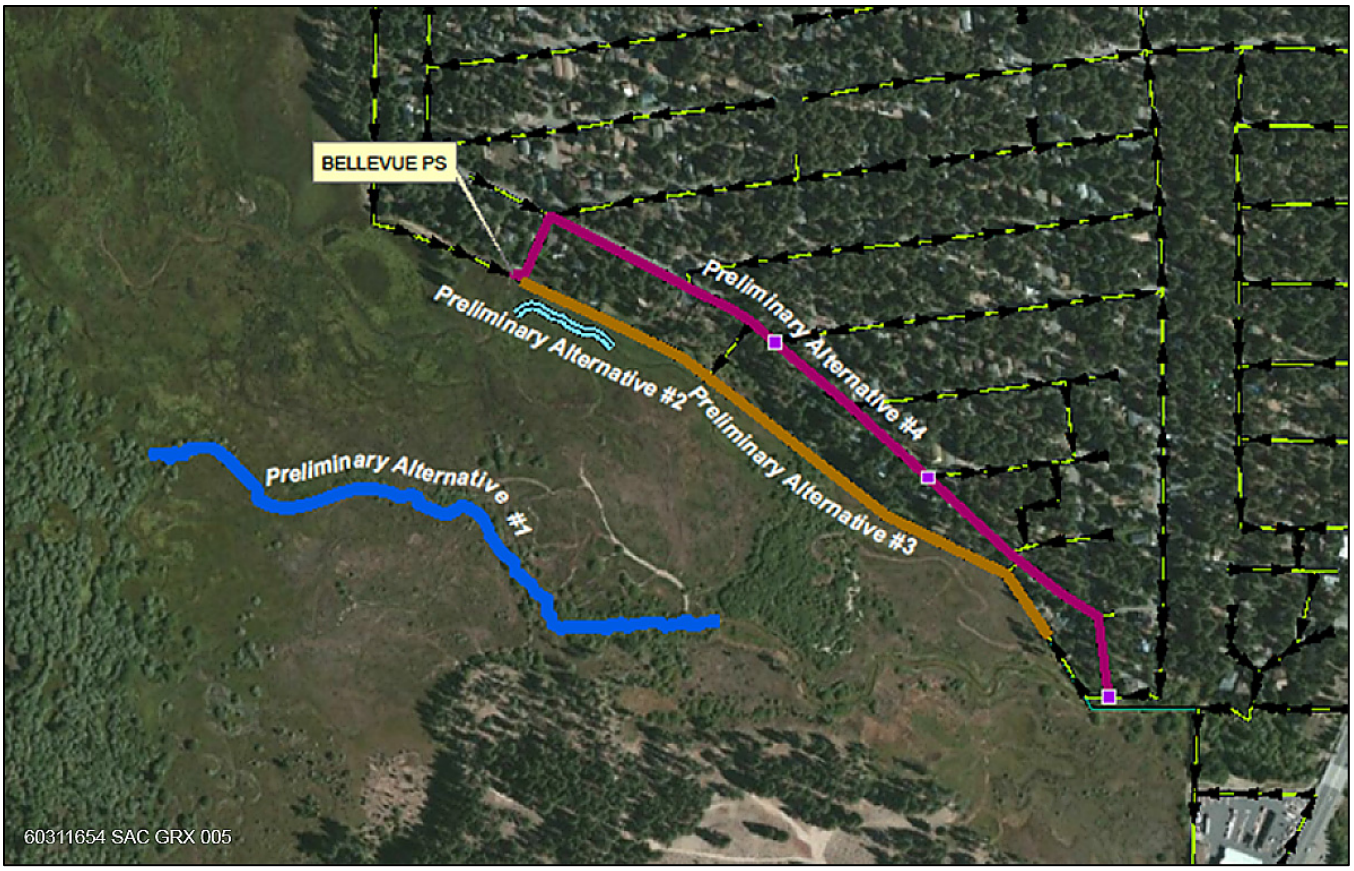
Table 2-3 Related Projects Considered in the Cumulative Impact Analysis
Additional Urban Development: This urban development would consist of numerous small residential, commercial, industrial, and infrastructure projects in the project vicinity and elsewhere in the watershed of the Upper Truckee River and south shore of Lake Tahoe. These projects might include some construction activities in the channel of perennial or intermittent waterways (e.g., at road and utility crossings). Based on current land use planning and projected changes in population, additional urban development in the project vicinity, the Upper Truckee River watershed, and the south shore of Lake Tahoe is likely. Based on a review of land cover and general plan land use designations within the watershed approximately 8 percent of the watershed is in natural vegetation within areas zoned for developed land uses, and thus a portion of this natural vegetation could be converted to developed land uses in the foreseeable future. However, zoning does not necessarily guarantee development because most of the Tahoe Basin is fully developed and most improvements are within existing developed land uses. Most development in the area consists of numerous small residential, commercial, industrial, and infrastructure projects. These projects might include some construction activities in the channel of perennial or intermittent waterways (e.g., at road and utility crossings). Additional urban development is ongoing and anticipated to be ongoing throughout implementation of the proposed project.
Notes: BMP = best management practice; CAL FIRE = California Department of Forestry and Fire Protection; Caltrans = California Department of Transportation; Conservancy = California Tahoe Conservancy; CSLT = City of South Lake Tahoe; DGS = California Department of General Services; EA = environmental assessment; EIP = Environmental Improvement Program; EIR = environmental impact report; EIS = environmental impact statement; FHWA = Federal Highway Administration; FONSI = finding of no significant impact; GIS = geographic information system; IS = initial study; ND = negative declaration; Reclamation = U.S. Bureau of Reclamation; SEZ = Stream Environment Zone; SP = (California) State Park; SR = State Route; SRA = State Recreation Area; State Parks = California Department of Parks and Recreation; TRPA = Tahoe Regional Planning Agency; U.S. 50 = U.S. Highway 50; USFS = U.S. Forest Service. Source: Data compiled by AECOM in 2014.

2.8 OTHER ALTERNATIVES CONSIDERED BUT REJECTED FROM FURTHER ANALYSIS

Several alternatives or project elements were considered during the early project design process. These preliminary alternatives are presented in Exhibit 2-7 and summarized below. Additional information is presented in Appendix A, considerations related to schedule, cost, permitting constraints, and/or the inability to avoid or substantially lessen significant environmental impacts. The District considered five preliminary alternatives representing a range of varied approaches that included the following:

1. Opening and reintroducing flows to an older Trout Creek channel;
2. Excavating and rerouting flows back to the preexisting Trout Creek channel;
3. Raising the grade of the District's easement;
4. Relocating the District's sewer facilities outside the SEZ; and
5. Using multiple low-impact projects to reduce the risk of stream processes on the District facilities within the SEZ.

The preliminary alternatives 1, 2, and 3 were modified and incorporated into alternative 5 which the District, the Conservancy, and Lahontan RWQCB staff agreed was the preferred approach consistent with existing uses of the study area. The preliminary alternative 5 was used as the basis to develop the AMP that is evaluated in this Initial Study.



Source: STPUD 2014, NHC 2014, TRPA 2014, Adapted by AECOM 201

Exhibit 2-7 **Preliminary Alternatives Considered but Eliminated**

3 CEQA ENVIRONMENTAL CHECKLIST AND EXPLANATIONS

PROJECT INFORMATION		
1.	Project Title:	Upper Truckee Marsh Sewer Facilities Protection Project
2.	Lead Agency Name and Address:	South Tahoe Public Utility District 1275 Meadow Crest Drive South Lake Tahoe, CA 96150
3.	Contact Person and Phone Number:	Ivo Bergsohn, PG, CHG Hydrogeologist 530.543.6204
4.	Project Location:	Upper Truckee Marsh—South Tahoe Public Utility District Easement and Adjacent Areas in the Upper Truckee Marsh
5.	Project Sponsor's Name and Address:	South Tahoe Public Utility District 1275 Meadow Crest Drive South Lake Tahoe, CA 96150
6.	General Plan Designation:	Conservation, Recreation, Residential
7.	Zoning:	TRPA Plan Area Statements 100 (Truckee Marsh) and 99 (Al Tahoe); see Chapter 2, "Project Description"
8.	Description of Project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)	See Chapter 2, "Project Description."
9.	Surrounding Land Uses and Setting: (Briefly describe the project's surroundings)	See Section 2.2.1, "Project Location" and 2.2.2, "Project Background" in Chapter 2, "Project Description."
10:	Other public agencies whose approval is required: (e.g., permits, financing approval, or participation agreement)	U.S. Army Corps of Engineers Tahoe Regional Planning Agency Lahontan Regional Water Quality Control Board California Department of Fish and Game California Tahoe Conservancy

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

☐ Aesthetics	☐ Agriculture & Forestry Resources	☒ Air Quality
☐ Biological Resources	☒ Cultural Resources	☐ Geology & Soils
☐ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials	☐ Hydrology & Water Quality
☐ Land Use & Planning	☐ Mineral Resources	☒ Noise
☐ Population & Housing	☐ Public Services	☐ Recreation
☒ Transportation/Traffic	☐ Utilities & Service Systems	☒ Mandatory Findings of Significance

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.

☒ I find that although the proposed project COULD have a significant effect on the environment, there WILL NOT be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.

☐ I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.

☐ I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Ivo Bergsohn	Hydrogeologist
Printed Name	Title
South Tahoe Public Utility District	
Agency	

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and

   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

3.1 AESTHETICS

ENVIRONMENTAL ISSUES		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I.	**Aesthetics. Would the project:**				
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

3.1.1 ENVIRONMENTAL SETTING

The study area is located within the Upper Truckee Marsh, which is largely undeveloped. The scenic character of the study area is defined primarily by the presence of Lake Tahoe, the Upper Truckee River and Trout Creek in the landscape, and existing habitat features (willow scrub–wet meadow, montane meadow, and lodgepole pine forest). The river and creek provide perennial water features visible in the landscape, adding interest, variety, and vividness. Security lighting is located on one outbuilding at the Bellevue Pump Station; there are no other sources of light and glare from the study area. Residential homes located adjacent to the study area provide sources of light and glare to the study area. The marsh is in a unique location that provides views that can rarely all be seen from one location in the Tahoe Basin, which contributes to the area's high visual quality.

Views of the study area from the surrounding community are provided primarily at the ends of public, mostly residential streets that abut the Upper Truckee Marsh. U.S. Highway 50 (U.S. 50), located south of the study area, is officially designated as a scenic highway, and Lake Tahoe, located north of the study area, is a scenic vista. However, the study area is not visible from either of these locations because of intervening distance and vegetation.

TRPA has developed a system for addressing scenic resources by using a set of travel route ratings. Roadways in the Tahoe Basin have been divided into 53 travel segments known as "roadway travel units," each representing a continuous two-directional viewshed of similar visual character. The roadway unit closest to the study area is Roadway Travel Unit 35, which includes U.S. 50. Like scenic roadways, the shoreline of Lake Tahoe has been divided into 33 segments known as "scenic shoreline units." The shoreline unit closest to the study area is Shoreline Unit 33, Truckee Marsh, which includes Lake Tahoe.

TRPA's 2011 threshold evaluation report determined that the roadway travel unit near the study area has been maintained since 2001, but continues to be in nonattainment of the threshold standard for this unit (TRPA 2012). The 2011 threshold evaluation also did not show a change for the shoreline travel unit near the study area, and this travel unit continues to be in attainment.

No TRPA-designated public recreation areas or campgrounds and no mapped scenic resources have views of the study area.

3.1.2 DISCUSSION

a) Would the project have a substantial adverse effect on a scenic vista?

Less than Significant Impact. The proposed project would include adaptive management measures such as constructing pilot channels, creating hummocky surfaces along unpreferential flow paths, implementing vegetation enhancement measures, and removing impediments caused by road fill. However, none of these activities would be visible from any scenic vistas, including Lake Tahoe or U.S. 50. In addition, implementing the adaptive management measures would involve the use of natural materials and revegetation that would be consistent with the natural setting and visual character of Trout Creek and the Upper Truckee Marsh. Willow use adjacent to neighboring communities would be limited to allow access to the District's easement; however, under current conditions this area supports willow habitat and they could potentially grow on their own. The District would continue to manage willows on the easement to the extent necessary to allow continued access. This impact would be less than significant.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Less than Significant Impact. The proposed project would not require any tree removal, and no rock outcroppings or historic buildings would be affected. As discussed in item a above, project activities would not be visible from Lake Tahoe or U.S. 50, and the adaptive management measures would be consistent with the natural setting of the study area. For these reasons, the proposed project would not damage any scenic resources. This impact would be less than significant.

c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Less than Significant Impact. As discussed in item a above, the existing visual character of the study area would be maintained. The project does not propose construction of any new buildings or structures or any changes to the Bellevue Pump Station. As mentioned previously, implementing the proposed adaptive management measures would involve using natural materials and revegetation that would be consistent with the natural setting and visual character of Trout Creek and the Upper Truckee Marsh. This impact would be less than significant.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No Impact. The project does not propose any exterior lighting or building modifications. Therefore, no impact related to light and glare would occur.

3.2 AGRICULTURE AND FORESTRY RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. Agriculture and Forestry Resources.				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

3.2.1 ENVIRONMENTAL SETTING

There are no active agricultural land uses in or near the study area. The reach of Trout Creek within the study area is located within the Upper Truckee Marsh in a broad wet meadow. Land uses south and southwest of the creek are primarily recreational and conservation and the Al Tahoe residential subdivision is located north and northeast of the study area. (See Section 3.10, "Land Use and Planning," for further discussion of existing land uses in the study area.)

No land in or near the study area has been designated by the California Department of Conservation (DOC) as Important Farmland (i.e., Prime Farmland, Farmland of Statewide Importance, or Unique Farmland) or land held under a Williamson Act contract (DOC 2013).

3.2.2 DISCUSSION

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. No active agricultural land uses occur in or near the study area, nor has land in the study area been designated by DOC as Important Farmland. Therefore, implementing the proposed project would not directly or indirectly convert Important Farmland to nonagricultural uses. No impact would occur.

b) Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

No Impact. No lands in or near the study area are held under a Williamson Act contract (DOC 2013). Therefore, implementing the proposed project would not conflict with existing zoning for agricultural uses or conflict with a Williamson Act contract. No impact would occur.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. The study area is not zoned as forestland, timberland, or a Timberland Production Zone. Therefore, implementing the proposed project would not conflict with existing zoning for, or cause rezoning of, forestry resources. No impact would occur.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. Section 12220(g) of the California Public Resources Code defines forestland as land that can support 10 percent native tree cover and woodland vegetation of any species (including hardwoods) under natural conditions, and that allows for management of one or more forest resources (timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation) and other public benefits.

Woodland vegetation in the project vicinity ranges from predominantly forested areas (Jeffrey pine forest and lodgepole pine forest) at the highest elevations on the edges of the meadow to riparian areas along Trout Creek. The Upper Truckee Marsh provides regionally important ecological, water quality, aesthetic, and recreational values, including wildlife habitat for a variety of species both common and special-status. The marsh is very accessible and is used extensively by the public through numerous user-created trails that provide access points from surrounding neighborhoods. Therefore, the study area would be considered forest land under PRC Section 12220(g).

The proposed project would include adaptive management measures such as constructing pilot channels, creating hummocky surfaces along unpreferential flow paths, implementing vegetation enhancement measures, and removing impediments caused by road fill. The project would not convert forest land to nonforest uses; rather, it would support the Conservancy's management approach for conservation of the Upper Truckee Marsh. No impact would occur.

e) Would the project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

No Impact. As discussed under item a above, implementing the proposed project would not result in other changes in the physical environment that could directly or indirectly result in the conversion of agricultural land, including Important Farmland, to nonagricultural uses because no active agricultural land uses occur in or near the study area, nor has land in the study area been designated by DOC as Important Farmland.

The Upper Truckee Marsh provides regionally important ecological, water quality, aesthetic, and recreational values and the study area would be considered forest land under PRC Section 12220(g). As discussed under item d above, the proposed project would not convert forest land to nonforest uses; rather, the proposed project would support the management of the Upper Truckee River for aesthetics, fish and wildlife, biodiversity, water quality, and recreation benefits. No impact would occur.

3.3 AIR QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. Air Quality.				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations.				
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

3.3.1 ENVIRONMENTAL SETTING

The study area is located in the eastern portion of El Dorado County, California, in the Lake Tahoe Air Basin (LTAB). Air quality in the El Dorado County portion of the LTAB is regulated by the U.S. Environmental Protection Agency (EPA), California Air Resources Board (ARB), TRPA, and the El Dorado County Air Quality Management District (EDCAQMD). Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, State and local regulations may be more stringent.

National ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS) have been established for the following criteria pollutants: ozone, carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and lead. These standards have been established with a margin of safety to protect the public's health. Both EPA and ARB designate areas of California as attainment, nonattainment, maintenance, or unclassified for the various pollutant standards according to the Federal Clean Air Act and the California Clean Air Act, respectively:

- *Attainment:* Pollutant concentrations did not violate the NAAQS or CAAQS for that pollutant in that area.

- *Nonattainment:* A pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as identified in the criteria.

- *Maintenance:* The area was previously nonattainment and is currently attainment for the applicable pollutant. The area must demonstrate continued attainment for a specified number of years before it can be redesignated as an attainment area.

- *Unclassified:* Data do not support either an attainment or nonattainment status.

The LTAB is currently designated as an unclassified/attainment or attainment area for all NAAQS. The region is currently designated as a nonattainment area for the State PM_{10} ambient air quality standard. The LTAB is designated as attainment or unclassified for all other CAAQS. Under TRPA standards, the LTAB is classified as nonattainment for ozone (1-hour and 8-hour), PM_{10}, and CO.

For the purposes of CEQA evaluation, EDCAQMD has established quantitative thresholds of significance of 82 pounds per day (lb/day) for reactive organic gases (ROG) and oxides of nitrogen (NO_X). EDCAQMD also requires projects to implement standard mitigation measures and best available mitigation measures when project construction or operations exceed these mass emission thresholds.

For the purposes of TRPA evaluation, implementing the proposed project would result in significant air quality impacts if project-generated emissions from stationary sources would exceed TRPA's significance thresholds for peak emissions during a 24-hour period, as established by Chapter 65 of the TRPA Code of Ordinances. The TRPA thresholds are shown in Table 3.3-1.

Table 3.3-1
TRPA Significance Thresholds for Peak Emissions during a 24-Hour Period

Pollutant	Kilograms	Pounds
Nitrogen dioxide (NO_2)	11.0	24.2
Respirable particulate matter (PM_{10})	10.0	22.0
Volatile organic compounds (reactive organic gases)	57.0	125.7
Sulfur dioxide (SO_2)	6.0	13.2
Carbon monoxide (CO)	100.0	220.5

Source: TRPA 2012

The study area is located in the area of El Dorado County that is least likely to contain naturally occurring asbestos (CDMG 2000).

3.3.2 DISCUSSION

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less than Significant Impact. Air quality plans describe air pollution control strategies to be implemented by a city, county, or regional air district. The primary purpose of an air quality plan is to bring an area that does not

attain Federal and State air quality standards into compliance with those standards pursuant to the requirements of the Clean Air Act and California Clean Air Act.

The State Implementation Plan (SIP) is a legal agreement between each state and the Federal government to commit resources to improving air quality. The SIP is not a single document, but a compilation of new and previously submitted attainment plans, emissions reduction programs, district rules, state regulations, and Federal controls. The emission estimates in the SIP are based on population growth levels and distribution identified in local community plans, combined with the cumulative impacts of approved and proposed development projects.

Consistency with the SIP is based on whether the project would exceed the estimated air basin emissions used as the basis of the air quality plans, which are based in part on projections of population and vehicle miles traveled (VMT). An increase in VMT beyond projections in local plans could result in a significant adverse incremental effect on a region's ability to attain or maintain national and state ambient air quality standards.

The proposed project would involve primarily construction activities, which are short term and temporary. As discussed in more detail in item b below, construction activities would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. After construction of the proposed project, long-term operational emissions would be generated during occasional and infrequent inspection, monitoring, and maintenance of the proposed adaptive management measures. These activities would not exceed existing maintenance and inspection activities. Therefore, implementing the proposed project would not require or result in trips or activities for operations and maintenance beyond existing conditions.

Implementation of the proposed project would be consistent with the existing land use designations. Project implementation would not cause an increase in population, employment, or VMT, nor would it affect the emissions budget of the SIP. In addition, implementing the proposed project would not result in the operation of any major stationary emissions sources or long-term operation of area or mobile sources of emissions. Thus, the proposed project would not conflict with or obstruct implementation of the applicable air quality efforts of ARB, EDCAQMD, or TRPA. This impact would be less than significant.

b) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less than Significant with Mitigation Incorporated. The proposed project would not require the ongoing operation of any new emissions sources. The project would require a limited number of trips for inspection, monitoring, and maintenance of the proposed adaptive management measures for an interim period. After this interim period, the proposed project would not require or result in trips or activities for operations and maintenance beyond existing conditions. To ensure the project's long-term success, hand crews may perform other minor actions at any time to repair or enhance installed measures, maintain plantings, and remove debris. Any emissions associated with these activities would be less than the estimates presented in Table 3.3-2. Therefore, operational emissions would not violate an ambient air quality standard or contribute substantially to an existing violation. This impact would be less than significant.

Construction emissions are short term or temporary but have the potential to result in a significant impact on air quality. Construction activities for the proposed project would generate temporary emissions of ROG and NO_X, CO, PM_{10}, and $PM_{2.5}$. ROG, NO_X, and CO emissions are associated primarily with mobile equipment exhaust, including off-road construction equipment and on-road motor vehicles. Fugitive particulate matter dust emissions

are associated primarily with site preparation and fill removal and vary as a function of parameters such as soil silt content, soil moisture, wind speed, acreage of disturbance area, and miles traveled by construction vehicles on and off site.

Construction of the proposed project is expected to begin in late summer/early fall 2014 and extend approximately 1.5 months, with planting activities continuing through December 15, 2014. The estimated construction workforce is a maximum of 20 workers per day. Only minor grading would be completed using heavy equipment, primarily for removal of the abandoned road fill. Other work would be performed primarily by hand crews. To conservatively estimate maximum daily emissions, the proposed project's construction emissions were modeled based on a worst-case scenario representing an intensive day of construction.

Emissions generated by typical construction activities were modeled using the California Emissions Estimator Model, Version 2013.2.2. This model allows the user to enter project-specific construction information, such as the types, number, and horsepower of construction equipment, and the number and length of off-site motor vehicle trips. Project construction emissions were estimated for construction worker commutes, haul trucks, and the use of off-road equipment.

As shown in Table 3.3-2, construction activities for the proposed project would generate maximum daily emissions of approximately 1 pound of ROG, 11 pounds of NO_X, 9.5 pounds of CO, 1 pound of PM_{10} (combined exhaust and fugitive dust), and 1 pound of $PM_{2.5}$. Additional modeling assumptions and details are provided in Appendix B.

Table 3.3-2
Summary of Modeled Short-Term Construction-Generated Emissions

Source	Emissions (lb/day)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Total Unmitigated Emissions	1.2	11.2	9.5	0.9	0.7
EDCAQMD Threshold	82.0	82.0	AAQS	AAQS	–
TRPA Threshold	125.7	24.2	220.5	22.0	–

Notes: EDCAQMD = El Dorado County Air Quality Management District; lb/day = pounds per day; NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic diameter of 10 micrometers or less; ROG = reactive organic gases; AAQS = Ambient Air Quality Standard; TRPA = Tahoe Regional Planning Agency
Source: Modeling by AECOM in 2014

As shown in Table 3.3-2, maximum daily construction emissions of ROG, NO_X, CO, and PM_{10} would not exceed EDCAQMD or TRPA thresholds. According to EDCAQMD's *Guide to Air Quality Assessment*, construction-related fugitive dust emissions are not considered to be significant if mitigation is part of or a mandatory condition of the project. For EDCAQMD to make this finding, the project proponent must commit to implementing fugitive dust control measures sufficient to prevent visible dust beyond the project property lines. However, these EDCAQMD rules to minimize construction-related fugitive dust emissions have not been incorporated into or made a mandatory condition of the proposed project. Therefore, the impact of the proposed project's PM_{10} emissions during construction would be potentially significant.

Mitigation Measure AQ-1: Reduce Construction-Related Emissions of Fugitive Dust.

The District and their construction contractor will comply with EDCAQMD Rule 202, Visible Emissions; Rule 205, Nuisance; Rule 223, Fugitive Dust–General Requirements; and Rule 223-1, Fugitive Dust–Construction, Bulk Material Handling, Blasting, Other Earthmoving Activities, and Carryout and Trackout Prevention. In addition, the contractor will implement the following fugitive dust control measures:

- Apply dust suppression measures in a sufficient quantity and frequency to maintain a stabilized surface and prevent visible dust emissions from exceeding 100 feet in length in any direction. Apply water to at least 80 percent of the surface areas of all open storage piles on a daily basis when there is evidence of wind-driven fugitive dust.

- Install control measures immediately adjacent to the paved surface to prevent track-out from exiting vehicles.

According to EDCAQMD, implementation of these control measures is sufficient to reduce construction-related emissions to a less-than-significant level. With implementation of these measures, the proposed project's construction activities would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, implementing Mitigation Measure AQ-1 would reduce this impact to a less than significant level.

c) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less than Significant Impact. The cumulative analysis focuses on whether a specific project would result in cumulatively considerable increase in emissions. By its very nature, air pollution is largely a cumulative impact. A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development projects. For projects in the LTAB to be determined to not have a significant cumulative air quality impact, consistency with the applicable TRPA air quality plans and mitigation requirements must also be shown.

As discussed in item b above, construction activities for the proposed project would generate emissions of criteria air pollutants, but at levels that would not exceed EDCAQMD or TRPA thresholds. The thresholds of significance are relevant to whether a project's individual emissions would result in a cumulatively considerable incremental contribution to existing air quality conditions. Because the emission estimates presented in Table 3.3-2 would not exceed any of EDCAQMD's or TRPA's project-level significance thresholds for air quality, the proposed project would not impede or obstruct attainment and maintenance of the ambient air quality standards. With implementation of Mitigation Measure AQ-1 described above, all necessary construction management practices would be implemented during construction to minimize PM_{10} fugitive dust emissions and prevent them from exceeding the CAAQS or NAAQS.

Emissions associated with the proposed project would not exceed EDCAQMD or TRPA significance criteria. In addition, the project would comply with existing air quality plans, would include applicable emission reduction measures, and would comply with all applicable air district rules and regulations. Therefore, the proposed project's construction-related and operational emissions would not result in a cumulatively considerable contribution to the region's air quality. This impact would be less than significant.

d) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact. Some members of the population are especially sensitive to air pollutant emissions and should be given special consideration when projects' air quality impacts are evaluated. These groups include children, older adults, persons with preexisting respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

The nearest sensitive receptors to the study area are single-family residential properties located on El Dorado Avenue, approximately 50 feet to the north of the study area. Pollutants that could be generated by project activities and could result in adverse health effects on sensitive receptors include diesel exhaust particulate matter (i.e., PM_{10} and $PM_{2.5}$), which is classified as a toxic air contaminant (TAC).

Operation of the proposed project would involve only minimal and infrequent maintenance activities and would not require the regular use of heavy-duty diesel equipment. Therefore, project operations would not expose sensitive receptors to substantial TAC concentrations.

TAC emissions would be most likely related to emissions of diesel particulate matter by construction equipment and on-road vehicles. The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent to which a person is exposed to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for such an individual are higher if a fixed exposure occurs over a longer period of time. Health effects from carcinogenic TACs are usually described in terms of individual cancer risk, which is based on a 70-year lifetime exposure to TACs.

Haul trucks and off-road equipment would not operate in the immediate vicinity of any sensitive receptor for an extended period of time. The longest period that construction activities would occur at a distance reasonably considered to have an effect on a sensitive receptor is approximately 1.5 months. A conservative measurement of 2 months was calculated; thus, if the duration of construction activities near a sensitive receptor is 2 months, then the exposure would be approximately 0.2 percent of the total exposure period used for typical health risk calculations (i.e., 70 years).

Because off-road, heavy-duty equipment would be used for a relatively short time period, construction activities would not be anticipated to expose sensitive receptors to substantial TAC concentrations. Therefore, project construction would not expose sensitive receptors to substantial pollutant concentrations. This impact would be less than significant.

e) Would the project create objectionable odors affecting a substantial number of people?

Less than Significant Impact. The occurrence and severity of odor impacts depend on numerous factors: the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause any physical harm, they still can be very unpleasant, and they can generate citizen complaints to local governments and regulatory agencies.

Potential construction-related sources of odors include diesel construction equipment that emit exhaust. However, because of the amount and types of equipment, the temporary nature of these emissions, and the highly diffusive properties of diesel exhaust, nearby receptors would not be affected by diesel exhaust odors associated with project construction. The proposed project would use typical construction techniques, and the odors would be typical of most construction sites and temporary in nature.

Operation of the proposed project would not add any new odor sources. Infrequent maintenance worker trips would not be anticipated to generate or expose any persons to substantial odor emissions. As a result, the proposed project would not create objectionable odors affecting a substantial number of people. This impact would be less than significant.

3.4 BIOLOGICAL RESOURCES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV.	**Biological Resources. Would the project:**				
	a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☐	☒	☐
	b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☐	☒	☐
	c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
	d) 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?	☐	☐	☒	☐
	e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
	f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Note: The potential to introduce aquatic nuisance species to Trout Creek during project construction is discussed in Section 5, "Wildlife," in Chapter 4, "TRPA Initial Environmental Checklist and Explanations."

3.4.1 ENVIRONMENTAL SETTING

Several biological, hydrological, and geomorphic studies have been conducted for the Upper Truckee River and Marsh Restoration Project that encompasses the Trout Creek Upper Truckee Marsh Sewer Protection Project study area. These studies, which provide the basis for this analysis, include:

- *Processes and Functions of the Upper Truckee Marsh* (CTC and DGS 2003);
- *Upper Truckee River and Wetland Restoration Project: Final Concept Plan Report* (CTC and DGS 2006);

- *Upper Truckee River and Marsh Restoration Project DEIR/DEIS/DEIS California Tahoe Conservancy/DGS, Reclamation, and TRPA* (Conservancy et al. 2013)

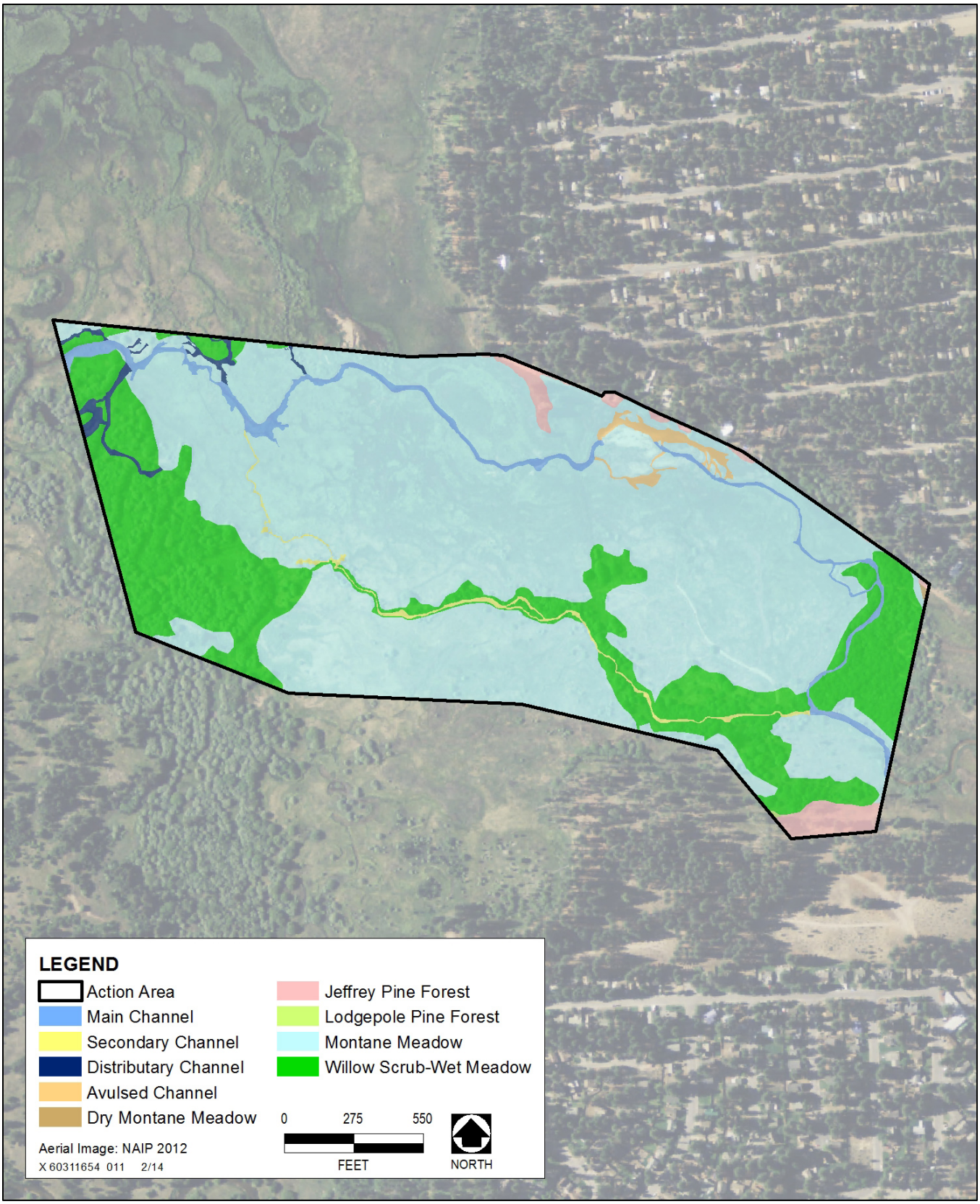
Field study methods, background literature and database searches, and the environmental setting for common and sensitive biological resources within the study area are described in detail in these reports and are summarized below. Exhibit 3.4-1 shows the habitat types occurring in the study area.

Vegetation in the study area is characterized by a continuum of plant associations, ranging from predominantly forested areas (Jeffrey pine forest and lodgepole pine forest) at the highest elevations on the edges of the meadow to wet meadow and riparian areas along Trout Creek. Sensitive habitats are those that are of special concern to resource agencies or are afforded specific consideration through the TRPA Goals and Policies and TRPA Code of Ordinances, Section 404 of the Clean Water Act, and other applicable regulations, and include wetlands and other aquatic habitats. Exhibit 3.4-1 shows the location of Trout Creek, its associated channels, and willow scrub-wet meadow.

A preliminary delineation of waters of the United States, including wetlands, has been prepared for the study area (AECOM 2014). A total of approximately 94.12 acres of potentially jurisdictional wetlands and other waters of the United States occur within the 96-acre study area. These potentially jurisdictional features consist of approximately 4.67 acres of Relatively Permanent Waters (RPW) in Trout Creek and 89.45 acres of wetlands abutting RPWs. Abutting wetlands consist of montane meadow and willow scrub-wet meadow. A large portion of the study area is also classified as Stream Environment Zone (SEZ) and includes those areas mapped as willow scrub-wet meadow, lodgepole pine meadow, montane meadow, and the channels of Trout Creek. In addition to these sensitive habitats located within the study area, two special-status plant species are known to occur in the vicinity of the study area, American mannagrass (*Glyceria grandis*), and Tahoe yellow cress (*Rorippa subumbellata*). Exhibit 3.4-2 shows the location of SEZ boundaries and occurrences of special-status plant populations in relation to the study area boundaries.

The Upper Truckee Marsh, including the study area, is extremely valuable wildlife habitat for a variety of both common and special-status species and is part of the largest remaining wetland in the Tahoe Basin. Twelve special-status wildlife species were identified as having a moderate or high potential to use portions of the study area for activities such as foraging, resting, roosting or breeding (Conservancy et al. 2013): bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), northern goshawk (*Accipiter gentilis*), Cooper's hawk (*A. cooperii*), sharp-shinned hawk (*A. striatus*), long-eared owl (*Asio otus*), yellow warbler (*Dendroica petechia*), western red bat (*Lasiurus blossevillii*), hoary bat (*L. cinereus*), Northern harrier (*Circus cyaneus*), Willow flycatcher (*Empidonax traillii*), and waterfowl. Four special-status fish species were also identified as having a moderate or high potential to occur within the study area (Conservancy et al. 2013): Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*), Lahontan Lake tui chub (*Gila bicolor pectinifer*), Lahontan redside (*Richardsonius egregius*), and Mountain sucker (*Catostomus platyrhynchus*). Trout Creek likely supports all life stages of these species; however, habitat within the study area does not include specific habitat features that would support breeding or rearing habitat, and is most likely used during migrations and for foraging.

Habitat associations, regulatory or management status, and potential for occurrence of these special status plant and wildlife species in the study area are detailed in the Upper Truckee Marsh Restoration Project DEIR/DEIS/DEIS (Conservancy et al. 2013) and are summarized below. Potential impacts to these species and mitigation to reduce these impacts to a less-than-significant level are also discussed.



Source:

Exhibit 3.4-1 **Habitats in the Study Area**

Source: EDAW Survey 2007, TRPA 2012

Exhibit 3.4-2 **American Mannagrass Occurrence**

3.4.2 DISCUSSION

a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?

Please note that project effects on species of plants, wildlife, and fish are discussed below. Separate impact conclusions are provided for plants, wildlife, and fish. However, the most conservative impact conclusion listed below is provided under item a in the environmental checklist above.

PLANTS

Less than Significant Impact. Surveys were conducted on July 24-27, 2007, for special-status plant species with potential to occur in the study area; two special-status plant species were detected in the vicinity of the study area, American mannagrass and Tahoe yellow cress (TYC) (EDAW 2007). These species are discussed below.

American Mannagrass

American mannagrass is a rhizomatous grass (i.e., a grass with some below-ground stems) that is on California Native Plant Society (CNPS) List 2B.3 (plants that are rare, threatened, or endangered in California but more common elsewhere; not very endangered in California). American mannagrass grows in riparian habitats, on streambanks, at lake margins, in meadows, and in bogs and fens. It grows to a height of three feet and has a 7- to 15-inch-long, egg-shaped inflorescence (i.e., arrangement of flowers) bearing small spikelets (i.e., small groups of inconspicuous flowers). The grass flowers between June and August.

During EDAW's (now AECOM) special-status plant survey that included the study area (July 25–27, 2007), American mannagrass (approximately 35 flowering stems were observed in a 10-foot square area) was found in one location at the northwestern boundary of the District's study area growing on a low mud bench within one of the active channels of Trout Creek just above the surface water.

No American mannagrass was observed in 2007 within the study area and direct impacts to this species are not anticipated; however, this plant species does occur just outside of the study area approximately 1,500 feet downstream of proposed ground disturbing activities and could be indirectly impacted by project activities (Exhibit 3.4-2). If additional American mannagrass populations are found within the study area, the populations could become flooded or dewatered and individual plants could be harmed by construction activities. The AMP proposes American mannagrass surveys prior to any ground disturbance and if new populations are discovered within the study area they will be avoided (see Section 5 in the AMP) or other mitigation such as transplanting will be developed to avoid impacts to those populations. Indirect impacts to the known American mannagrass population downstream of the study area would be limited to minor and temporary hydrologic alterations or increases in turbidity that fall within the range of natural variability, and significant alterations to the basic functions of Trout Creek are not anticipated. These indirect impacts are unlikely to adversely affect the existing American mannagrass population because of their temporary nature, distance upstream of the known population, and the range of variability within the natural functions of Trout Creek to which this species is adapted.

Tahoe Yellow Cress

TYC is a perennial herb with yellow flowers that is endemic to the sandy beaches of Lake Tahoe. Part of the mustard family, TYC is a candidate for listing by U.S. Fish and Wildlife Service (USFWS), listed as endangered by California Department of Fish and Wildlife (CDFW), and a Tahoe Regional Planning Agency (TRPA) threshold special-status species. It emerges above ground from perennial underground roots between March and June and flowers between June and October.

TYC is known to occur at Cove East Beach and Barton Beach, approximately 2,600 feet from the closest potential construction activities within the study area (Exhibit 3.4-2). No suitable habitat for this species occurs within the study area, and no direct impacts to TYC are expected. Indirect impacts from alterations to Trout Creek, and subsequently the beaches where TYC occurs, are also unlikely to occur because while the project is anticipated to alter the location of a portion of Trout Creek, the creek is expected to flood at approximately the same discharge and carry approximately the same quantity of bedload as it does under current conditions therefore beach creation and inundation would not be altered. Trout Creek within the Upper Truckee Marsh is a delta system, and channel stability is inherently dynamic; the project would fall within the range of normal channel movement and would not alter the overall function of the delta. Because the project is unlikely to alter these basic functions of Trout Creek, indirect impacts to potential TYC habitat are not expected.

WILDLIFE

Less than Significant Impact. As discussed above, twelve special-status wildlife species were identified as having a moderate or high potential to occur within the study area (Conservancy et al. 2013). Short-term adverse impacts on several of these species are anticipated from project implementation; these impacts are discussed below by species. As discussed in Chapter 2, "Project Description," the majority of construction would occur in the first year of AMP implementation with monitoring and minor maintenance occurring in Years 2-5. The AMP proposes measures that would be minimally invasive, such that long-term alterations to habitat would be within the natural range of variability within the system. In addition, measures to avoid and minimize potential direct and indirect construction impacts that are included in the AMP are discussed below.

Waterfowl Species

"Waterfowl" is designated as a special-interest group of species by TRPA. Most of the study area is designated as one of the 18 TRPA-designated threshold sites for nesting waterfowl and the study area supports high species diversity of waterfowl. The wetlands within the study area provide nesting, resting, and foraging habitat for waterfowl. Waterfowl which could nest in the study area include as mallard (*Anas platyrhynchos*), cinnamon teal (*Anas cyanoptera*), and gadwall (*Anas strepera*). Other waterfowl potentially using habitat in the study are for foraging, cover or resting include American widgeon (*Anas americana*), northern pintail (*Anas acuta*), and northern shoveler (*Anas clypeata*).

Suitable nesting habitat for waterfowl species exists within and downstream of the study area particularly downstream of the construction footprint where there is greater riparian cover which increases the suitability of nesting locations within the marsh by isolating nesting habitat from human disturbance, aides in predator avoidance, and helps with thermal regulation. While the project would increase riparian vegetation in the long-term, project activities such as channel excavation for the pilot channel, installation of right bank overflow plugs, the removal of the abandoned road fill, revegetation, cleanup, and materials transport within or adjacent to

riparian habitat could result in the temporary removal or disturbance of marsh habitat that may provide nesting locations for waterfowl. Construction-related disturbance (such as noise) associated with these project activities could also directly affect nesting, foraging, or resting waterfowl. Loss of occupied nesting habitat would be a direct and significant impact. Measures to avoid and minimize potential direct and indirect construction impacts that are included in the AMP are discussed below.

Bald Eagle and Osprey

TRPA considers most of the study area a population threshold site for wintering bald eagle. The bald eagle is listed as endangered under the CESA, designated as a sensitive species by U.S. Forest Service (USFS), and designated as a special-interest species by TRPA; it is also fully protected under the California Fish and Game Code. Several known perch sites exist in the study area and vicinity. These perch sites are regulated by TRPA and are not to be disturbed. The proximity of these perches to foraging areas makes them particularly valuable to eagles. TRPA regulations also state that perching trees and nesting sites shall not be physically disturbed; nor shall the habitat within the population threshold site for wintering bald eagle be degraded in any manner.

The osprey is designated as a species of concern by CDFW and as a special-interest species by TRPA. Osprey are associated strictly with large fish-bearing waters and are known to forage in Lake Tahoe and in several other fish-bearing lakes within the Tahoe Basin. In the Tahoe Basin, osprey nests are distributed primarily along the northern portion of the east shore and southern portion of the west shore of Lake Tahoe. Other osprey nests in the Tahoe Basin are located along the shorelines of smaller lakes (e.g., Fallen Leaf Lake), and in forest uplands up to 1.5 miles from water. Osprey has been documented flying over the study area. They are not known to nest in the study area, but good foraging and perch sites exist within the study area. Because potential nest trees in the study area are located at the wet meadow/upland edge and this habitat is relatively close to residential development throughout the study area, the quality of nesting habitat for osprey is considered low. However, the quality of foraging habitat in the study area is relatively high and osprey may also use both the Upper Truckee River and Trout Creek for foraging.

Bald eagle and osprey are likely to forage and perch within or nearby the study area, and the study area is part of TRPA-designated wintering habitat for bald eagle. However, bald eagle and osprey are not known to nest in the study area (or Upper Truckee Marsh) and construction would occur outside of the wintering period for bald eagle. The nearest known bald eagle nest site is located at Emerald Bay, approximately 5.5 miles from the study area. Project activities would not impact potential perch or nest trees; however, construction activities could disturb their foraging activities. Because of the presence of existing recreational use of the study area and vicinity, the existing disturbance level is relatively high; additional temporary disturbance (outside of the wintering time period) related to excavation for the pilot channels, installation of right bank overflow plugs, the removal of the abandoned road fill, revegetation, cleanup, and materials transport would not substantially affect the foraging patterns of bald eagle or osprey. Also, abundant and suitable foraging habitat is available in other areas nearby. Because of the limited spatial and temporal effects of the proposed construction and current recreational use, these activities are not expected to cause injury or mortality to individuals, disrupt breeding attempts, or affect the population size or viability of these species.

Northern Goshawk, Cooper's Hawk, and Sharp-Shinned Hawk

The northern goshawk, Cooper's hawk, and sharp-shinned hawk are forest raptor species that have been detected in the study area. Each of these species is designated as a species of special concern by CDFW. The northern goshawk is also considered sensitive by USFS Region 5 and is considered a special-interest species by TRPA.

Northern goshawk generally requires mature conifer forests with large trees, snags, downed logs, dense canopy cover, and open understories for nesting. Foraging habitat for this species includes forests with dense to moderately open overstories, and open understories interspersed with meadows, brush patches, riparian areas, or other natural or artificial openings. Forest habitat in the study area lacks the characteristics of suitable nesting habitat. A northern goshawk was previously observed in the study area. However, the detection was made in September, when individuals tend to move from summer areas (Conservancy 1997). Therefore, this individual may have been a dispersing juvenile or migrant. Although the goshawk has been observed in the study area, the lack of suitable nesting habitat in the study area and the high level of disturbance in the upland area limit the potential for the northern goshawk to nest there.

Cooper's hawk and sharp-shinned hawk nest and forage in a variety of coniferous and mixed forest habitat types. Cooper's hawk will also forage in more open areas. Suitable foraging habitat exists in the study area in upland areas, as well as in willow scrub–wet meadow. However, the small patches of forested habitat in the study area may not be adequate for nesting. In addition, the level of disturbance, especially in and around the upland area, limits the potential for these two species to use the site for nesting. Both the Cooper's hawk and sharp-shinned hawk are known to occur in the study area (Conservancy et al. 2013).

While northern goshawk, Cooper's hawk, and sharp-shinned hawk have been documented within and in the vicinity of the study area none of these species are known or likely to nest in the study area or vicinity; however, study area provides potential foraging habitat. The removal or disturbance of occupied nesting habitat is not anticipated as a result of the proposed project. Construction could result in noise, dust, and other disturbances to foraging birds in the vicinity, potentially resulting in avoidance of the study area during construction. All potential impacts would be temporary; no long-term degradation of habitat would occur as a result of project implementation and project activities are not expected to cause injury or mortality to individuals, disrupt breeding attempts, or affect the population size or viability of these species.

Long-Eared Owl

Long-eared owl is designated a species of special concern by CDFW. Long-eared owl occurs in a variety of habitat types throughout its range and will nest in woodland, forest, and open (e.g., grassland, shrub-steppe, and desert) settings. Long-eared owl occupies wooded and nonwooded areas that support relatively dense vegetation (trees, shrubs) adjacent to or within larger open areas such as grasslands or meadows (i.e., habitat edges) (Marks, Evans, and Holt 1994). This species has also been documented breeding in contiguous conifer forest habitat with heavy mistletoe infestation (Bull, Wright, and Henjum 1989). Trees and shrubs used for nesting and roosting include oaks, willows, cottonwoods, conifers, and junipers (Marks, Evans, and Holt 1994).

Long-eared owl has been documented in the vicinity of the study area, and suitable habitat may exist in upland forests and willow scrub–wet meadow within the study area. No long-eared owls were detected during focused nocturnal owl surveys conducted in the vicinity of the study area in 2012 (AECOM 2012); however, they are known to occur in the Upper Truckee Marsh (Richardson pers. comm., 2014). It is possible that long-eared owl

nests within the study area in areas of dense vegetation. Project activities such as channel excavation for the pilot channels, installation of right bank overflow plugs, the removal of the abandoned road fill, revegetation, cleanup, and materials transport within or adjacent to riparian habitat could result in the temporary removal or disturbance of vegetation that may provide nesting habitat for long-eared owl. Construction within occupied habitat could cause direct impacts on breeding and nesting activities, and could affect the size or viability of the local population. Removal of occupied nesting habitat would be a direct and significant impact if long-eared owl were taken or deterred from occupying breeding and nesting locations. Construction could also result in noise, dust, and other disturbances to foraging birds in the vicinity, potentially resulting in avoidance of the study area during construction. All potential impacts on would be temporary; no long-term degradation of habitat would occur as a result of project implementation. Measures to avoid and minimize potential direct and indirect construction impacts that are included in the AMP are discussed below.

Northern Harrier

The northern harrier is designated as a species of concern by CDFW. It breeds in a variety of open grassland, wetland, and agricultural habitats. Open wetland habitats used for breeding include marshy meadows, wet and lightly grazed pastures, and freshwater and brackish marshes. Breeding habitat also includes dry upland habitats, including grasslands, croplands, drained marshlands, and shrub-steppe in cold deserts. Vegetation height and structure particularly affect the quality of northern harrier habitat, especially because this species is a ground nester.

Northern harrier has been observed periodically in the study area. It is not known whether they nest within the study area, but they have been observed foraging in the area in both spring and fall. Northern harrier typically nests in areas that remain undisturbed during the nesting season. The level of recreational activity in the study area throughout the summer months may limit its suitability for nesting. However, project activities such as channel excavation for the pilot channels, installation of right bank overflow plugs, the removal of the abandoned road fill, revegetation, cleanup, and materials transport within or adjacent to riparian habitat could result in the temporary removal or disturbance of vegetation that may provide nesting habitat for northern harrier. Construction within occupied habitat could cause direct impacts on breeding and nesting activities, and could affect the size or viability of the local population. Removal of occupied nesting habitat would be a direct and significant impact if northern harrier were taken or deterred from occupying breeding and nesting locations. Construction could also result in noise, dust, and other disturbances to nesting harriers in the vicinity, resulting in potential nest abandonment and mortality to eggs and chicks. Measures to avoid and minimize potential direct and indirect construction impacts that are included in the AMP are discussed below.

Yellow Warbler

Yellow warbler is designated as a species of special concern by the CDFW. In the Sierra Nevada, yellow warbler typically breeds in wet areas with dense riparian vegetation. Primary breeding habitats are willow patches in montane meadows, and riparian scrub and woodland dominated by willow, cottonwood, aspen, or alder with dense overstory cover. Willow scrub habitat in the study area provides suitable summer breeding and foraging habitat for yellow warbler.

The project is expected to improve habitat along Trout Creek for riparian birds, including yellow warbler, over the long term by increasing riparian vegetation cover through willow plantings. These plantings would also discourage human intrusion into potentially suitable breeding habitat. However, project activities such as channel

excavation for the pilot channels, installation of right bank overflow plugs, the removal of the abandoned road fill, revegetation, cleanup, and materials transport within or adjacent to riparian habitat could result in the temporary removal or disturbance of vegetation that may provide nesting habitat for yellow warbler. Construction within occupied habitat could cause direct impacts on breeding and nesting activities, and could affect the size or viability of the local population. Removal of occupied nesting habitat would be a direct and significant impact if yellow warblers were taken or deterred from occupying breeding and nesting locations. Construction could also result in noise, dust, and other disturbances to nesting warblers in the vicinity, resulting in potential nest abandonment and mortality to eggs and chicks. Measures to avoid and minimize potential direct and indirect construction impacts that are included in the AMP are discussed below.

Willow flycatcher

Three subspecies of willow flycatcher occur in the Sierra Nevada: *Empidonax traillii brewsteri*, *E. t. adastus*, and *E. t. extimus*. The willow flycatcher (all subspecies) is designated as sensitive by the USFS Regional Forester and listed as endangered under the CESA; additionally, *E. t. extimus* (southwestern willow flycatcher) is listed as endangered under the ESA. The willow flycatcher was identified in the notice of intent for the Sierra Nevada Forest Plan Amendment as one of seven aquatic, riparian, and meadow–dependent vertebrate species at risk in the Sierra Nevada bioregion.

Willow flycatcher is a migratory songbird that nests in shrubby, wet habitats. In the Sierra Nevada, willow flycatcher tends to prefer willow stands interspersed with open meadow and near standing or running water. Important characteristics of meadows suitable for breeding willow flycatcher is a high water table that results in standing or slow-moving water, or saturated soils (e.g., "swampy" conditions); abundant cover of riparian deciduous shrubs (particularly willow); and riparian shrub structure with moderate to high foliar density that is uniform from the ground to the shrub canopy (Sanders and Flett 1989; Bombay 1999; Green, Bombay, and Morrison 2003). Riparian habitat along streams can also function as suitable habitat for the willow flycatcher, although this is less common in the Sierra Nevada. Those areas must support the hydrologic and vegetation characteristics described for suitable meadows (e.g., standing or slow-moving water, abundant and dense riparian vegetation). Stream channels that are high-gradient, deeply incised, and lacking a floodplain (e.g., potential for saturated soils or standing water) and are characterized by a sparse or narrow riparian vegetation corridor are not suitable for breeding willow flycatchers.

Willow flycatcher are known to occur in the vicinity of the study area; protocol surveys for willow flycatcher conducted by AECOM biologists in 2011-2012 located willow flycatchers adjacent to the study area, with potential evidence of nesting (AECOM 2011, 2012). Much of the study area does not provide suitable habitat for nesting willow flycatcher (particularly in dry water years) because of its hydrologic conditions and the current willow structure and distribution there (e.g., lack of saturated soils or standing water within willow stands during the breeding season, limited dense willow cover in the floodplain). However, project activities could result in the temporary removal or disturbance of vegetation that may provide nesting habitat for willow flycatcher. Construction within occupied habitat could cause direct impacts on breeding and nesting activities, and could affect the size or viability of the local population. Removal of occupied nesting habitat would be a direct and significant impact if willow flycatcher were taken or deterred from occupying breeding and nesting locations. Construction could also result in noise, dust, and other disturbances to nesting willow flycatcher in the vicinity, resulting in potential nest abandonment and mortality to eggs and chicks. Measures to avoid and minimize potential direct and indirect construction impacts that are included in the AMP are discussed below.

Western Red Bat and Hoary Bat

Western red bat is designated as a sensitive species by the Regional Forester and a species of special concern by CDFW. Suitable habitat includes edge habitats adjacent to streams or open fields, in orchards, and sometimes urban areas. Roost sites are generally hidden from view in all directions; lack obstruction beneath, allowing the bat to drop downward for flight; lack lower perches that would allow visibility by predators; have dark ground cover to minimize solar reflection; have nearby vegetation to reduce wind and dust; and are generally located on the south or southwest side of a tree. Roost sites may be associated with intact riparian habitat, particularly willow, cottonwoods, and sycamores. Suitable habitat is present in the study area along the upland edge of montane meadow and willow scrub–wet meadow. The species may also forage across the other habitats located in the study area (e.g., wet meadow, stream). Western red bats have been detected at Tallac Marsh, less than 4 miles west of the study area (Borgmann and Morrison 2004).

The hoary bat is designated as a species of concern by CDFW. It is associated with a diverse array of forest habitats that also contain open areas, which can provide edge habitat. Hoary bat is solitary and tends to roost in the foliage of both coniferous and deciduous trees. Suitable roosting habitat exists in the study area along the montane meadow/upland edge, and high-quality foraging habitat is present throughout the study area. Hoary bat has been documented in various locations within the Tahoe Basin, including the study area, as recently as 2004 (Borgmann and Morrison 2004).

Both of these special-status bat species may occur within the study area; however, it is not known whether the study area supports roost sites. If roost sites for these species are present in the study area, project activities are unlikely to remove or cause abandonment of these features because work would be relatively non-invasive and no large trees or snags are proposed for removal. Construction could result in noise, dust, and other disturbances to foraging bats in the vicinity, potentially resulting in avoidance of the study area during construction. However, construction would not normally occur during the same time of days as peak foraging hours for these species. All potential impacts on would be temporary; no long-term degradation of habitat would occur as a result of project implementation.

WILDLIFE IMPACT CONCLUSIONS

The following potential impacts on special-status wildlife species that could result from project implementation (discussed above) would be significant: loss of individuals or nests, or disruptions to nesting attempts of yellow warbler, long-eared owl, waterfowl, willow flycatcher, and northern harrier. Measures to avoid and minimize potential direct and indirect construction impacts to yellow warbler, long-eared owl, waterfowl, willow flycatcher, and northern harrier are included in the AMP. While most construction would occur after September 1, which is outside of the nesting season for all of these species (i.e., approximately March 1-August 31), there is the potential for the nesting season to be extended because of weather. In a very wet and cold spring/summer, the nesting season could extend into September, and in this case pre-construction surveys would be implemented as per the AMP for any activities occurring after August 31. In addition, prior to Year 1 construction activities, protocol-level willow flycatcher surveys will be conducted to determine if any willow flycatchers are exhibiting territorial behavior or are nesting within the vicinity of construction activities. If any of these surveys find that nesting is occurring, avoidance measures would be implemented in coordination with the appropriate agencies. Implementation of these avoidance and minimization measures included in the AMP would reduce potential impacts on special-status wildlife species to a less-than-significant level and no additional mitigation is necessary.

FISH

Less than Significant Impact. Four special-status fish species were identified as having a moderate or high potential to occur within the study area (Conservancy et al. 2013): Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*), Lahontan Lake tui chub (*Gila bicolor pectinifer*), Lahontan redside (*Richardsonius egregius*), and Mountain sucker (*Catostomus platyrhynchus*). Some short-term adverse impacts could occur related to project implementation; these impacts are discussed below along with the measures incorporated in the AMP to reduce these potential impacts to a less-than-significant level.

Lahontan cutthroat trout is a federally listed threatened species, and is known to occur in Lake Tahoe and the Upper Truckee River and has the potential to occur in Trout Creek. The Nevada Department of Wildlife (NDOW) released Lahontan cutthroat trout into Lake Tahoe near Cave Rock during the summer of 2011 to provide anglers the chance to catch a native fish species that had not been available in Lake Tahoe for a long time. This plan was considered experimental and for recreational purposes and not as an attempt to repopulate Lake Tahoe with Lahontan cutthroat trout. While most of these fish have likely been removed from Lake Tahoe and its tributaries either from fishing or predation, it is possible that some individuals remain and could be found in Trout Creek.

Mountain sucker and Lahontan redside are CDFW species of special concern, and the Lahontan lake tui chub is a CDFW species of special concern and a USFS sensitive species. All three of these species are likely to occur in the study area, either using the study area as temporary habitat while migrating up or downstream, or using shallow water and backwater areas for rearing habitat. The utilization of habitat within the study area likely varies with yearly flow conditions and site-specific factors that are dynamic within the system such as cover availability, temperature, and presence of predatory species.

Project activities could cause short-term habitat degradation through increased turbidity within and downstream of the construction footprint, stranding during dewatering or diversion activities, short-term disruption of fish passage/migration, and the introduction and spread of aquatic invasive species; however, several measures have been developed as part of the AMP to limit the potential for erosion, sedimentation, and prevent stranding of aquatic biota that result in the loss or take of special status fish. These measures are summarized below. Additional information related to water quality impacts is discussed in item a, Section 3.9, “Water Quality.”

Dewatering and diversion plans will be developed separately each time ground disturbing activities are proposed. In general, work areas will be isolated through the installation of silt fencing, wattles, or temporary dams. Included in all of the dewatering and diversion plans will be a plan for fish species rescue and relocation from the dewatered areas. Construction will generally occur between September 1 and October 15, when creek flows are lowest, the meadow surface is driest, and after the spawning season for fish species expected to be present has passed; although planting activities that do not require ground disturbance may extend beyond October 15. Equipment use would be limited to removal of the abandoned road fill back to the prevailing meadow grade and possibly for hummock installation. All other excavation and fill would be performed by hand crews. All excavated sod would be salvaged and used as sod plugs, placed in existing low areas, or incorporated into the overbank plugs. Excess soil material would be incorporated into fill hummocks or hauled off-site. Fill placement would be vegetatively stabilized, generally with marsh mats. Locally, fill may be stabilized with erosion control fabric planted with sod or plugs. A temporary bridge will be used to cross Trout Creek to access the abandoned road; structural support for the crossing will be placed on coarse bed material without excavation of the channel or meadow. Some measures would open new flow paths and are therefore potentially subject to some erosion and

generation of turbidity. Pilot channels in the work area upstream of the Bellevue Pump Station are part of the dewatering strategy and may be particularly sensitive to initial flows. To minimize potential generation of turbidity, the pilot channels would be "seasoned" to reduce the initial flush of turbidity by installing gravel bag dams at the upstream and downstream ends during construction and prior to activation. The District would minimize the duration, magnitude, and potential effects of sediment discharges through monitoring, control of any turbid water, staged activation of new flow paths, designs to encourage expansion of favorable flow paths primarily during periods of high flows, and temporary and remedial erosion control measures. All observations would be recorded and provided to the Lahontan Regional Water Quality Control Board (RWQCB), as described in Appendix E of the AMP.

A fish rescue and relocation plan developed as part of the AMP (Appendix F of the AMP) describes the methods that will be used to capture and relocate fish from in-water work areas prior to dewatering. The plan will be implemented prior to all construction activities in the Trout Creek channel and in areas where active creek flows presently occur outside of the channel (e.g., right overbank upstream of Bellevue Pump Station). The plan is intended to minimize harm, harassment, and mortality of fish which may be present in the construction area. All species of fish will be rescued and native species will be relocated prior to dewatering activities. Rescue efforts will focus on protecting Lahontan cutthroat trout, if found to be present, and any other fish species listed under ESA and CESA and/or fish species with protected habitat designations.

No long-term adverse impacts to fish species are anticipated because project activities would not alter flows, hydrologic or physical connectivity in Trout Creek, and could increase shading and topographic complexity through willow plantings and creation of overflow distributaries. Currently migration through the study area is limited in the avulsion area and the proposed project should benefit migration through this reach of Trout Creek.

Based on the information regarding construction management and monitoring proposed as part of the AMP, project-related construction and post-construction channel adjustments are not expected to cause or contribute to impacts to special-status fish species. Therefore, this impact would be less than significant.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?

Less than Significant Impact. Impacts to Lahontan cutthroat trout are addressed in item a above. vegetation removal is expected to be very minimal and include removal of willow saplings along the newly formed sand bank and possibly a few plants that may require temporary disturbance to gain access along the creek channel. The AMP proposes to increase riparian habitat through additional planting to reroute flows from the right overflow area, to establish pilot channels, hydraulic roughness, and maintain overall stability of the channel. A net long-term benefit would result from project implementation related to the establishment of naturally functioning riparian vegetation, through willow plantings and increased hydrologic connectivity of the channel and the floodplain.

Because the project would involve altering a stream channel and banks, the project would require a streambed alteration agreement from CDFW pursuant to Section 1602 of the California Fish and Game Code as described in Chapter 1, "Introduction." The project would be required to comply with all permitting requirements of CDFW including conditions identified in the Section 1602 permit. Therefore, this short-term construction impact would be less than significant.

c) Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less than Significant Impact. The project would involve changes to the channel of Trout Creek, a potentially jurisdictional water of the United States. This would result in short-term impacts on federally protected wetlands. As described in the AMP, the proposed project would include monitoring and adaptive management measures to assure that there is no permanent loss of wetlands that would occur with project implementation, including in hummock fill areas; however, temporary disturbances (< 1 acre) would occur within the Upper Truckee Marsh and along the Trout creek channel.

The District would be required to obtain authorization from U.S. Army Corps of Engineers (USACE) for the project pursuant to Section 404 of the Clean Water Act. A delineation of waters of the United States was completed for the proposed project and will be submitted as part of the Section 404 permit application. The Section 404 permitting process includes securing authorization for fill or reconstruction of jurisdictional waters of the United States, including wetlands, from the Sacramento District of USACE. The Section 404 permit requires the following general permit terms:

- determination of volume and type of material to be placed into waters of the United States;
- determination of total area of waters of the United States to be directly and indirectly affected;
- a description of habitat, including plant community, located in the study area;
- a description of any environmental impacts that are expected to occur, including methods to avoid, minimize, or mitigate adverse impacts on water quality or aquatic function at the project site;
- any other information pertinent to the wetland, stream, or water body involved;
- for projects involving the restoration of greater than 3 acres of wetlands, evidence that USFWS has been provided with a courtesy copy of the project notification; and
- a copy of the 401 water quality certification or waiver issued for the project.

As described in Appendix E of the AMP, vegetative cover and vigor will be monitored using transects, site observations, and photos. Monitoring will be based primarily on visual observations for each of the implemented features, but will be supplemented by transects for the abandoned road fill removal and hummocks. Three transects will be established in the road fill removal area and three will be established across constructed fill hummocks. If hydrologic changes occur that would affect species composition or vigor in areas outside of construction area, baseline data will be re-taken from the baseline transects and used for comparison.

Because the proposed project would not result in any permanent loss of wetlands, temporary impacts to wetlands would be minimized through minimally invasive construction techniques and monitoring described in the AMP, and the project would be required to comply with all applicable Section 404 permitting requirements of the USACE pertaining to wetland impacts, including conditions identified in the Section 404 permit, impacts to wetlands would be minimized, this impact is less than significant

d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Please note that potential effects on species of both wildlife and fish are discussed below. Separate impact conclusions are provided for wildlife and fish. However, the most conservative impact conclusion listed below is provided under item d above.

WILDLIFE

Less than Significant Impact. Wildlife movement corridors are considered an important ecological resource by various agencies (e.g., USFWS, CDFW, and USFS). Also, wildlife movement and migration corridors are protected under the TRPA Code of Ordinances. Movement corridors provide favorable locations for wildlife to travel between different habitat areas, such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors allowing wildlife to move between various locations within their range.

The study area has the potential to function as a wildlife corridor because of its position in the Upper Truckee Marsh, and connectivity to large open spaces; however, the importance of the study area as a wildlife corridor is unknown. Because of the high level of human disturbance within and adjacent to the study area, the presence of a major highway east of the study area, and residential development surrounding much of the area, the potential for the study area to function as an important wildlife corridor is limited. To the extent that wildlife use the study area as a movement corridor, short-term disturbance caused by construction activities could affect wildlife movements within or across the study area temporarily. However, because of the study area's position at the forest-urban interface and adjacent to U.S. 50, species that would use the area during daily or seasonal movements are most likely adapted to high disturbance levels that presently exist there, and the temporary incremental increase in project-related disturbance would not affect wildlife movement patterns to a great degree. Also, no long-term barriers to wildlife movements would be created as a result of project implementation. Potential impacts of project implementation on wildlife movements would be temporary and less than significant. No wildlife nursery sites are known to occur on the study area.

FISH

Less than Significant Impact. During construction activities, portions of the creek channel could be temporarily diverted and dewatered. This would result in a temporary barrier to migration and movement of fish and other aquatic organisms. Once construction within the channel is complete, the creek channel would be rewetted and migration and movement would be restored. Ultimately, the restored creek channel would provide similar or improved habitat conditions and would not result in a barrier to migration or movement of fish or other aquatic organisms. For these reasons, temporary diversion of the creek and associated barriers to fish migration and movement during construction activities would be a less-than-significant impact.

As discussed above for impacts on special-status species, construction activities would disturb soils and could generate surface runoff, sedimentation, and increased turbidity in aquatic habitats downstream. However, given the distance to potential nursery sites within backwater and shoreline areas, any increases in turbidity would be eliminated with storage and treatment of the waters within the Upper Truckee Marsh downstream of the project. The primary potential source of contamination would be the loosened soil materials, but other on-site sources of

contamination during construction could include leaks or spills of fluids or fuels from vehicles and equipment, or miscellaneous construction materials and debris. However; the AMP has proposed BMPs including staging and maintenance at the Bellevue Pump Station, the use of wattles, wood chips, steel plates, temporary mats, and other measures described in Section 5.6 of the AMP. Therefore, potential impacts on fish habitat function and quality would be less than significant.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less than Significant Impact. Through its goals and policies and Code of Ordinances, TRPA sets standards for preserving and managing wildlife habitats, with special emphasis on protecting or increasing habitats of special significance such as deciduous trees, wetlands, meadows, and riparian. Specific habitats that are protected include riparian areas, wetlands, and SEZs; wildlife movement and migration corridors; important habitat for any species of concern; critical habitat necessary for the survival of any species; nesting habitat for raptors and waterfowl; fawning habitat for deer; and snags and coarse woody debris. In addition, TRPA special-interest species, which are locally important because of rarity or other public interest, and species listed under ESA and CESA are protected from habitat disturbance from conflicting land uses. In addition, no project or activity can be implemented within the boundaries of a SEZ except as otherwise permitted for habitat improvement, dispersed recreation, vegetation management, or as provided in Chapter 20 of the TRPA Code of Ordinances.

The proposed project would not conflict with the protection of TRPA special-interest species (see analysis under item a above). Because the project's goals include enhancing riparian habitat, it is consistent with TRPA regulations for conducting project activities within SEZs and riparian areas. In addition, conformance with TRPA regulations is addressed in Chapter 4, "TRPA Initial Environmental Checklist and Explanations."

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. No federal, state, or local conservation plans have been adopted that include the study area. No impact would occur.

3.5 CULTURAL RESOURCES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V.	**Cultural Resources. Would the project:**				
	a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☒	☐	☐
	b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
	c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
	d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

3.5.1 ENVIRONMENTAL SETTING

The study area is located in the South Lake Tahoe U.S. Geological Survey 7.5-minute quadrangle, east of the Truckee River and west of modern developments, primarily in marshland and along the current and former channel of Trout Creek. Soils in the study area consist predominantly of Holocene-age floodplain deposits (Saucedo 2005).

Background information regarding cultural resources for the proposed project was obtained from a review of a recently conducted investigation that included the study area: *Cultural Resources Inventory and Evaluation Report, Upper Truckee River and Marsh Restoration Project* (AECOM 2012).

Cultural resources are the physical remains of a complex interaction of changing human technological and social systems that adapt to environmental conditions and human social needs. Therefore, understanding the potential significance of a cultural resource requires contextual information. Following is a brief summary of the prehistoric, ethnographic, and historic-period contexts of the study area.

CULTURAL SETTING

Prehistory

Robert Heizer and Albert Elsasser were the first researchers to propose a chronological sequence of past cultures based on site locations and technological differences in the archaeological record for the Tahoe Basin (Heizer and Elsasser 1953). This initial attempt at a chronological sequence contained only two main cultural manifestations. The earlier of the two was named the Martis Complex, after the Martis Valley located east of Truckee, and dated from 5,000 to 1,300 years before present (B.P.). Among the defining characteristics of the Martis Complex was a heavy reliance on tools made of basalt and the presence of milling stones and slabs for processing seed resources. The second cultural manifestation, called the King's Beach Complex, dated from 1300 B.P. to 150 B.P. and was characterized by the use of tools made of chert and obsidian, bedrock mortars, and small projectile points.

Research conducted during the subsequent decades has led to a more refined, though not necessarily always well defined, chronological cultural sequence (Elston et al. 1976; Hull 2007; Moratto 1984). The current and most widely accepted sequence contains six phases, each defined by temporally diagnostic projectile points:

- Tahoe Reach Phase (circa [ca.] 10,000–8000 B.P.)—Great Basin Stemmed series projectile points
- Spooner Phase (ca. 8000–5000 B.P.)—various large basalt projectile points
- Early Martis Period (ca. 5000–3000 B.P.)—Martis Contracting Stem and Martis Split Stem projectile points
- Late Martis (ca. 3000–1300 B.P.)—Martis Corner Notched, Elko Corner Notched, and Elko Eared points
- Late Archaic—divided into the Early Kings Beach Phase (ca.1300–800 B.P.), typified by Rosegate and Gunther Series points, and the Late Kings Beach Phase (ca. 800–150 B.P.), marked by Desert Side-notched and Cottonwood series projectile points

Ethnography and Ethnohistory

The study area is centrally located within the traditional territory of the Washoe (Kroeber 1925), with primary use by the Southern Washoe or *Hung a lel ti*. The rich environment of the Tahoe Basin afforded the Washoe a degree of isolation and independence from neighboring peoples, which may account for their long tenure in the area. The Washoe are part of an ancient Hokan-speaking residual population, which has been subsequently surrounded by Numic-speaking peoples, such as the Northern Paiute. The ethnographic record suggests that during the warmer months, small groups traveled through high mountain valleys collecting edible and medicinal roots, seeds, and marsh plants. In the higher elevations, men hunted large game (mountain sheep and deer) and trapped smaller mammals. Fishing may have been the most important economic activity for the Washoe (Barrett 1917; d'Azevedo 1986:466, 471; Kroeber 1925).

Washoe traditional lifeways changed with Euro-American settlement of the area. The Washoe became economically marginalized by the turn of the 20th century as their requests to government authorities for help were ignored. Most Washoe underwent difficult times because of the marginalization. More recently, Washoe people have been reinvesting in their community, such as by consolidating the tribe and raising their standard of living through education and job creation, and by renewing their pursuit of traditional cultural practices and beliefs (Barrett 1917; d'Azevedo 1986).

History

Historic-era activities in the Tahoe Basin and specifically in and near the study area can be discussed according to the general trends or themes that have most influenced current land use and development patterns. Unless specified otherwise, the information presented below is drawn from the work of Susan Lindström (1996, 2002).

Transportation

The opening of the Comstock silver mining boom in Nevada, beginning in mid-1859, prompted a surge in heavy wagon and freight traffic through the Tahoe Basin and the development of roadways and routes that allowed for increased and quicker travel though the region.

Johnson Pass Road was one of the earliest components of the Bonanza Road System between Placerville and the mines of the Comstock Lode (named for one of the original discoverers). The Bonanza Road System was known variously as the Johnson Cut-off, the Lake Road, the Placerville/Lake Tahoe Road, the Lake Bigler Toll Road, the Lake House Road, the Lincoln Highway, and ultimately as U.S. 50. The Bonanza Road (more commonly referred to as the "Old Placerville Road") traversed the Johnson Cut-off over Echo Summit, down to Lake Valley, and then to Mormon Station (Genoa). Laid out in l852 (probably as a narrow trail), it was passable for wagons sometime before 1854 (Hoover et al. 1966:76). The Lake House "dog-leg" of the Johnson Pass Road branched northward through the present-day Sierra Tract and Highland Woods subdivisions. One road branched from Pioneer Trail near the present fire station and the other road left Pioneer Trail along Trout Creek, about 2 miles northeast of Meyers.

Cattle Ranching and Agriculture

Several pioneer ranching and dairy families in the Tahoe region, including the Barton and Johnson families as discussed below, had land holdings on or near the lower reaches of the Upper Truckee River and Trout Creek drainages within and adjacent to the study area.

Barton Ranch

Cattleman Hiram "Hy" Barton was among several ranchers with holdings in the project vicinity (Scott 1957:195). William D. Barton's ranch and milk house, which later would be known as "Meadowedge," was located south and east of the study area and beyond Rubicon Trail.

Barton's Ranch, situated in the first meadow north of Yank's (Meyers) with the Upper Truckee River running through the holding, was not strictly considered a way station in the 1860s. Homesteaded by Hiram Barton, who came to California in the 1850s, it served as his Lake Valley "home ranch" during the summer season. Barton was the father of two girls and seven boys; one of his sons, William Delos Barton, was still active in the cattle business in 1955 with his headquarters at the Tahoe Valley Y (Scott 1957:379).

Johnson Ranch

Johnson family members were pioneers in the Lake Valley area and introduced irrigation practices to neighboring ranchers. Chris Johnson owned considerable land holdings in the project vicinity. Although most of the Johnson holdings were centered around Bijou Meadows, they also irrigated Trout Creek Meadows. In search of additional pastureland, Chris Johnson purchased acreage along the reach of Trout Creek within the eastern portion of the present-day Sierra Tract in the early 1900s.

According to Knox Johnson, grandson of Chris Johnson, the family stored water behind two dams on Trout Creek. The upper dam was located near the site of the current District offices and the lower dam was opposite Knox's former residence within the Sierra Tract at 1057 Blue Lake Avenue. Levees were built along both sides of Trout Creek to back up water and flood the meadow in what is now a residential area south of the study area near U.S. 50. The family ice house once occupied the location of the present-day muffler shop at 2774 Blue Lake Avenue (AECOM 2012).

Timber Harvesting

Several major lumber companies formerly operated in the Tahoe Basin. Each developed an impressive network of sawmills, railroads, tramways, flumes, and rafting operations, which were designed to cut and move most of the lumber over the crest of the Carson Range and down to the Comstock mines. The Carson & Tahoe Lumber & Fluming Company emerged as the chief operator, with holdings in the east-central, south, and southwestern portions of the Tahoe Basin.

During the 1890s, the Carson & Tahoe Lumber & Fluming Company obtained timber rights to more than 6,000 acres throughout the south shore of the lake, acquiring rights on Barton family holdings, among others. As the timber business prospered, thousands of men found work as lumberjacks (or "sawyers"), log rollers, and cordwood splitters; ranchers and dairymen who provisioned the lumber operations benefited as well. After the collapse of the timber industry, Lake Tahoe became increasingly well known as a resort destination (Hoover et al, 1966: 258).

Resort and Residential Community Development

With the demise of logging, title to land sections surrounding the study area was obtainable by paying the back taxes or, at the most, $1.50 an acre. This incentive led to an era of resort and summer-home development that came to characterize much of South Lake Tahoe (Scott 1957:219). As the Tahoe Basin attracted more tourists, diverse resorts appeared along the shores of the lake. Growing numbers of Eastern visitors joined the members of San Francisco's elite and the wealthy mining and business interests of the Comstock at the lake's best hotels.

By 1908 Chris Johnson owned land along Trout Creek, including a triangular piece of property within the current Sierra Tract subdivision located adjacent to and south of the study area. During the late 1940s, the Johnsons subdivided their parcel.

The Highland Woods subdivision is located at the southern extent of the Upper Truckee Marsh, adjacent to and immediately north of U.S. 50. The earliest part of this subdivision was developed in 1959 as the "Country Crossroads Village." The 10-acre lot located off of Sunset Drive, in the western end of the subdivision, was once a sawmill site that was operated during the 1940s by Gus Winkleman, a former supervisor for El Dorado County.

RESULTS OF CULTURAL INVESTIGATIONS

Native American Consultation

Consultation with Native American communities was conducted in November 2007 for the Upper Truckee River Marsh Restoration Project, which encompassed the study area; the consultation was initiated by EDAW (now AECOM). EDAW sent a letter to the Native American Heritage Commission (NAHC) requesting a search of its sacred lands file; any information regarding Native American land use during the prehistoric, ethnographic, and historic eras; and a list of local Native American representatives for consultation. The NAHC responded in November 2007. In its letter response, the NAHC stated that a search of its sacred lands file failed to indicate the presence of Native American cultural resources in the immediate study area for the Upper Truckee Marsh, which includes the study area. The NAHC's response also listed three local Native American representatives; two were members of the Washoe Tribe of Nevada and California, a Federally recognized tribe.

Contact letters were sent to Rose Enos of Auburn, California, and Waldo Walker (chairperson) and Lynda Shoshone (tribal historic preservation officer) of the Washoe Tribe of Nevada and California. Ms. Shoshone requested an on-site meeting with EDAW (now AECOM) that occurred on November 21, 2007. Ms. Shoshone noted that the Washoe traditionally inhabited the Upper Truckee River and Marsh area. Generally, she expressed support for the restoration of channel and ecological conditions because the improved conditions might more closely resemble conditions at the time of tribal habitation.

In addition, AECOM conducted Native American consultation in 2012. A project site visit was conducted on August 8, 2012, to review designs for the Upper Truckee River Marsh Restoration Project as they related to prehistoric site CA-ELD-26. In attendance were Daryl Cruz, cultural resources coordinator for the Washoe Tribe of Nevada and California tribal historic preservation officer; Myrnie Mayville and William Soule from the U.S. Bureau of Reclamation (Reclamation); Danielle Hughes of AECOM; and Scott Carroll and Peter Eichar from the Conservancy. Mr. Cruz expressed initial concerns regarding proposed bike trails; these concerns were resolved by assurances that the proposed trail designs would be removed from the site and surrounding bluff area. The bluff area of concern is outside the study area for the District's proposed project. No further requests regarding the treatment of the site were requested. Mr. Cruz was asked to have the Washoe provide cultural monitoring of initial staging within the bluff area for the Upper Truckee River and Marsh Restoration Project.

Study Findings

This section is based on *Cultural Resources Inventory and Evaluation Report: Upper Truckee River and Marsh Restoration Project*, prepared by AECOM in January 2012 for the Conservancy, the California Department of General Services (DGS), and Reclamation. The investigation included an archaeological pedestrian survey conducted by AECOM, a records search conducted at the North Central Information Center, and Native American consultation as detailed above. The report also discussed the findings of nine previous investigations conducted near and within the study area.

AECOM surveyed all portions of the Upper Truckee River Marsh Restoration Project area, which included the study area for the proposed project, to intensive standards. A total of 16 cultural resources—13 historic-era resources and three prehistoric resources—were identified in the project vicinity during the record search and pedestrian survey. The historic-era resources are generally associated with transportation, logging, and the cattle industry; no historic-era resources were recommended eligible for listing in the California Register of Historical Resources (CRHR) and National Register of Historic Places (NRHP) by AECOM (2012). AECOM could not evaluate two of the cultural resources because they were partially submerged during the pedestrian survey. The prehistoric-era resources consisted of two isolated finds and a habitation/lithic scatter site; the habitation site was recommended eligible for listing in the CRHR and NRHP while the two isolated finds were not. In general, the AECOM 2012 report shows that portions of the project vicinity were used intensively during both the prehistoric and historic eras.

Within the study area, however, only two cultural resources are present, both dating to the historic era: CA-ELD-721H (Old Placerville Road) and CA-ELD-2239H (historic-era fence lines). CA-ELD-721H was not recommended eligible for listing in either the CRHR or NRHP; although it did demonstrate how the area has been influenced by early transportation systems and is associated with important historical events in the Tahoe Basin, the resource has lost its integrity and no longer conveys its original construction or use (AECOM 2012). CA-ELD-2239H is associated with the theme of ranching, but this resource is not associated with important events in

the past or persons important in history, is not itself associated with the work of a master, lacks high artistic value, and has little data potential; it was therefore also recommended as not being eligible for listing in the CRHR or NRHP (AECOM 2012). Reclamation has submitted the study findings for the Upper Truckee River Marsh Restoration Project and State Historic Preservation Office concurrence is expected before construction begins for the District's proposed project (Soule, pers. comm., 2014).

No significant cultural resources (resources listed or eligible for listing in the CRHR or NRHP) have been identified within the study area; therefore, no known cultural resources require further consideration.

3.5.2 DISCUSSION

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

Less than Significant with Mitigation Incorporated. As part of the proposed project, road fill in the study area that is associated with CA-ELD-721H (Old Placerville Road) would be removed to eliminate the channel constriction downstream of the Bellevue Pump Station and decrease the potential for future channel avulsion onto the District's easement. Because none of the cultural resources identified in the study area appear to be eligible for listing in the NRHP/CRHR, they do not require further consideration. Given that prehistoric and historic-era resources have been identified in the project vicinity, it is possible that previously undiscovered historical resources may be encountered during project-related, ground-disturbing activities. Therefore, this impact would be potentially significant.

Mitigation Measure CUL-1: Avoid Potential Effects on Previously Undiscovered Resources.

If buried or previously unidentified resources are discovered during project activities, all work within a 30-foot radius of the find will cease. The District will hire a professional archaeologist meeting the Secretary of the Interior's Professional Standards for Archaeologists to assess the discovery and recommend what, if any, further treatment or investigation is necessary for the find. Any necessary treatment/investigation will be completed before project activities continue in the vicinity of the find. If the find is related to tribal uses, the Washoe Tribe of Nevada and California will be contacted and invited to consult with the hired professional archaeologist or monitor any further necessary treatment or investigation if needed.

Implementing Mitigation Measure CUL-1 would reduce the impact of the proposed project on previously undiscovered historical resources to a less than significant level.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less than Significant with Mitigation Incorporated. There are no known archaeological resources in the study area. Given the project location and the presence of a nearby archaeological resource, previously undiscovered archaeological resources could be inadvertently found during ground-disturbing project activities. Therefore, this impact would be potentially significant.

Implementing Mitigation Measure CUL-1, as described above, would reduce the impact associated with the project's potential to disturb previously unidentified archaeological resources to a less than significant level.

c) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No Impact. A review of the Geologic Map of the Lake Tahoe Basin indicates that the study area is composed of Holocene-age (i.e., 11,700 years B.P. to Present Day) floodplain deposits, composed of silty sand and sandy to clayey silt (Saucedo 2005). By definition, to be considered a fossil, a resource must be more than 11,700 years old. Holocene deposits contain only the remains of extant, modern taxa (if any resources are present), which are not considered "unique" paleontological resources. Therefore, this formation is not considered paleontologically sensitive. As a result, no impact on paleontological resources would occur.

d) Would the project disturb any human remains, including those interred outside of formal cemeteries?

Less than Significant with Mitigation Incorporated. There is no evidence suggesting the presence of any prehistoric or historic-era marked or unmarked human interments within the study area or in the immediate vicinity. This does not preclude the possibility that unmarked, previously unknown graves of Native Americans or Euro-Americans could be present in the study area. Because of the potential for disturbance of previously undiscovered human remains during project construction, this impact would be potentially significant.

Mitigation Measure CUL-2: Avoid Potential Effects on Previously Undiscovered Burials.

In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities, the District and its contractor(s) will immediately halt potentially damaging excavation in the area of the burial and will notify the El Dorado County Coroner and a professional archaeologist to determine the nature of the remains. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). After the coroner's findings have been made, the archaeologist and the NAHC-designated Most Likely Descendant will determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed. The responsibilities of El Dorado County for acting upon notification of a discovery of Native American human remains are identified in Section 5097.9 of the California Public Resources Code.

California law recognizes the need to protect Native American human burials, skeletal remains, and items associated with Native American burials from vandalism and inadvertent destruction. The District will ensure that the procedures for the treatment of Native American human remains contained in California Health and Safety Code Sections 7050.5 and 7052, and California Public Resources Code Section 5097, are followed.

Implementing Mitigation Measure CUL-2 would reduce the impact associated with the project's potential to disturb human remains to a less than significant level.

3.6 GEOLOGY AND SOILS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. Geology and Soils. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

3.6.1 ENVIRONMENTAL SETTING

The study area is located on the South Lake Tahoe, California, 7.5-minute U.S. Geological Survey quadrangle map. Elevations are approximately 6,228–6,245 feet above mean sea level, and the study area slopes gently toward the lake (to the north). A review of the Geologic Map of the Lake Tahoe Basin, California and Nevada, indicates that the study area is composed of Holocene-age (i.e., 11,700 years Before Present to Present Day) floodplain deposits, composed of silty sand and sandy to clayey silt (Saucedo 2005).

The study area is located along the southern shore of Lake Tahoe on a regionally significant down-faulted graben (i.e., trench-like geologic feature), sometimes referred to as a half-graben. The study area is not located in an Alquist-Priolo Earthquake Fault Zone (CGS 2012). The nearest fault zoned under the Alquist-Priolo Act is near Minden, Nevada, approximately 20 miles from the study area. The Geologic Map of the Lake Tahoe Basin,

California and Nevada, shows several faults mapped near the study area (Saucedo 2005). The North Tahoe Fault, located beneath the lake, is a northeast-southwest trending fault, approximately 7.0 miles long. The northeast-southwest trending Incline Village Fault zone appears to be the landward extension of the submerged North Tahoe Fault and trends northeast toward the Truckee Meadows Fault. All three of these faults may be part of a system of normal faults that rupture together. Geologic evidence indicates that an earthquake may have occurred along the Incline Village Fault as recently as 500 years ago (during the Holocene), and all three faults are estimated to be capable of generating an earthquake of magnitude 7.0 (Seitz and Kent 2004).

The East Tahoe Fault, much of which is also located under Lake Tahoe, is inferred to bound the east margin of the Tahoe Basin (Sawyer 1999). The fault shows bedding terminating against a planar west-dipping bedrock surface, suggesting young movement by the fault. Recent bathymetry of Lake Tahoe reveals that the escarpment of the East Tahoe Fault is deeply dissected, has an irregular base, and is partly buried at the base by well-developed sediment aprons. The subaqueous fault has probably been modified by the deposition of thick debris avalanche deposits, which appear to have accumulated against the eastern basin escarpment after one or more very large debris avalanches that began on the west wall of the basin. Schweickert et al. (2000) speculated that at least one mega-landslide on the west side of the basin was triggered by a Holocene faulting event. No evidence has been reported that the East Tahoe Fault displaces Quaternary deposits on the north or south shores of the lake.

The north-south trending West Tahoe–Dollar Point Fault zone is another prominent normal slip fault zone in the Tahoe Basin (Ichinose et al. 1999). The West Tahoe Fault is submerged from Emerald Bay to McKinney Bay. The Dollar Point Fault is the northern continuation of the West Tahoe Fault northward from McKinney Bay. These faults are likely to rupture together.

According to the Earthquake Potential Map for Portions of Eastern California and Western Nevada, the Tahoe area has a moderate potential for shaking caused by seismically related activity (CGS 2005). According to the Nevada Seismological Laboratory catalog, eight earthquakes measured at a moment magnitude (M) of 4.2 M or greater have occurred since 1950 within approximately 18 miles of the center of Lake Tahoe (Smith et al. 2004). These include an M 4.5 earthquake at Tahoe Vista (approximately 35 miles northeast of the study area) on June 3, 2004. The 2004 event has been attributed to an increase in upper crustal seismicity following a deep dike swarm of 1,611 earthquakes that occurred in the Tahoe Vista area at the site of a deep magma-injection event beneath Lake Tahoe (Smith et al. 2004). Recent seismic research in the Tahoe Basin suggests that the potential for strong seismic shaking in the area may be greater than had been thought previously.

TRPA Land Capability and Coverage

The Upper Truckee Marsh is classified under the TRPA Land Capability Classification system as Land Capability District 1b, Stream Environment Zone (SEZ). Land use in the District's easement area and adjacent meadow to the south is primarily recreational, and the Conservancy manages this use to protect marsh resources. User-created trails within the study area are mapped as "soft" coverage within the SEZ; however, the abandoned roadfill has never been verified as coverage. To the north of the District's easement, the adjacent residential area is mostly located in Land Capability Districts 6 and 7.

Soils

Based on a review of U.S. Natural Resources Conservation Service (NRCS) (2014) soil survey data, project-related activities would take place in the three soil types described below.

Tahoe Complex, 0 to 2 percent slopes—This soil type is located in the southern part of the Tahoe Basin, within floodplains and valley flats. Soils consist of mucky silt loam, gravelly coarse sand, loam, sandy loam, and loamy sand. This soil type is subject to flooding, is very poorly drained, has low shrink-swell potential, and has a very high runoff potential when thoroughly wet under natural conditions. The Tahoe Complex also has a low water erosion hazard and a moderate wind erosion hazard. This soil type has limitations for road construction, excavations, and dwellings because of a high potential for flooding and ponding, high organic-matter content, high potential for frost action, shallow depth to groundwater, and low soil bearing strength.

Tahoe Complex, 0 to 5 percent slopes, gravelly—This soil type is located in riparian corridors all around the Tahoe Basin, within floodplains and valley flats. The soils are derived from granitic and volcanic parent material and consist of mucky gravelly silt loam, gravelly loam, gravelly loamy fine sand, and gravelly fine sand. The Tahoe Complex has a low wind and water erosion hazard. This soil type is occasionally subject to flooding, is poorly drained with high permeability, has low shrink-swell potential, and has a very high runoff potential when thoroughly wet under natural conditions. This soil type has limitations for road construction, excavation, and dwellings because of a high potential for flooding and ponding, high organic-matter content, high potential for frost action, shallow depth to groundwater, and low soil bearing strength.

Watah peat, 0 to 2 percent slopes—This soil type is located in the southern part of the Tahoe Basin, in fens, floodplains, and valley flats. Soils consist of peat, mucky peat, mucky gravelly coarse sandy loam, and gravelly loamy coarse sand. The soil has high permeability and low shrink-swell potential, is very poorly drained, and has very high surface runoff potential when thoroughly wet under natural conditions. Flooding and ponding occur frequently in this soil type. Watah peat soil also has a low wind and water erosion hazard. It has limitations for road construction, excavation, and dwellings because of a high potential for flooding and ponding, high organic-matter content, high potential for frost action, shallow depth to groundwater, and low soil bearing strength.

3.6.2 DISCUSSION

a) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)

No Impact. The study area is not located in an Alquist-Priolo Earthquake Fault Zone (CGS 2012), and the project site is not underlain by or adjacent to any known faults. The nearest fault zoned under the Alquist-Priolo Act is near Minden, Nevada, approximately 20 miles southeast of the study area. Furthermore, the proposed project does not entail the construction of any buildings, utilities, or permanent hard-surface roads where surface fault rupture could pose a hazard. Therefore, no impact would occur.

ii) Strong seismic ground shaking?

No Impact. As described above, there are several known faults in the project region, such as the East Tahoe Fault and the Incline Village Fault, for which geologic evidence indicates that activity has occurred during Holocene time (i.e., active faults). Potentially active faults include the Genoa Fault and the Tahoe Valley Fault. The Genoa Fault is located approximately 20 miles east of the study area and is capable of generating an earthquake of

magnitude 7.4. The Tahoe Valley Fault Zone surrounds the study area to the north, west, and south. This Quaternary fault has a slip rate of <0.2 millimeter per year. Other fault zones in the Tahoe Basin, including the North Tahoe and West Tahoe-Dollar Point, also may pose a hazard for strong seismic ground shaking in the project vicinity. However, the proposed project does not entail the construction of any buildings, utilities, or permanent hard-surface roads where strong seismic ground shaking could pose a hazard. Therefore, no impact would occur.

iii) Seismic-related ground failure, including liquefaction?

No Impact. 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, thus becoming similar to quicksand. Factors determining liquefaction potential are soil type, level and duration of seismic ground motions, type and consistency of soils, and depth to groundwater. Liquefaction poses a hazard to engineered structures. The loss of soil strength can cause bearing capacity to be insufficient to support foundation loads, increase lateral pressure on retaining walls, and result in slope instability. Based on a review of NRCS (2014) data on the project site's soil characteristics, the shallow groundwater table at the project site, and the fact that active and potentially active faults are present in the project region, the potential exists for liquefaction to occur should a large-magnitude earthquake occur on one of the faults in the Tahoe Basin. However, the proposed project does not entail the construction of any buildings, utilities, or permanent hard-surface roads where strong seismic ground shaking could pose a hazard. Therefore, no impact would occur.

iv) Landslides?

No Impact. The study area is located in an area of level terrain, and it is not located adjacent to an area of steep slopes where landslides could occur. Thus, no impact would occur.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less than Significant Impact. As discussed in detail in item a in Section 3.9, "Hydrology and Water Quality," construction-related disturbances occurring within and adjacent to the channel could result in soil erosion and associated sedimentation; however, several measures have been developed as part of the proposed project in order to avoid excessive erosion and to protect water quality. The overall intent of the AMP is to provide infrastructure protection while minimizing disturbance to existing resources in the Upper Truckee Marsh. Year 1 construction will generally occur between September 1 and October 15, when creek flows are lowest and the meadow surface is driest. Construction will only proceed when flows are less than 20 cfs as measured at the U.S. Geological Survey (USGS) Tahoe Valley gauge.

Measures to minimize erosion are discussed in Section 5.6 of the AMP. For example, most of the work would be performed by hand crews; only low-ground-pressure equipment (less than 5 pounds per square inch loaded) would be used; and the District's easement (which would serve as the primary equipment access area and would have the most trips) would be protected with wood chips, mats, or plates. One-time access for LGP equipment would be made via U.S. 50 and Rubicon Trail and existing pedestrian access routes. No staging area is anticipated for this access route because no significant material quantities would be imported or exported. A temporary bridge would be necessary to cross Trout Creek to access the abandoned road; structural support for the crossing would be placed on coarse bed material without excavation of the channel or meadow. Furthermore, fill placement

would be vegetatively stabilized, generally with marsh mats. Locally, fill may also be stabilized with erosion-control fabric planted with sod or plugs.

In addition, the adaptive management approach of this project relies on natural processes to achieve project objectives and will result in the pilot channels or other flow paths gaining flow capacity over time by expansion into active main channels. This process will be most active during the non-construction periods during peak flows when aesthetic beneficial uses less prevalent given access to the marsh is somewhat limited by the wet conditions and background turbidity levels are naturally higher. The pilot channel design will incorporate vegetative grade controls or temporary erosion control measures to provide stability at low flows. Enlargement of the pilot channel is expected over time, primarily during spring snowmelt and individual storms. Similarly, constructed left bank overflow points may experience some erosion during high flows. Some turbidity will be generated during active widening of the channels until conditions approach that of the upstream and downstream channels. During high flow periods background (upstream) turbidity is elevated and project related turbidity is expected to be consistent with natural processes associated with channel changes in other locations of the Upper Truckee Marsh and in upstream reaches of Trout Creek. The extent and duration of increases cannot be precisely predicted. However, even if an increase occurs there will be storage and treatment within the Upper Truckee Marsh downstream of the project that will ameliorate any marginal increase prior to discharging to Lake Tahoe.

The District will minimize the duration, magnitude, and potential effects of sediment discharges through monitoring, control of any turbid water, staged activation of new flow paths, designs to encourage expansion of favorable flow paths primarily during periods of high flows, and temporary and remedial erosion control measures. All observations will be recorded and provided to the Lahontan RWQCB, as described in Appendix E of the AMP.

Based on the information regarding construction management, project related construction and post-construction channel adjustments are not expected to cause excess erosion or sedimentation. Therefore, this impact is considered less than significant.

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less than Significant Impact. NRCS (2014) soil survey data indicate that soils at the project site are limited for shallow excavations because of frequent ponding, frequent flooding, and a shallow depth to groundwater. However, ground-disturbing activities associated with the proposed project would only occur from September 1 through October 15, when meadow soils are driest, creek flow is at its lowest level, and flooding potential is lowest. Because of the shallow depth to groundwater, dewatering would be implemented as necessary based on site-specific conditions as described in Chapter 2, “Project Description” and Section 5.6 of the AMP. The proposed project does not include construction of any buildings, utilities, or permanent hard-surface roads where soil instability would be a factor. Therefore, this impact would be less than significant.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?

No Impact. Based on a review of NRCS (2014) soil survey data, all soils on the project site have a low shrink-swell potential. Furthermore, the proposed project does not entail the construction of buildings, utilities, or

permanent hard-surface roads where shrink-swell potential would be a design consideration. Thus, no impact would occur.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The proposed project does not require the use of septic tanks or alternative wastewater disposal systems. During project construction, restroom facilities would be provided via portable toilets at the staging area near the Bellevue Pump Station. Thus, no impact would occur.

3.7 GREENHOUSE GAS EMISSIONS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. Greenhouse Gas Emissions.				
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impacts on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

3.7.1 ENVIRONMENTAL SETTING

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. A portion of the solar radiation that enters the earth's atmosphere is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. Infrared radiation (i.e., thermal heat) is absorbed by GHGs; as a result, infrared radiation released from the earth 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.

GHGs are present in the atmosphere naturally, released by natural sources, and formed from secondary reactions taking place in the atmosphere. The following GHGs are widely seen as the principal contributors to human-induced global climate change:

- Carbon dioxide (CO_2)
- Methane
- Nitrous oxide
- Hydrofluorocarbons
- Perfluorocarbons
- Sulfur hexafluoride

Global warming potential (GWP) is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to CO_2. The GWP of a GHG is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time (i.e., lifetime) that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG. GHGs with lower emissions rates than CO_2 may still contribute to climate change because they are more effective at absorbing outgoing infrared radiation than CO_2 (i.e., high GWP). The concept of CO_2 equivalents (CO_2e) is used to account for the different GWP potentials of GHGs to absorb infrared radiation.

GHG emissions related to human activities have been determined to be highly likely responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate (IPCC 2007). Similarly, impacts of GHGs are

borne globally, as opposed to the more localized air quality effects of criteria air pollutants and toxic air contaminants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; however, no single project alone is expected to measurably contribute to a noticeable incremental change in the global average temperature, or to a global, local, or micro climate. Given the nature of environmental consequences from GHGs and global climate change, CEQA requires that lead agencies evaluate the cumulative impacts of GHGs, even relatively small additions, on a global basis.

3.7.2 DISCUSSION

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than Significant Impact. Emission sources such as off-road construction equipment, trucks hauling materials to the study area, and worker commute vehicles would generate GHG exhaust emissions during construction. Construction-related GHG emissions would be generated primarily in the form of CO_2. Although emissions of other GHGs, such as methane and nitrous oxide, are important with respect to global climate change, the emission levels of these other GHGs from on- and off-road vehicles used during construction are relatively small compared with CO_2 emissions, even when factoring in the relatively larger global warming potential of methane and nitrous oxide.

This analysis includes a quantification of total modeled construction-related GHG emissions. Such emissions were estimated using the same methodology discussed earlier in Section 3.3, "Air Quality." CalEEMod estimates GHG emissions associated with project development, including transportation, electricity, natural gas, solid waste, water and wastewater, and area-source emissions.

The El Dorado Air Quality Management District (EDCAQMD) has not established quantitative significance thresholds for evaluating GHG emissions in CEQA analyses. Each project is evaluated on a case-by-case basis using the most up-to-date calculation and analysis methods. EDCAQMD's *CEQA Guide to Air Quality Assessment* includes numerous references to methodologies for analysis of criteria pollutant emissions developed by other air districts, such as the Sacramento Metropolitan Air Quality Management District and the South Coast Air Quality Management District. Therefore, in light of the lack of a specific GHG threshold or guidance from EDCAQMD, it is considered appropriate to reference methodologies and guidance from those agencies when discussing GHG emissions.

The San Luis Obispo Air Pollution Control District has adopted 1,150 metric tons (MT) CO_2e as a project-level GHG significance threshold that would apply to annual operational and amortized construction emissions from land use development projects (SLOAPCD 2012). San Diego County has established a threshold of 2,500 MT CO_2e per year as a project-level GHG significance threshold that would apply to operational and construction emissions from land use development projects (San Diego County 2013). The South Coast Air Quality Management District GHG Working Group has proposed a significance screening level of 3,000 MT CO_2 per year for residential and commercial projects (SCAQMD 2010).

GHG emissions associated with construction of the proposed project would be 12 MT CO_2e. The proposed project is not expected to generate new vehicle trips and would not require additional maintenance or operations activities that would exceed existing levels. The proposed project would not substantially increase the generation or use of electricity, water, wastewater, and solid waste.

The total construction-related and operational CO_2e emissions of 12 MT CO_2e associated with the proposed project would be substantially less than any of the proposed or adopted GHG thresholds discussed earlier in this section. Therefore, the proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. This impact would be less than significant.

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less than Significant Impact. Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, requires that statewide GHG emissions be reduced to 1990 levels by 2020. The California Air Resources Board's (ARB's) Scoping Plan is the State's plan to achieve the GHG reductions in California required by AB 32 and also reiterates the State's role in the long-term goal established in Executive Order S-3-05, which is to reduce GHG emissions to 80 percent below 1990 levels by 2050. According to ARB, the 2020 goal was established as an achievable, midterm target, and the 2050 GHG emissions reduction goal represents the level scientists believe is necessary to stabilize the climate (ARB 2008). However, the Scoping Plan does not recommend additional measures for meeting specific GHG emissions limits beyond 2020. In general, the measures described in the Scoping Plan are designed to meet emissions goals in 2020 and do not become increasingly stringent after 2020.

ARB's current Scoping Plan includes measures that would indirectly address GHG emissions levels associated with construction activity, including the phasing in of cleaner technology for diesel engine fleets (including construction equipment) and the development of a Low Carbon Fuel Standard. Policies formulated under the mandate of AB 32 that are applicable to construction-related activity, either directly or indirectly, are assumed to be implemented during construction of the proposed project if those policies and laws are developed before construction begins. Therefore, it is assumed that project construction would not conflict with the Scoping Plan.

ARB is required to update the Scoping Plan at least once every 5 years to evaluate progress and develop future inventories that may guide this process. ARB is currently updating the Scoping Plan, and a revision is expected to be adopted in 2014. Because ARB has not completed the update to the Scoping Plan, it is unknown at this time what effect any additional measures may have on the proposed project.

El Dorado County does not currently have a climate action plan. In addition, the proposed project would not conflict with the AB 32 Scoping Plan or any other plans, policies, or regulations for the purpose of reducing GHG emissions. As discussed previously, the proposed project would also not generate GHG emissions that would have a significant impact on the environment. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation for the purpose of reducing GHG emissions. This impact would be less than significant.

3.8 HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. Hazards and Hazardous Materials. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
h) 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?	☐	☐	☒	☐

3.8.1 ENVIRONMENTAL SETTING

HAZARDOUS MATERIALS

AECOM searched several publicly available databases maintained under California Public Resources Code (PRC) Section 65962.5 (i.e., the "Cortese List") to determine whether any known hazardous materials are present either within or immediately adjacent to the study area.

The State Water Resources Control Board (SWRCB) maintains the GeoTracker database, an information management system for groundwater. Data on leaking underground storage tanks and other types of soil and

groundwater contamination, along with associated cleanup activities, are part of the information that the SWRCB must maintain under PRC Section 65962.5. A search of the GeoTracker database (SWRCB 2014) indicated that there are no known open, active cases of contamination in the study area, but there are several open cases in the vicinity of the study area near U.S. 50 and to the west at the Tahoe Keys Marina (Table 3.8-1).

Table 3.8-1
State Water Resources Control Board Potential Contamination Sites

Site and Location	Designation	Potential Contaminant	Potential Media Affected	Cleanup Status
Tahoe Keys Marina 2435 Venice Drive South Lake Tahoe, California	LUST	Gasoline	Surface water/soil	Verification monitoring—eligible for closure
Former Midas Muffler 2709 Lake Tahoe Blvd. South Lake Tahoe, California	LUST	Petroleum hydrocarbons and chlorinated solvents	Aquifer/drinking water	Site assessment
Former Terrible Herbst Gas Station 2762 Lake Tahoe Blvd. South Lake Tahoe, California	LUST	Gasoline, waste oil/ motor/hydraulic/lubricant	Aquifer/drinking water	Verification monitoring—eligible for closure
Berry/Hinckley Industries Bulk Fuel Plant 2070 James Avenue South Lake Tahoe, California	Cleanup program site	Diesel, gasoline	Aquifer/drinking water	Verification monitoring
South Y PCE U.S. 50/ Emerald Bay Road South Lake Tahoe, California	Cleanup program site	Perchloroethylene	Aquifer/drinking water	Site assessment

Note: LUST = leaking underground storage tank
Source: SWRCB 2014

The Hazardous Waste and Substances Site List (the "EnviroStor" database) is maintained by the California Department of Toxic Substances Control (DTSC) as part of the requirements of PRC Section 65962.5. A search of the EnviroStor database indicated that there are no open sites or active cases of hazardous waste and substances present either within or immediately adjacent to the study area (DTSC 2014).

A search of the U.S. Environmental Protection Agency's (EPA's) Envirofacts database (which includes records maintained under the Comprehensive Environmental Response, Compensation, and Liability Act) indicated that there are no known open sites or active cases of hazardous material contamination either within or immediately adjacent to the study area (EPA 2014).

EPA maintains records of small- and large-quantity generators of hazardous waste pursuant to the Resource Conservation and Recovery Act through a national program management and inventory system regarding hazardous-waste handlers. Small-quantity generators produce 220–2,200 pounds of hazardous waste per month; large-quantity generators produce more than 2,200 pounds of hazardous waste or more than 2.2 pounds of acutely hazardous waste per month. This information is available to the public through EPA's Envirofacts database (EPA 2014). Although no large-quantity generators are located near the study area, two small-quantity generators are located in the project vicinity, with no reported violations:

- Pacific Bell (now AT&T), 2633 Sussex Avenue
- Rite Aid Drugstore No. 6107, 1020 Al Tahoe Boulevard

There is one Superfund site in the South Lake Tahoe area: the Meyers Landfill, located on Forest Road No. 1204 (i.e., "Garbage Dump Road") south of Pioneer Trail, approximately 3.8 miles south of the study area (EPA 2013). The Meyers Landfill was a municipal landfill that was operated by private parties from 1946 to 1955 and by El Dorado County from approximately 1955 to 1971 under U.S. Forest Service special-use permits. Groundwater beneath the landfill has been contaminated by water leaching through the decomposing landfill waste. This has resulted in a groundwater contaminant plume that extends approximately 2,000 feet down-gradient from the landfill. The results of a 2012 groundwater investigation indicate that contaminated groundwater in the upper groundwater zone appears to be moving northeastward, parallel to Saxon Creek. The eastern edge of this plume has migrated underneath Saxon Creek and is currently located approximately 700 feet from Trout Creek, upstream of the study area. Groundwater in the middle groundwater zone is moving in a more northerly direction toward Pioneer Trail (USFS 2013:Figure 7). The primary contaminants of concern are vinyl chloride (a carcinogen) and related volatile organic compounds. The results of groundwater sampling indicate that vinyl chloride concentrations have historically ranged from less than 0.5 part per billion (ppb) to 100 ppb (1 ppb is about one drop in 13,750 gallons of water).

The landfill has been covered with a cap of clean soil and a geomembrane layer, and drainage improvements have been completed, to prevent further infiltration of water through the landfill and into the groundwater. The final phase of soil remediation, which consists of revegetation, was implemented in 2013. The site remains closed to public access to allow the vegetation to become established. A series of groundwater monitoring wells have been installed and groundwater monitoring is planned for the next several years (USFS 2013).

SCHOOLS

There are no schools within 0.25 mile of the study area. The closest school is South Tahoe Middle School, located approximately 2,000 feet east of the study area, on the east side of U.S. 50.

AIRPORTS

The northern end of the runway at the Lake Tahoe Airport is located approximately 2.1 miles southwest of the study area. The airport is owned and operated by CSLT. Although the Lake Tahoe Airport is equipped to be a commercial air carrier/general-aviation airport, it does not currently support commercial flights and there is no commercial operator. The airport includes one north-south asphalt runway, which is 8,544 feet long by 150 feet wide (CSLT ALUC 2007).

The Lake Tahoe Airport is adjacent to the Upper Truckee River and its corridor of aquatic, wetland, riparian, and upland habitats that extends from upstream of the airport through South Lake Tahoe to the lake. The airport's location in this corridor, its proximity to Lake Tahoe, and the extensive areas of natural vegetation nearby create the potential for hazardous wildlife movement through the airport's clear, approach/departure, and overflight zones.

The study area provides habitat for several groups of species that can be hazardous to aviation (FAA 2007):

- *Waterfowl.* This group includes all ducks, geese, and swans. Although not strictly waterfowl, rails and grebes are also included in this guild. Most of the study area, specifically the river corridor and other open water as well as montane meadows in the project vicinity, provides habitat for waterfowl.

- *Gulls.* The study area and downstream beaches and dunes, open water, disturbed areas, and to a lesser extent, most other land cover types provide habitat for gulls.

- *Sparrows, larks, and finches.* Species in this group forage throughout most of the study area and breed in most land cover types.

- *Raptors.* Several species of raptors use the study area. The open cover types (e.g., montane and wet meadows) provide foraging habitat, and the lodgepole pine and Jeffrey pine forests provide perch sites and some nesting habitat for raptors.

- *Swallows*. Swallows are summer migrants, present from spring to early fall. The river and creek corridors and other open water, beaches and dunes, wetlands, and the wet and montane meadows in the project vicinity all provide foraging habitat for swallows. Postbreeding flocks of swallows can be present in late summer, particularly when flying insects are abundant.

- *Blackbirds and starlings*. The disturbed areas, and to a lesser extent the beach, dune, and meadow areas, in the project vicinity provide foraging habitat for blackbirds and starlings. All species in this guild are gregarious and can form large flocks.

- *Corvids.* This guild includes ravens, magpies, and jays. The Upper Truckee Marsh and most of the study area provide habitat for these species.

- *Columbids*. Only two species in this guild occur: rock pigeon and mourning dove. In the project vicinity, disturbed areas, beaches and dunes, and to a lesser extent montane meadows provide habitats for columbids.

- *Wading birds*. This guild includes herons and egrets. The Upper Truckee River, Trout Creek, other open water, and wetlands in the project vicinity provide habitat for wading birds.

Section 3.4, "Biological Resources," provides additional information about wildlife and habitat in the study area. Habitat for these species groups is provided not only in the study area, but also in the vicinity in the Upper Truckee Marsh; along the Upper Truckee River corridor; in a large portion of the airport's clear, approach/departure, and overflight zones; and in most of the 10,000-foot-wide Critical Zone (within which the Federal Aviation Administration [FAA] recommends minimizing attractants of hazardous wildlife).

Despite the presence of extensive habitat for hazardous wildlife in its vicinity, bird-plane collisions (i.e., bird strikes) have not been a serious problem at the Lake Tahoe Airport. There are four records of bird strikes at the Lake Tahoe Airport in the FAA Wildlife Strike Database (FAA 2013), which involved a mourning dove, ducks, a red-tailed hawk, and an unidentified small bird. No damage was caused by these strikes, which all occurred between 1991 and 1995 when the airport was providing commercial airline services (which ceased in 2000). No wildlife strikes have been reported at the Lake Tahoe Airport since 1995.

WILDFIRE HAZARD

The study area generally consists of montane meadow and willow scrub–wet meadow plant communities. The willow scrub–wet meadow community occurs primarily in association with the stream channel and as scattered patches within the floodplain. On the right overbank of the stream channel near the abandoned road fill, a broader area of slightly higher ground exists, a portion of which is vegetated with lodgepole pines. The area immediately adjacent to and east of the current channel alignment lies within the Al Tahoe West housing area. Numerous lodgepole pines are present throughout this area and adjacent to the stream channel and the Bellevue Pumping Station.

Removal of forest vegetation on California Tahoe Conservancy (Conservancy) property that poses fuel hazards is a cooperative effort between the Conservancy and the California Department of Forestry and Fire Protection (CAL FIRE). Since the Conservancy acquired majority ownership of the area in 2000, fuel reduction efforts have focused primarily on removing vegetation reported by citizens as dead or dying. Citizen requests to remove vegetation in the study area perceived to be a potential fuel hazard increased after the Angora fire (June 2007), prompting the Conservancy to include the study area on the agency's fuel-hazard-reduction list in summer 2007. CAL FIRE flags vegetation within the study area and on nearby Conservancy-owned parcels, such as those scattered among the privately owned residential parcels in the Al Tahoe neighborhood. Once vegetation is marked, the Conservancy removes fuels and performs periodic maintenance.

3.8.2 DISCUSSION

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than Significant Impact. As described in Chapter 2, "Project Description," nearly all project-related activities would be implemented using hand crews. Construction for the proposed project would involve the routine transport and handling of a minimal amount of hazardous substances such as diesel fuels and lubricants. Handling and transport of these materials during project construction could expose workers to hazardous materials. Transportation of hazardous materials on area roadways is regulated by the California Highway Patrol and the California Department of Transportation, and use of these materials is regulated by DTSC, as outlined in Title 22 of the California Code of Regulations. The District and its contractor would be required to use, store, and transport hazardous materials in compliance with Federal, State, and local regulations during project construction. No hazardous materials would be used or stored in the study area after project construction. Because the proposed project is legally required to comply with applicable Federal, State, and local laws pertaining to the handling, transport, storage, and disposal of hazardous materials, including California Occupational Health and Safety Administration requirements, this impact would be less than significant.

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?

Less than Significant Impact. As described in Chapter 2, "Project Description," nearly all project-related activities would be implemented using hand crews. Heavy construction equipment that uses small amounts of hazardous materials, such as oils, fuels, and other potentially flammable substances, would be used only minimally as part of this project and staging would be located outside of the marsh at the Bellevue Pump Station. Therefore, the potential for project construction activities to create an environmental hazard from upset or

accident conditions involving the release of these hazardous materials into the environment is considered minor. The District would be legally required to conform to all applicable regulations and permitting requirements of the Lahontan RWQCB and TRPA pertaining to construction discharges and water quality standards, as discussed in item a in Section 3.9, "Hydrology and Water Quality." The District will minimize the duration, magnitude, and potential effects of water quality impacts through monitoring, control of any turbid water, staged activation of new flow paths, designs to encourage expansion of favorable flow paths primarily during periods of high flows, and temporary and remedial erosion control measures. Therefore, this impact would be less than significant.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. There are no schools within 0.25 mile of the study area. The closest school is South Tahoe Middle School, located approximately 2,000 feet east of the study area, on the east side of U.S. 50. Therefore, no hazardous emissions would occur and no hazardous materials, substances, or waste would be handled within 0.25 mile of an existing or proposed school. No impact would occur.

d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. As discussed above, AECOM performed a search of databases related to hazardous materials contamination sites compiled under PRC Section 65962.5 and maintained by the SWRCB (2014), DTSC (2014), and EPA (2014). The results of these records searches indicate that there are no known open, active cases of contamination within or immediately adjacent to the study area. Thus, no impact would occur.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

Less than Significant Impact. Existing habitats in the study area are an attractant to wildlife that could potentially pose a hazard to aircraft. The proposed project would not increase floodplain inundation or create substantial additional new habitat; rather, the project would realign Trout Creek channel pathways and would entail minor vegetation planting to stabilize the creek channels.

The study area is located approximately 2.1 miles from the northern end of the runway at the Lake Tahoe Airport. Thus, the study area is outside of the approach/departure zone for the Lake Tahoe Airport, but within (at the extreme northern end of) the 10,000-foot-wide zone where FAA recommends that wildlife attractants be minimized. Bird-attracting habitats are already present in these locations, and stream channel realignment and associated minor revegetation activities are not anticipated to cause a substantial increase in the attraction of hazardous wildlife.

Stream Environment Zone restoration, timber management, range management, and management of fish and wildlife habitat are identified in the *Lake Tahoe Airport Comprehensive Land Use Plan* as compatible land uses for the clear, approach/departure, and overflight zones of the Lake Tahoe Airport (CSLT ALUC 2007:38). Thus, a wide range of management, enhancement, and restoration activities in nearby natural vegetation are considered compatible with the airport's operations.

Furthermore, bird strikes have not historically affected aviation safety at the Lake Tahoe Airport. FAA's Wildlife Strike Database indicates only four records of bird strikes; these nondamaging bird strikes occurred between 1991 and 1995 when commercial aircraft were operating at the airport (FAA 2013). During preparation of the *Draft Preliminary Wildlife Assessment, Lake Tahoe Airport* (Camp Dresser & McKee 2007:3-14), airport staff members were unable to provide any record of bird strikes occurring at the Lake Tahoe Airport. No species of concern with regard to bird strikes were known at the airport as of 2007, and airport staff members indicated that bird strikes were expected to continue to be very rare in the future. Because the proposed project is not expected to cause an increase in wildlife-related hazards and the proposed land uses are compatible with the *Lake Tahoe Airport Comprehensive Land Use Plan*, this impact would be less than significant.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. There are no private airstrips in the vicinity of the study area. Thus, no impact would occur.

g) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less than Significant with Mitigation Incorporated. Project-related activities would occur in the area south of Al Tahoe, along the Trout Creek stream corridor. Equipment access and material delivery would occur via Bellevue Avenue, which terminates at the District's pump station. A portion of the roadway and shoulder (estimated at 600 square feet) near the Bellevue Pump Station would be used for staging; this area is located approximately 120 feet from the nearest residential driveway. One-time access for LGP equipment would be made via U.S. 50 and Rubicon Trail and existing pedestrian access routes. No staging area is anticipated for this access route because no significant material quantities would be imported or exported. As discussed in Section 3.16, "Transportation/Traffic" under item a, the proposed project would not result in an increase in long-term project-related traffic because existing land uses would remain unchanged. However, short-term construction traffic could affect local roadways and intersections, including emergency access. Short-term construction-related emergency response and evacuation impacts would be potentially significant.

Implement Mitigation Measure HAZ-1: Implement Mitigation Measure TRA-1: Prepare a Traffic Control Plan.

The District's contractor shall be responsible for providing an approved traffic control plan subject to review and comment by TRPA and the CSLT before construction. The plan will address project construction traffic and parking, and emergency access. At a minimum, the traffic control plan will discuss truck haul routes, truck turning movements at the project staging area, traffic control signage, potential bicycle and pedestrian traffic conflicts, and monitoring of the in-place traffic control plan to implement traffic control revisions, if necessary.

Implementing Mitigation Measure HAZ-1 would reduce construction-related emergency response and evacuation impacts to a less than significant level.

h) Would the project 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?

Less than Significant Impact. The study area consists primarily of annual and perennial grasses and low-growing shrubs, some of which would be dry during the summer months when the proposed project is planned for

implementation. Therefore, the project components would be constructed in an area where the combination of physical and weather factors may lead to a high wildfire hazard. However, only a limited amount of construction equipment will be used, primarily in the first year of construction. Much of the work proposed will be performed by hand crews. Furthermore, the proposed project would not result in any land uses or changes that would increase the fire risk. Because the use of construction equipment would be minimal, the risk of accidental ignition of wildland fires is also considered minimal.

Furthermore, the Conservancy, in coordination with CAL FIRE, implements treatments to reduce the fire hazards posed by forest vegetation in the project vicinity. Treatments include removing shrubs and trees to increase the spacing between tree crowns and the distance between understory vegetation (i.e., herbaceous plants, shrubs, and smaller tree saplings) and the tree canopy, and to reduce the total amount of vegetation and dead wood (USFS et al. 2007). Such treatments would reduce the severity and rate of spread of a fire in the project vicinity.

For the reasons stated above, this impact would be less than significant.

3.9 HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. Hydrology and Water Quality. Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) 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)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?	☐	☐	☒	☐
d) 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 which would result in on- or off-site flooding?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j) Result in inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

3.9.1 ENVIRONMENTAL SETTING

WATERSHED OVERVIEW

Trout Creek is a tributary to Lake Tahoe, and is located in the South Tahoe Hydrologic Area (No. 634.10) on the south side of the lake. The following studies related to hydrology, hydraulics, and geomorphology of Trout Creek served as the primary sources for this analysis:

- *Upper Truckee River and Marsh Restoration Project, Draft Environmental Impact Report/Environmental Impact Statement* (Conservancy et al. 2013); and

- *Upper Truckee Marsh Sewer Facilities Adaptive Management Plan* (NHC 2014)

The Trout Creek watershed (Exhibit 3.9-1) is the second largest watershed in the Tahoe Basin that flows to Lake Tahoe. The watershed area comprises 41.2 square miles, and makes up 13 percent of the total area tributary to Lake Tahoe (Rowe and Allander 2000:7–8). The geology of the Trout Creek watershed is dominated by granitic rock with glacial deposits and lacustrine sediment, and the watershed compasses the second largest urban center in the Tahoe Basin. The Trout Creek basin is fan-shaped, with a total valley distance of about 15 miles from the headwaters to Lake Tahoe. Its broad headwater area faces northwest. The elevation of the Trout Creek watershed ranges from about 6,225 feet at the lake to about 10,800 feet at its upper end; only about 10 percent of the Trout Creek watershed lies below 6,500 feet. The basin shape, headwater orientation, and elevation distributions produce variations in storm patterns, snowpack accumulations, and snowmelt processes, which affect the time required for runoff to pass through the basin to the lake. Prior to modern urban development, Trout Creek was affected by nearly 100 years of watershed-scale changes in land use, hydrology, and sediment loads, including logging and log transport and livestock grazing.

HYDROLOGY

Most precipitation in the Tahoe Basin falls between October and May, in the form of snow at higher elevations and snow and rain at lake level. The seasonal snowmelt process creates annual streamflow peaks in May or June. The snowpack at lower elevations can melt completely and generate runoff in the urban areas and valley floors near the lake before the snow at the headwaters melts. The minimum streamflow occurs during the summer and fall. Climate-driven cycles can produce extreme highs and lows during a single year and from one year to the next. Precipitation timing and amounts and the mix of snow and rain can vary substantially from year to year, producing year-to-year variability in streamflow. Table 3.9-1 provides streamflow data from gauge stations at several locations in the Trout Creek watershed (see Exhibit 3.9-1 for locations).

Table 3.9-1
U.S. Geological Survey Streamflow Gauge Stations within the Trout Creek Watershed

Gauge Station Name	USGS Station ID	Period of Record (Water Years)	Contributing Drainage Area (Sq. Mi.)	Basin Area Gauged (%)
Trout Creek at South Lake Tahoe	10336790	1972–1974 1988–1992	40.4	90.1
Trout Creek near Tahoe Valley	10336780	1961–current	36.7	89.1
Trout Creek at Pioneer Trail	10336775	1990–current	23.0	55.8
Trout Creek near Meyers	10336770	1990–current	7.4	17.7

Notes: ID = identification number; sq. mi. = square miles; USGS = U.S. Geological Survey
Source: Conservancy et al. 2013:3.8-4.

The mean daily streamflows on Trout Creek during snowmelt season for water years 1972–2007 were estimated to be 50 cubic feet per second (cfs) for the Upper Truckee River and Marsh DEIR/DEIS/DEIS (Conservancy et al. 2013:3.8-7). A later snowmelt peak, higher headwater elevations, and a larger percentage of drainage area above

8,000 feet in the Trout Creek watershed may increase the supply for base flow. Summer/fall evaporative losses may also be reduced in the shorter, steeper, narrower valleys and channels along Trout Creek.

NHC (2014) conducted flow frequency and flow duration analyses for Trout Creek specifically for this project, using the USGS gauge at Tahoe Valley (Station ID 10336780) and flow data for the 1961 to 2012 water years. Exhibit 3.9-2 shows a summary hydrograph that displays mean daily flow exceedance values for each day of the year over a 50-year time period. The mean daily streamflow during snowmelt season (i.e., 50 percent exceedance) ranged from 50−90 cfs.

HYDRAULICS AND FLOODING

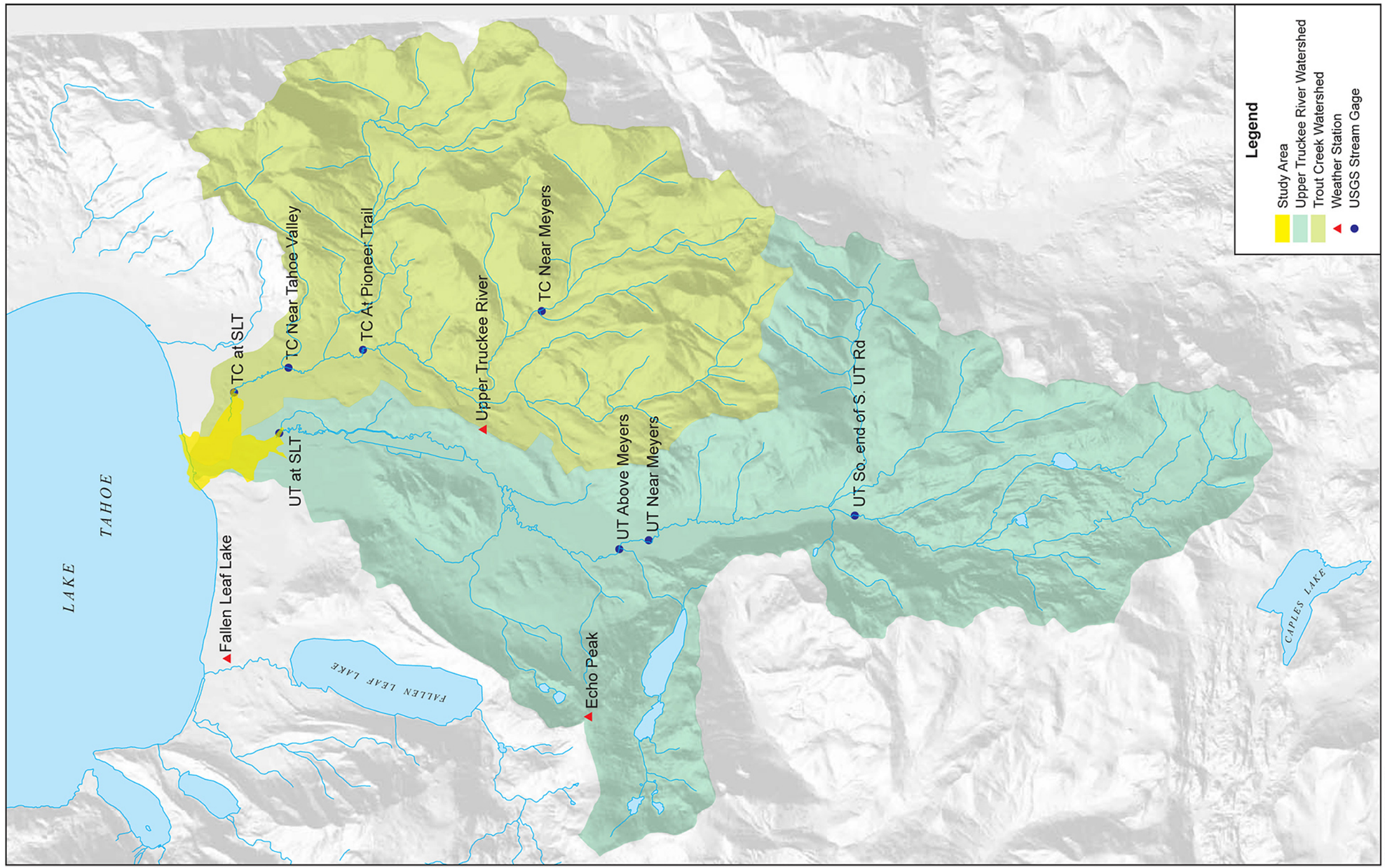
Extreme peak flows associated with floods on Trout Creek occur under several conditions, the most common of which is winter rain-on-snow conditions (i.e., during large winter rainstorms when antecedent snowpack conditions add to the total runoff). Floods may also result from spring snowmelt events or rainstorms. Summer thunderstorms in the Tahoe Basin are common and can be intense, but they are typically brief and cover only small portions of the watershed; they rarely produce substantial flooding or flood hazards in the project vicinity (Conservancy et al. 2013:3.8-22). Over the 45-year period of record on Trout Creek, several peak-flow events have occurred. The most recent event occurred during the record snowmelt event of 2011.

Water begins to overtop channel banks (i.e., overbanking) when streamflow exceeds channel capacity. A site-specific survey and subsequent hydraulic calculations were completed by NHC in 2014 to estimate the channel capacity of Trout Creek both upstream and downstream of the area where large amounts of sediment were transported during the 2011 snowmelt (i.e., the 2011 avulsion area). These calculations indicate that Trout Creek has a channel capacity of approximately 50 cfs at the upstream cross sections (which may be affected by channel filling upstream of the avulsion section) and 75 cfs at the downstream sections in Reach 2. Channel capacity for Reach 1 was estimated at 150−200 cfs (Conservancy and DGS 2003).

Under present conditions, the previous Trout Creek channel near the Bellevue Pump Station is completely filled and flows are carried as overbank flows beginning about 200 feet upstream of the pump station. Sediment transport in the system has been largely interrupted since the 2011 event, although site observations indicate that some sand is moving in the shallow overbank flows. Because transport is interrupted, channel aggradation is in progress upstream of the avulsion area.

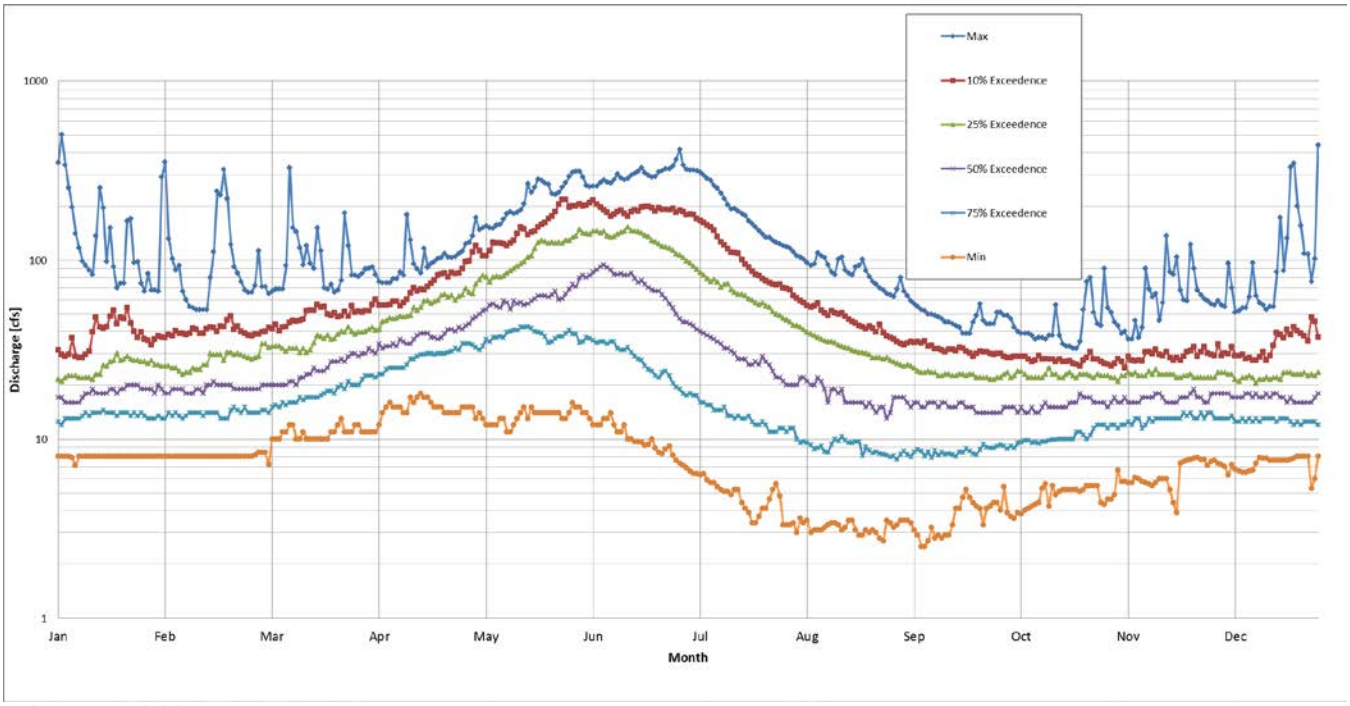
For flows greater than about 80 cfs, the abandoned road fill downstream of the Bellevue Pump Station affects conveyance on the floodplain. Preliminary hydraulic calculations performed by NHC (2014) indicate that reduced velocities may occur in the area near the Bellevue Pump Station for moderate flood flows (100−500 cfs) compared to upstream and downstream reaches, potentially affecting sediment transport and increasing the risk of channel avulsion.

Using the same statistical data and analysis, NHC (2014) estimated the peak-flow magnitudes for Trout Creek over a range of expected return intervals (Table 3.9-2). Because these are unregulated flows (i.e., no substantial dams or other flow-control structures exist upstream), the flow magnitudes and frequencies are not managed, but instead occur as a function of climate and weather conditions, land use and vegetation cover, and channel and floodplain characteristics. The annual flood peaks recorded on Trout Creek at the Tahoe Valley gauge are shown on Exhibit 3.9-3.



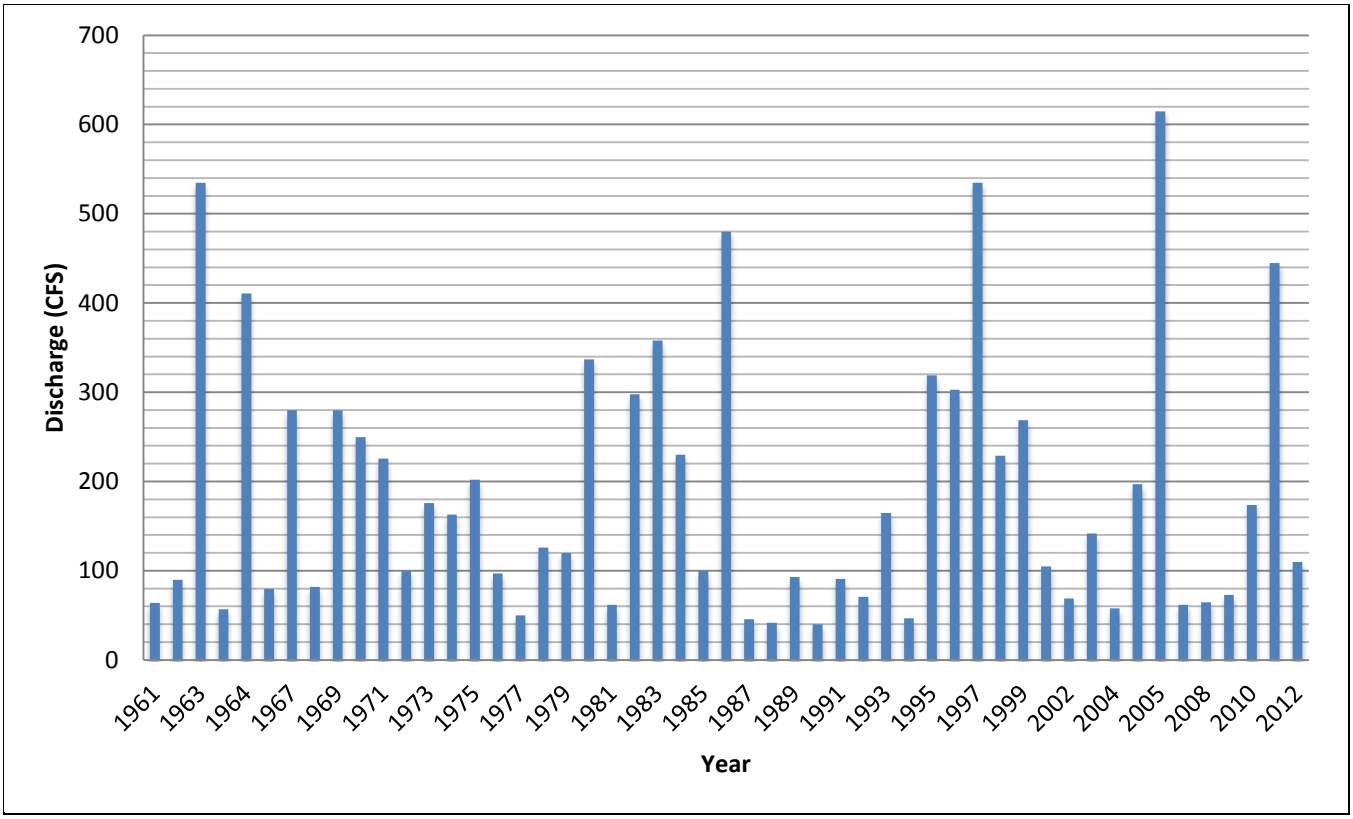
Source: Conservancy and DGS 2003

Exhibit 3.9-1 **Trout Creek and Upper Truckee River Watersheds**



Source: NHC 2014

Exhibit 3.9-2 **Monthly Streamflow for Trout Creek**



Source: NHC 2014

Exhibit 3.9-3 **Annual Peak Flow Rates for Trout Creek**

Table 3.9-2 Flood Frequencies for Trout Creek	
Recurrence Level (Years)	Peak Discharge (cfs)
1.5	100
2	138
5	270
10	385
100	940
Notes: cfs = cubic feet per second Source: NHC 2014	

The flow duration analysis performed by NHC (2014) indicates that Trout Creek flows remain at or above 10 cfs more than 90 percent of the time, consistent with previous evaluations noting that Trout Creek has a strong base flow component. The 10 percent exceedance value is approximately 80 cfs, which is similar to the channel capacity estimates discussed above.

Flood hydrology along Trout Creek is affected by water levels in Lake Tahoe. The elevation of Lake Tahoe has undergone cycles of relatively high and low stands (several years above or below median) for periods of several years. In addition to the general year-to-year pattern, seasonal changes in Lake Tahoe's elevation are noticeable in the long-term monthly record. The seasonal changes in a given year are usually on the order of 1−2 feet, but sometimes Lake Tahoe falls or rises several feet within a few months. The typical lake levels (minimum through 20 percent exceedance) are highest in spring and early summer (May–July) as a result of seasonal snowmelt runoff entering Lake Tahoe. However, maximum lake levels have occurred in January from major rain-on-snow floods, despite lower median and minimum values in the fall and winter months. The level of Lake Tahoe declines during the summer months as runoff input decreases and evaporative loss increases. The lowest lake levels are in October and November. When flood events occur on Trout Creek, the water flows across Barton Beach, creating a direct connection between Trout Creek and the lake.

As Lake Tahoe rises above its median level, floodplain storage is reduced because low portions of the Barton Beach ridge (and the mouth of the Upper Truckee River) allow lake water to fill in the low-elevation areas of the marsh. About 1,000 feet of lower Trout Creek would have reduced channel capacity under lake backwater conditions (Conservancy and DGS 2003:8-9). The area of lake backwater is a small percentage of the total floodplain storage when the lake is near median elevation (i.e., 6,225–6,226 feet). However, during high lake levels (i.e., 6,228–6,229 feet), 25 percent or more of floodplain storage could be taken up by lake backwater. The increase in area affected by backwater effects reflects the low surface gradient of the marsh.

Elevations in the study area are generally in the range of 6,234 feet to 6,236 feet (NAVD88), and the Trout Creek channel bed elevation is approximately 6,231 to 6,233 feet. The Bellevue Pump Station is approximately 3,800 feet upstream of Lake Tahoe, which has a maximum legal elevation of 6232.1 feet NAVD88 (6229.1 feet U.S. Bureau of Reclamation [USBR]). Thus, maximum lake elevations are likely to induce backwater effects in the vicinity of the Bellevue Pump Station, and a surcharge of about 2 feet above the legal limit would inundate ground elevations near the station. Lake levels increased approximately 4 feet between January 2011 and August 2011, reaching a maximum of 6231.4 feet NAVD88 (6228.4 feet USBR) in late July and early August.

Streamflow in 2011 peaked near the end of June at over 400 cfs (with the lake at an elevation of 6230.5 feet) and receded through July and August. At the end of July 2011, streamflow was about 100 cfs with the lake at its maximum elevation. The relatively high lake levels in this unusually high runoff volume year (2011) may have been a contributing factor in the Trout Creek channel avulsion. High lake levels can be expected to influence channel behavior and sediment transport in the project vicinity in the future.

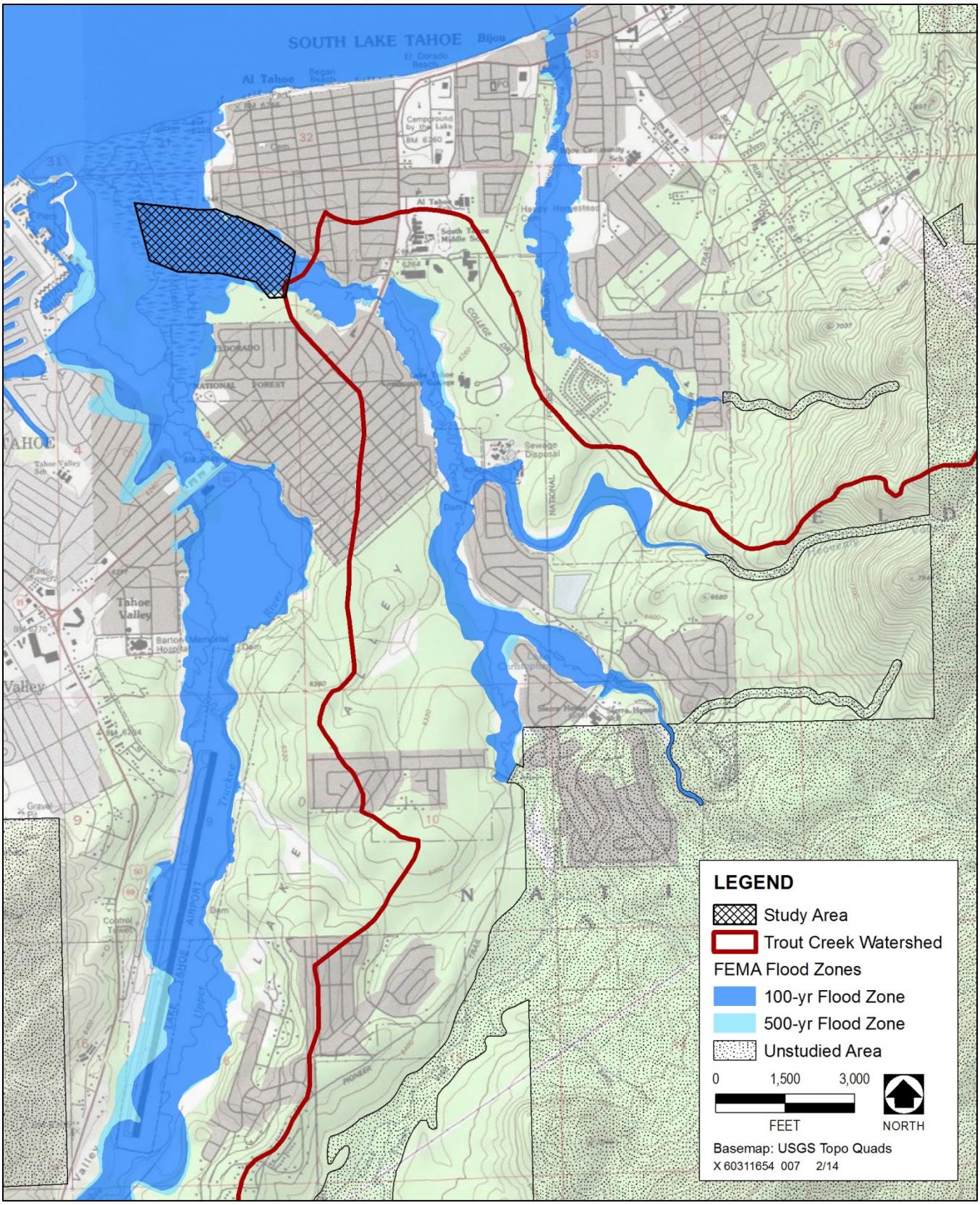
The regulatory floodplain identified by the Federal Emergency Management Agency (FEMA) consists of land temporarily inundated by water overflowing from an adjacent or nearby river or stream during the identified "base flood," in this case the 100-year flood. The boundaries of the 100-year floodplain and estimated water-surface elevations and floodway boundaries for the Trout Creek watershed, shown in Exhibit 3.9-4, are from FEMA's 2008 Flood Insurance Rate Maps (FIRMs) (FEMA 2013). This regulatory floodplain, along with the adjacent floodplain for the Upper Truckee River and marsh, is used by FEMA and CSLT in implementing floodplain development regulations. The mapping reflects revisions to the 1978 FIRMs following land use changes in and around the study area, including improvements to the U.S. 50 bridges at the Upper Truckee River and Trout Creek crossings, additional urban development, record peak flood events, and restoration of the Lower West Side Restoration Area. Additionally, a Letter of Map Revision (LOMR) was prepared in 2009 on the basis of updated topographic information for the Tahoe Keys and Lake Tallac area (Conservancy et al. 2013). The LOMR revised flood zone mapping in the northwest corner of the marsh but did not revise the base flood elevations.

However, as discussed in detail in the "Stream Geomorphology" subsection below, the Trout Creek stream channel alignment used in the FEMA mapping is not the current alignment, and the Trout Creek floodway is designated near the center of the marsh rather than along the current channel location in the vicinity of the Bellevue Pump Station (because the snowmelt and channel avulsion event occurred after the FEMA mapping was prepared).

STREAM GEOMORPHOLOGY

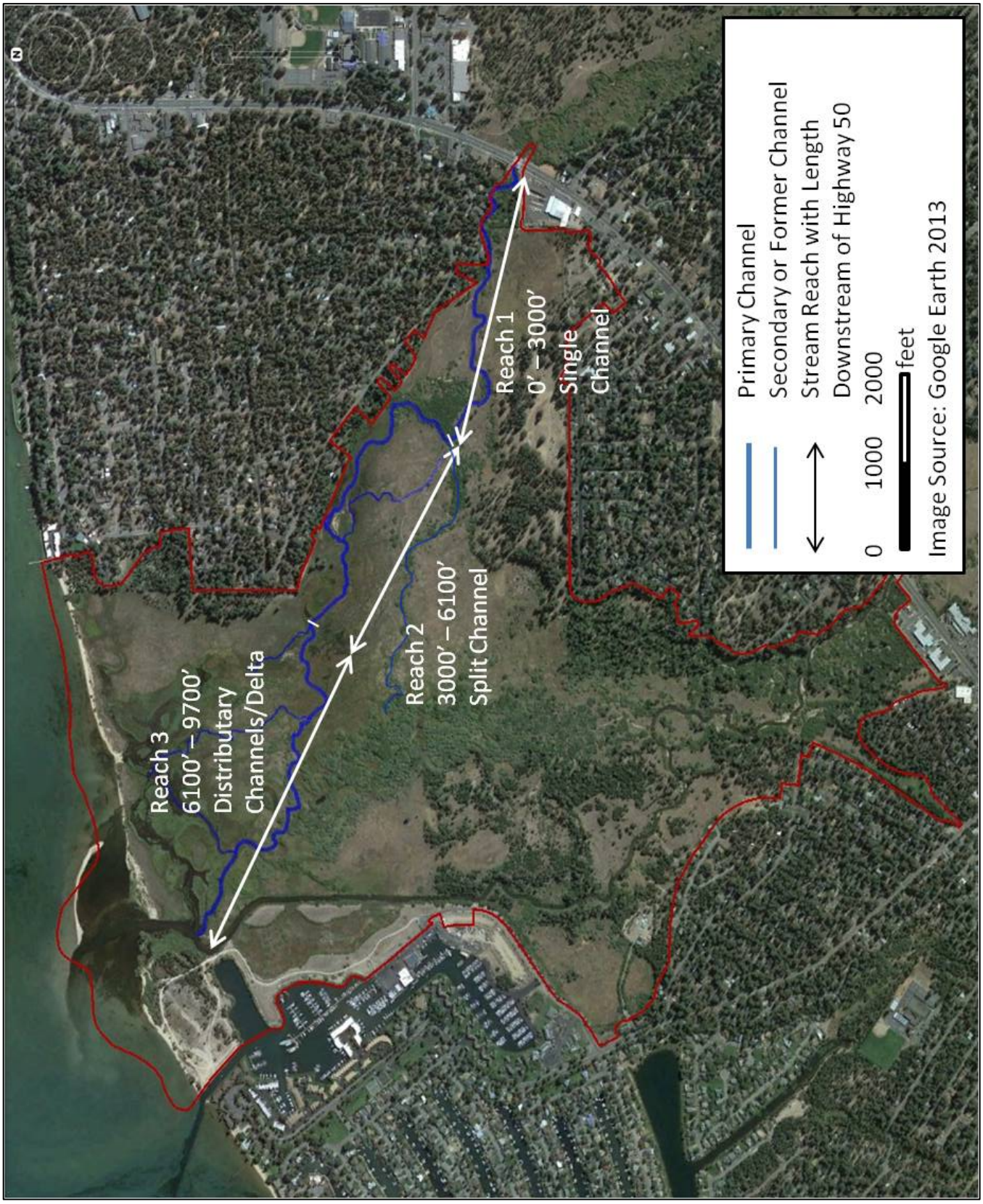
During the record-snowmelt year in 2011, a portion of the Trout Creek channel near the Bellevue Pump Station completely filled with sand and small gravel, causing the stream to overflow to the north approximately 70 feet onto the District's easement (i.e., the 2011 avulsion area.) This process is continuing upstream such that flow paths are developing over a new, approximately 300-foot-long reach, thereby diverting water out of the channel.

As shown in Exhibit 3.9-5, Trout Creek below U.S. 50 has been divided into three reaches (Conservancy and DGS 2003). The study area lies in Reach 2, which begins approximately 3,000 feet below (north of) U.S. 50 and ends approximately 6,100 feet below U.S. 50. Trout Creek is characterized as a split channel with the main channel along the north side of meadow and a secondary channel in the center of the meadow. The upstream reach is a single thread meandering channel that (Reach 1) extends about 3,000 feet downstream of U.S. 50 to a sharp bend to the right where the secondary channel splits off (about 1,800 feet upstream of the Bellevue Pump Station). Reach 3 is defined as beginning about 2,000 feet downstream of the Bellevue Pump Station and continuing to Lake Tahoe, and is characterized as a main channel and distributary channels in the lagoon area. The Reach 2 channel was estimated to have a slope of approximately 0.001 and a sinuosity of approximately 1.48. Channel dimensions at the upstream and downstream ends of the NHC October 2013 survey area (see Exhibit 2-6) indicate flow areas of approximately 25 and 35 square feet at the top of bank, respectively. Mean depths and width-to-depth ratios vary considerably, and may be affected by channel filling at the upstream sections. At the deeper cross sections both upstream and downstream of the 2011 avulsion area, mean depths are 2−3 feet and top width to mean depth ratios are 6:8. In the study area, the main channel has a characteristic top width of 15−20 feet. The



Source: NRCS 2013, FEMA 2013

Exhibit 3.9-4 **FEMA Floodplain Mapping for the Trout Creek Watershed**



Source: NHC 2014 based on Conservancy and DGS 2003

Exhibit 3.9-5 **Trout Creek Reaches**

Reach 1 channel is somewhat larger in size, with a top width of 25−30 feet and a flow area of 50−100 square feet. The Reach 3 channel is distributary, and thus its channel geometry is not directly comparable to the upstream reaches.

The Trout Creek channel has varied substantially in location over time, as shown in Exhibit 3.9-6. Changes in channel location are likely due to a combination of human influences and natural processes typical in a deltaic system, including channel avulsions that occurred prior to the 2011 snowmelt event. A key influence on historical channel morphology appears to be an area of abandoned road fill that is present in the form of a northwest−southeast trending alignment crossing the meadow surface, to the west and downstream of the Bellevue Pump Station. The channel pattern upstream of the road is distinctly more sinuous than other areas indicating that the road may have created a constriction in the main channel and/or floodplain capacity. This would have contributed to overbank sediment deposition as well as increased channel sinuosity, thereby increasing the elevations in the center of the meadow and lowering the channel slope. In historical aerial photos, the main channel of Trout Creek is nearer the center of the meadow than its present location (NHC 2014). A major avulsion also occurred in the 1960s, upstream of the now-abandoned road fill.

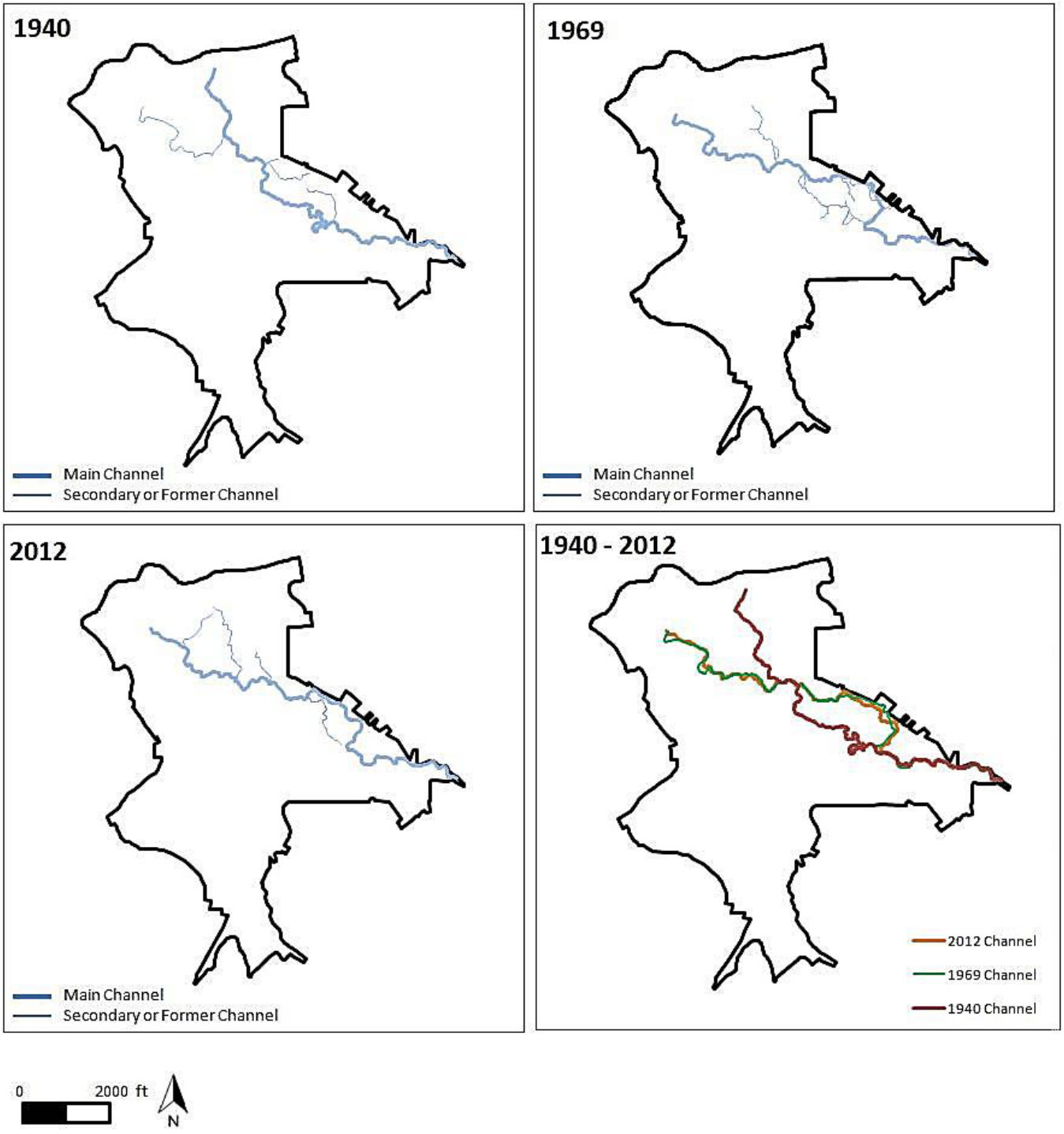
A sharp bend in the Trout Creek channel is present near the upstream end of the study area and about 3,000 feet downstream of U.S. 50 (visible in Exhibit 3.9-5 at the intersection of Reach 1 and Reach 2). The Trout Creek channel downstream of the bend runs from the center of the meadow to the northern edge of the meadow and the District's easement. This channel section is approximately transverse to the general valley slope and developed after the 2011 channel avulsion. Unlike most of the downstream reach of Trout Creek this section of the channel is heavily vegetated with willows.

The bend at the head of the secondary channel of Trout Creek is reinforced by debris and non-native materials (e.g., timber and logs). The secondary channel is presently seasonally dry but is typically occupied by high flows in the snowmelt season. However, Conservancy and DGS (2003) noted that it was occupied by low flows as recently as 2002. The upstream portion (50−100 feet) of this secondary channel near the bend on the main channel is shallower than the downstream portion, potentially indicating that the channel was filled and the bend revetted to discourage this flow path.

Bed material in the project reach (i.e., Reach 2) is primarily coarse sand with some small gravel, and bank material is primarily sandy silt and clay with a highly organic surface layer. Banks are reinforced by graminoids (e.g., sedges, rushes, and wetland grasses). With the exception of the transverse section of channel noted above, woody bank vegetation is generally limited, but a relatively dense stand of young willow is present on recent sand deposits in the area of the 2011 avulsion. The current channel has an approximately 400-foot-long section that is revetted with rock; its downstream end is located approximately 600 feet upstream of the Bellevue Pump Station.

The area of abandoned road fill may restrict flood flows on both meadow overbank areas. On the left overbank, this is a relatively narrow (20−25 feet) prism of fill that is now vegetated with meadow graminoids. On the right bank, a broader area of slightly higher ground exists, a portion of which is vegetated with lodgepole pines.

The channel downstream of the Bellevue Pump Station is similar to the upstream channel, but during NHC site visits in summer 2013 the overbanks were observed to become progressively more saturated and composed of organic material downstream of the road fill. This may be due in part to more distributary channel patterns in the lower marsh, but also may be influenced by beaver activity observed near the downstream end of the study area.



Source: NHC 2014

Exhibit 3.9-6 **Historic Trout Creek Channel Locations**

The water surface elevation was observed to increase approximately 1 foot with respect to the top of bank elevation in about 800 feet downstream of the abandoned road fill.

WATER QUALITY

The Federal Clean Water Act defines water quality standards as including both "designated uses" (i.e., beneficial uses) and "water quality criteria" (i.e., water quality objectives). The applicable standard used for the proposed project is Lahontan RWQCB beneficial uses, with a focus on aesthetic values under Non-Contact Recreation Use designated in the Basin Plan (Lahontan RWQCB 1995). Visible turbidity is considered the primary concern along the receiving waters of Trout Creek, where degradation of a magnitude and duration that impairs aesthetic values is considered significant. The strictest criteria is if persistent visible turbidity is produced, particularly during the recreation season and especially during the low-flow summer months when background conditions would be expected to result in high water clarity. Visible turbidity that lasts after the initial disturbance ends, and/or disturbances that produce a recurring or chronic source of turbidity are considered significant and adverse.

The turbidity values that would correlate with this impairment of aesthetics-related beneficial use might not occur unless turbidity was increased beyond natural seasonal background by several orders of magnitude (i.e., well beyond the <10 percent increase limit in the turbidity standard of the Basin Plan). Summer turbidity levels would also likely need to exceed the minimum aesthetic criterion to have adverse effects on other beneficial uses, including those supporting aquatic organisms. The proposed project would have to elevate turbidity considerably above 10 percent over background to impair beneficial uses.

Trout Creek regularly discharges into the Upper Truckee River, which has been identified as the stream with the highest fine sediment loads discharging to Lake Tahoe. The average annual erosion rate for fine sediment from streambanks for the Upper Truckee River is 639 tons per year and approximately 63 percent of the total fine sediment from its entire watershed (Simon 2006).

In natural alluvial stream systems, the form and capacity of the active channel are generally developed such that high frequency flows (e.g., typical seasonal variations in discharge) are contained within the banks. Less frequent, larger flows result in overtopping of the banks and inundation of portions or all of the floodplain. Normal overbanking is considered to occur when the channel overtops during a 2-year recurrence streamflow event. In other words, a naturally or normally functioning stream would be expected to typically overbank, on average, approximately during one event (for a period of several days to a couple of weeks) every couple of years.

The channel capacity for Trout Creek ranges from about 150 to 200 cfs in Reach 1, decreasing to 80 cfs in Reach 2. The channel would be overtopped between the calculated 2- and 5-year recurrence peak flows in Reach 1, and more often in Reach 2. Under the existing channel conditions, streamflow (and the sediments and nutrients conveyed by it) spreads out on the floodplain for over a week (about 10–11 days per year on average) over the entire season. As discussed previously, the 2011 record snowmelt year resulted in a channel avulsion event in Reach 2 of Trout Creek, which resulted in a substantial amount of sediment that was displaced downstream and to the northeast, in the vicinity of the Bellevue Pumping Station.

Soil cores taken from the marsh indicate that net sedimentation has been occurring on Trout Creek in Reach 3. Since the 1950s, the average vertical accretion rates have been 0.25 inch per year on the Trout Creek floodplain. These modern net sedimentation rates are substantially greater than rates averaged over the last ~1,650 years (0.032 inch per year) or over the last ~4,620 years (0.028 inch per year) (Winter 2003).

Both the Federal and State governments have designated Lake Tahoe an "Outstanding National Resource Water" (Lahontan RWQCB 1995:5-1). In addition to aesthetic enjoyment, the exceptional quality of water in the Tahoe Basin supports a number of beneficial uses related to human and environmental health, including drinking water supply, water-based recreation, wildlife habitat, and aquatic life and habitat. Stringent water quality goals and watershed regulations, along with mitigation and restoration measures have been implemented, particularly since the 1980s. From the late 1960s through 1998, Lake Tahoe lost its water clarity at a rate of nearly 9 inches per year and has failed to meet transparency and clarity standards (Lahontan RWQCB and NDEP 2007a:25). Since 2003 the annual average and winter average lake clarity levels has been gradually improving on a yearly basis. However, 2013 readings represent a 5-foot decrease over the previous year due to weather variability (UC Davis 2014). The lake is considered "impaired" with respect to the aesthetic-recreation beneficial use under Section 303(d) of the Federal Clean Water Act. Development of a total maximum daily load (TMDL) threshold identified the pollutant sources, quantified the amounts of pollutants the lake can accept and achieve the clarity goals, determined options for reducing pollutants, estimated load allocations, and developed implementation and monitoring plans (Lahontan RWQCB and NDEP 2007:13-15). The Lahontan RWQCB approved Basin Plan amendments to establish the Lake Tahoe TMDL and an implementation plan for associated changes to urban stormwater regulations on November 16, 2010 (Resolution No. R6T-2010-0058). EPA approved the Lake Tahoe TMDL on August 16, 2011.

Lake Tahoe is impaired by excess nutrient (nitrogen and phosphorus) and fine sediment inputs. Nitrogen and phosphorus stimulate algae growth, which in turn absorbs light and reduces light penetration through the water. Fine sediments decrease clarity by scattering light as the particles slowly settle through the water. Fine mineral particles (i.e., particles less than 20 micrometers [µm] in diameter) have been shown to strongly affect water clarity and may be responsible for 60 percent or more of the transparency loss (because of their impact on light scattering) (TRPA 2007).

Trout Creek is the third largest tributary (out of 63 perennial streams) to Lake Tahoe. Based on average annual nutrient and suspended sediment sampling results for Trout Creek collected for water years (WYs) 1980 to 2005, nutrient concentrations in Trout Creek have frequently exceeded Basin Plan objectives and TRPA threshold criteria (Conservancy et al. 2013:3.9). Average annual total phosphorus concentrations in Trout Creek exceeded the Basin Plan objective of 0.015 milligrams per liter (mg/L) in all years and exceeded the TRPA threshold criteria of 0.03 mg/L in about two-thirds of the years. Average annual total nitrogen concentrations exceeded the Basin Plan objective of 0.19 mg/L in 59 percent of the years on Trout Creek. The TRPA total nitrogen standard of 0.22 mg/L was exceeded in 53 percent of the years on Trout Creek. The total iron concentrations in Trout Creek have only been sampled since WY 1989, but consistently exceeded the Basin Plan objective and TRPA standard of 0.03 mg/L, perhaps because of high natural background levels. The average annual total suspended sediment concentrations on Trout Creek did not exceed the TRPA standard of 60 mg/L.

An evaluation of median suspended sediment concentrations of the 10 largest tributaries to Lake Tahoe from 1993 to 1998 indicated that Trout Creek at U.S. 50 ranked fifth (Rowe et al. 2002:94). During this period, the minimum concentration of suspended sediment in Trout Creek was 2 mg/L, the maximum was 335 mg/L, and the median was 14 mg/L. Although average suspended sediment concentrations in Trout Creek do not usually exceed water quality standards, this stream contributes a greater suspended sediment load than any other tributary to Lake Tahoe other than the Upper Truckee River, because of its high flow volumes.

Monthly and annual suspended sediment loads on Trout Creek demonstrate year-to-year variations that generally track precipitation and overall streamflow volume variations (Rowe et al. 2002:114; Simon et al. 2003; Simon 2006). The lower estimated sediment loads are generally under 1,000 tons/year (T/year) during about a third of the years on Trout Creek. The high end of the range, about 8,000 T/year or more, occurred during a wet year (WY 1983). Estimated average suspended-sediment loads for Trout Creek are shown in Table 3.9-3.

Table 3.9-3
Average Suspended Sediment Loads for Trout Creek (metric tons per year)

	Reuter and Miller 2000 (Total Annual Average)	Kroll 1976 (Average Annual Load)	Simon and others 2003 (Average Annual Load)	Simon and others 2003 (Median Annual)
	WY 1989–1996	WY 1972–1974	WY 1972–2002	WY 1972–2002
Trout Creek	798	1,540	1,790	1,190

Note: WY = water years
Source: Simon et al. 2003, cited in Conservancy et al. 2013:3.9-32

The calculated annual load of fine (less than 0.063 mm) sediment is 462 million tons per year for Trout Creek (or 8.9 percent of the total annual suspended load for the streams) (Simon 2006:24). The Trout Creek fine sediment load ranks third and fine particle flux ranks fourth out of all the tributaries in the Tahoe Basin (Simon 2006:24). While the suspended sediment yields (per unit watershed area) estimated for Trout Creek (4.8 tons per year per square mile) is "moderate" relative to other watersheds at Lake Tahoe, the size of this watershed increases its loading to the lake (Simon et al. 2003:ES-1). Rowe et al. (2004) found that the seasonal pattern of sediment loading generally follows runoff variability. The highest seasonal median loads occur during snowmelt months of April, May, and June, as for suspended sediment.

Stubblefield et al. (2006) calculated that the Trout Creek system retained 68–90 percent of the suspended sediment and 61–85 percent of the total phosphorus within the Upper Truckee River and Marsh study area (Stubblefield et al. 2006:296). The greatest retention was in the marsh reaches in areas of distributary channels and/or ponding (Stubblefield et al. 2006:297). Ponding increased the spreading of water across the floodplain. As water depths and floodplain connection increased later in the runoff season, sediment retention on the floodplain increased. Sedimentation in the marsh reach of Trout Creek retained all particle sizes measured (1–1,000 µm), even fine particles less than 10 µm (Stubblefield et al. 2006:298). The 2003 mass sedimentation rate (approximately 0.029 grams per cubic centimeter per year [g/cm^2/year]) observed by Stubblefield et al. (2006) was only about 5 percent of the rate measured for soil cores over the past 50 years (approximately 0.6 g/cm^2/year) (Winter 2003:86). However, the rate is similar to the modern period average (0.027 g/cm^2/year) measured in lake cores. The variations in the rate suggest that floodplain sedimentation from large flood events is probably important in the overall net accumulation under existing conditions.

SEISMIC SEICHES

A seiche is a wave that oscillates in a lake, bay, or gulf for a few minutes to a few hours as a result of seismic or atmospheric disturbances. Small seiches are almost always present on larger lakes; the frequency of the oscillation is determined by the size of the body, its depth and contours, and the water temperature. Larger seiches can be caused by nearby or distant earthquakes and occur when the wave signature of the seismic waves is resonant with the natural period (controlled by basin geometry) of the lake.

Recent investigations of the tectonic and seismic conditions within the Lake Tahoe region indicate the potential for moderate to large earthquakes that may generate strong to very strong seismic shaking in the study area. (See Section 3.6, "Geology and Soils"). The West Tahoe and North Tahoe–Incline Village Faults are considered active and capable of generating magnitude (M) 7 or greater earthquakes (Schweickert et al. 2004). In addition, the Genoa Fault, which forms the eastern boundary of the Carson Range, is considered capable of generating large earthquakes (M 7.2 to 7.5). The probability of an M 7 earthquake occurring within the next 50 years in the South Lake Tahoe area has been estimated by the Nevada Earthquake Safety Council (NESC) to be between 10 and 12 percent (NESC 2007).

Occurrence of such seismic events may result in the formation of tsunamis within Lake Tahoe. The amplitudes (i.e., wave heights) of these seismically induced waves are expected to be on the order of 3–10 meters (10–30 feet). Additionally, the earthquakes may generate large seiches within the lake for hours after the events (Ichinose et al. 2000).

3.9.2 DISCUSSION

a) Would the project violate any water quality standards or waste discharge requirements?

Less than Significant Impact. Short-term adverse impacts on water quality could result from construction-related disturbances occurring within and adjacent to the channel; however, several measures have been developed as part of the proposed project in order to protect water quality. The overall intent of the AMP is to provide infrastructure protection while minimizing disturbance to existing resources in the Upper Truckee Marsh. Year 1 construction would generally occur between September 1 and October 15, when creek flows are lowest and the meadow surface is driest. Construction would only proceed when flows are less than 20 cfs as measured at the USGS Tahoe Valley gauge. The primary potential source of contamination would be the loosened soil materials, but other on-site sources of contamination during construction could include leaks or spills of fluids or fuels from vehicles and equipment, or miscellaneous construction materials and debris. However; the AMP has proposed best management practices including staging and maintenance at the Bellevue Pump Station, the use of wattles, wood chips, steel plates, temporary mats, and other measures described below and in Section 5.6 of the AMP.

Equipment use would be limited to removal of the abandoned road fill back to the prevailing meadow grade and possibly for hummock installation. All other excavation and fill would be performed by hand crews. All excavated sod would be salvaged and used as sod plugs, placed in existing low areas, or incorporated into the overbank plugs. Excess soil material would be incorporated into fill hummocks or hauled off-site. Fill placement would be vegetatively stabilized, generally with marsh mats. Locally, fill may be stabilized with erosion control fabric planted with sod or plugs. Planting activities that do not require ground disturbance may extend beyond October 15 as weather allows and with approval by TRPA and Lahontan RWQCB. Prior to October 15, all construction sites would be winterized and no bare soil is expected after completion of any phase of construction.

Visible turbidity is considered the primary concern along Trout Creek, where degradation of a magnitude and duration that impairs aesthetic values is considered significant such that persistent visible turbidity is produced, particularly during the recreation season and especially during the low-flow summer months when background conditions would be expected to result in high water clarity. Visible turbidity that lasts after construction ends, and/or disturbances that produce a recurring or chronic source of turbidity are considered significant and adverse.

Access onto the abandoned roadway for fill would be protected with wood chips, and plates or mats, as needed. In order to gain access to the southern portion of the abandoned roadfill, a temporary creek crossing would be needed. This creek crossing is anticipated to be constructed using structural elements placed parallel to flow in the channel (logs, barrier rail), surfaced with steel plates. Temporary disturbance of the channel bed to install the crossing is unavoidable and would be minimized by the use of clean, pre-fabricated structural elements that can be placed directly on top of the stream bed without the need for significant excavation. The installation would occur when flows are less than 20 cfs, and would be removed prior to October 15. Temporary discharge of some sediment associated with installation and removal of the crossing is unavoidable, but is expected to be short in duration (2 hours or less), thus not expected to affect beneficial uses.

The pilot channels (Measure 1) would be constructed by hand crews then seasoned and opened to flow in a sequence of steps to protect water quality, as described in Section 5.7 of the AMP. It is expected that the flow presently occupying the right overbank would be diverted through the pilot channels. Additional left bank flow paths (Measure 2) would be opened through hand excavation, although these may not divert flow except during higher flows. A third measure would consist of installing overbank flow plugs along the right bank (Measure 9) which may be temporarily reinforced with gravel bags.

The above measures would result in progressive dewatering of the right overbank during the construction period. Based upon their effectiveness, a temporary diversion dam may also be installed to force any residual flow exiting the right bank into the pilot channels. With all of the above measures in place, there would be only residual ponded water in the District's easement and right overbank during summer/fall low flows. Any residual non-turbid water would be pumped into a designated irrigation disposal area in an unsaturated portion of the meadow. Because implementation of these initial measures would be performed with hand crews, it is not anticipated that water exceeding 20 NTUs in turbidity would be generated. Should that not be the case, waters in excess of 20 NTUs would be pumped through a chitosan sock and lined sedimentation basin prior to disposal in the irrigation area. During construction, turbidity would be field checked and creek turbidity upstream and downstream of the work area near the Bellevue Pump Station would be monitored using automated turbidity meters with data collectors in accordance with the monitoring plan (Appendix E of the AMP). Although the right-overbank area would be dewatered soft or wet soil conditions may persist because of high groundwater levels. Transport of materials and operation of equipment within the dewatered area has the potential to generate turbid residual water. If removal of residual water is needed, only occasional disposal is expected because of the limited operations which would take place and the measures used to minimize ground disturbance. Only low-ground-pressure equipment would be used, the easement (which would be the primary equipment access and have the highest number of trips) would be protected with mats, and most of the remaining operations would be performed with hand crews. One-time access for LGP equipment would be made via U.S. 50 and Rubicon Trail and existing pedestrian access routes. No staging area is anticipated for this access route because no significant material quantities would be imported or exported.

Some measures would open new flow paths and are therefore potentially subject to some erosion and generation of turbidity. Pilot channels in the work area upstream of the Bellevue Pump Station are part of the dewatering strategy and may be particularly sensitive to initial flows. To minimize potential generation of turbidity, the pilot channels would be "seasoned" to reduce the initial flush of turbidity by installing gravel bag dams at the upstream and downstream ends during construction and prior to activation. The upstream dam would then be used to introduce a small amount of flow into the channel. The water trapped in the channel by the downstream dam would be pumped and discharged using the same method as described above, including the same turbidity criteria.

After 10 repetitions, the gravel bag dams would be gradually removed over a period of time until, with the channels unrestricted, the downstream turbidity is less than 20 NTU after 24 hours. After a period of 5 days following this process, turbidity in the creek channel would be measured to verify that turbidity continues to decrease toward background levels, and after 10 days that turbidity has decreased to less than 10 NTU, or if turbidity at the upstream station exceeds 10 NTU, to not more than 110 percent of the upstream station. During the seasoning period, a field turbidity meter would be utilized in combination with recording meters. The District would minimize the duration, magnitude, and potential effects of sediment discharges through monitoring, control of any turbid water, staged activation of new flow paths, designs to encourage expansion of favorable flow paths primarily during periods of high flows, and temporary and remedial erosion control measures. All observations would be recorded and provided to the Lahontan RWQCB, as described in Appendix E of the AMP.

In addition, the adaptive management approach of this project relies on natural processes to achieve project objectives, would result in the pilot channels or other flow paths gaining flow capacity over time by expansion into active main channels. This process would be most active during the non-construction periods during peak flows when aesthetic beneficial uses less prevalent given access to the marsh is somewhat limited by the wet conditions and background turbidity levels are naturally higher. Trout Creek is an unregulated creek, therefore, it would not be possible to avoid or control streamflow due to a large flood occurring while the study area channel modifications are still adjusting to construction. While the probability of a large flood flow (i.e., 25-year recurrence peak flow) in any given year would be relatively low, the study area could be vulnerable for a few consecutive years. The pilot channel design would incorporate vegetative grade controls or temporary erosion control measures to provide stability at low flows. Enlargement of the pilot channel is expected over time, primarily during spring snowmelt and individual storms. Similarly, constructed left bank overflow points may experience some erosion during high flows. Some turbidity would be generated during active widening of the channels until conditions approach that of the upstream and downstream channels. During high-flow periods, background (upstream) turbidity is elevated and project-related turbidity is expected to be consistent with natural processes associated with channel changes in other locations of the Upper Truckee Marsh and in upstream reaches of Trout Creek. The extent and duration of increases cannot be precisely predicted. However, even if an increase occurs there would be storage and treatment within the Upper Truckee Marsh downstream of the project that would ameliorate any marginal increase prior to discharge to Lake Tahoe.

Turbidity data collected during the non-construction period would primarily be evaluated to determine whether any higher values decrease as expected as flows recede. If the data indicate that turbidity levels in excess of 10 NTU persists for more than a day at the downstream area after flows recede below 15 cfs (approximately the 50 percent exceedance probability flow after September 1), or if readings are persistently more than 110 percent of the upstream readings at flows below 15 cfs, remedial measures would be incorporated to reduce sediment generation. Remedial measures may include temporary measures such as installation of gravel bags or erosion control fabric, or installation of vegetative measures such as sod bank or bed stabilization. These measures would be designed to meet the 10 NTU/10 percent increase objectives during low flows, but to allow channel expansion during high flows up to the desired channel capacity. At the end of the full AMP implementation period, monitoring data would be provided to Lahontan to demonstrate that turbidity is increased by no more than 10 percent through the study area at flows up to the target channel capacity.

Based on the information regarding construction management, project-related construction and post-construction channel adjustments are not expected to cause an exceedance of water quality objectives or violate waste

discharge requirements to an extent and duration that would affect beneficial uses. Therefore, this impact would be less than significant.

b) Would the project 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)?

Less than Significant Impact. The proposed project would not entail the use of groundwater and would not affect any nearby groundwater users. The AMP is a set of measures designed to be implemented and monitored over time that would encourage channel formation in a more favorable location and increase its hydraulic roughness to make it more resistant to any future channel avulsions. Although the project would include modification of the Trout Creek channel and flows within Trout Creek, the District's easement would still provide overflow function during higher flows and the relatively high groundwater table existing within the Upper Truckee Marsh is expected to remain. The AMP does not propose any new coverage that would interfere with groundwater recharge. Rerouting the current overbank flows back to pre-2011 avulsion channels would not deplete groundwater supplies or interfere with groundwater recharge. Therefore, this impact would be less than significant.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?

Less than Significant Impact. Topography within the study area would be modified in the study area through implementation of proposed activities such as channel deepening and widening, construction of new pilot channels, installation of overbank flow plugs, placement of hummocks, and removal of the abandoned road fill. The proposed project includes measures that are designed to reduce erosion and siltation such as installation of hydraulic roughness elements, planting of vegetation, creation of hummocks, channel seasoning, and stabilization and protection of work area access routes. However, as discussed in a) above, a natural channel adjustment effect could occur where engineered designs are implemented. Expected channel adjustments would likely require at least a few years (approximately 2–3 years) where flows approach or exceed the geomorphic design flow to reach equilibrium. Natural channel adjustments would be expected in response to in-channel modifications and floodplain grading. Channel adjustments in the form of streambed or streambank erosion could produce turbidity effects. Normal channel adjustments would most likely occur during and just following peak seasonal streamflow (spring snowmelt) or during a large flood event when background turbidity is relatively high. As described in a above, the AMP would implement measures and techniques specifically designed to reduce erosion. Therefore, this impact would be less than significant.

d) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?

Less than Significant Impact. The proposed project has been designed to maintain the rate and volume of surface runoff. Flood flow velocities and water surface elevations would be expected to be similar to or lower than those under existing conditions, thus not increasing the potential for flooding either on- or off-site. The

District's easement would continue to be inundated during high flows. Under existing conditions, following the 2011 channel avulsion the channel has remained completely plugged and the process is continuing upstream such that overflow pathways are developing over an approximately 300 foot long reach and water is currently backed up onto residential properties. Trout Creek is an unregulated creek, therefore, it would not be possible to avoid or control streamflow due to a large flood occurring that could potentially cause a new channel to form along the easement that could potentially expose existing sewer lines and cause additional flooding in adjacent residential areas. The goal of the project is to protect the sewer infrastructure from flooding and reduce the risk of sewage discharges through the implementation of the AMP. The AMP is a set of measures designed to be implemented and monitored over time that would encourage channel formation in a more favorable location, raise the easement area slightly and increase its hydraulic roughness to make it more resistant to any future channel avulsions, and potentially improve flood conveyance and sediment transport. Therefore, implementation of the AMP would be beneficial and this impact would be less than significant.

e) Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less than Significant Impact. The proposed project would not contribute runoff water that would exceed stormwater drainage capacity. Direct precipitation would continue to either infiltrate into the soil or flow to the natural receiving waters. However, during construction, the potential for discharge of pollutants to surface waters could increase from accidental spills of fuels, oils, lubricant, or turbid waters as described in a) above. The AMP would implement measures to minimize the risk of accidental spills and excess turbidity. Thus, this impact would be less than significant.

f) Would the project otherwise substantially degrade water quality?

No Impact. All project impacts related to the potential degradation of water quality have been evaluated in sub-sections a through e above, and appropriate measures have been developed as part of the AMP to reduce these impacts to less than significant levels. Therefore, no further impacts related to substantial degradation of water quality would occur.

g) Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No Impact. The proposed project would not entail the construction of housing. Thus, no impact would occur.

h) Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows?

Less than Significant Impact. Project-related activities would take place within a 100-year flood hazard area. However, the proposed project is designed to protect District facilities from damage caused by the 2011 Trout Creek channel avulsion. The proposed elements have been designed to direct stream flows into pre-2011 channels located away from District facilities and the adjacent residential neighborhood. Flood flow velocities and water surface elevations would be expected to be similar to or lower than those under existing conditions, thus not increasing the potential for flooding either on- or off-site. Therefore, this impact would be beneficial and less than significant.

i) Would the project expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

Less than Significant Impact. As described in item h) above, the primary purpose of the proposed project is to protect District facilities from damage caused by the 2011 Trout Creek channel avulsion. The proposed elements have been designed to direct stream flows into pre-2011 channels located away from District facilities and the adjacent residential neighborhood. Flood flow velocities and water surface elevations would be expected to be similar to or lower than those under existing conditions, thus not increasing the potential for flooding either on- or off-site. Therefore, this impact would be beneficial and less than significant.

j) Would the project result in inundation by seiche, tsunami, or mudflow?

Less than Significant Impact. The study area is not located in the vicinity of an ocean, and therefore no impact would occur from tsunami. The study area is exposed to potential seiches from Lake Tahoe; however, the risk from a seiche would remain unchanged with implementation of the proposed project. The proposed project would not entail the construction of housing or other buildings designed for human occupancy, and construction of the proposed channel modifications and other elements would not result in increased hazards from inundation by seiche or mudflow. Thus, this impact would be less than significant.

3.10 LAND USE AND PLANNING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. Land Use and Planning. Would the project:				
a) Physically divide an established community?	☐	☐	☒	☐
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

3.10.1 ENVIRONMENTAL SETTING

The study area for the proposed project is located on 96 acres along Trout Creek within the Upper Truckee Marsh in South Lake Tahoe. The study area is generally bounded by U.S. 50 on the south, the Al Tahoe neighborhood on the east and northeast, and Lake Tahoe to the north.

The study area is primarily undeveloped broad meadow/marsh complex. Land uses are primarily recreation and conservation and the Conservancy manages recreation use to protect marsh resources. A network of user-created trails within the project vicinity provides informal recreational opportunities such as hiking, jogging, and nature viewing. An abandoned road fill associated with former cattle management in the study area traverses the meadow in a northwest-southeast direction, west and downstream of the District's Bellevue Pump Station.

In addition to the Bellevue Pump Station, the District owns and operates two sewer facilities in the study area: an 8-inch-diameter gravity main and a 10-inch-diameter force main located within a 12-foot-wide sewer easement between Oakland Avenue and Bellevue Avenue (see Exhibit 2-5 in Chapter 2, "Project Description").

The Al Tahoe residential subdivision is located immediately east and northeast of the study area. This adjacent subdivision contains a mixture of single-family and multifamily homes; some commercial uses are located near U.S. 50. The back yards of residences along the District's sewer easement are at or near the meadow elevation, and some are subject to inundation during high flows or, under current conditions, during the entire year.

The Upper Truckee Marsh provides regionally important ecological, water quality, aesthetic, and recreational values. Because of the study area's unique habitat qualities and natural setting, land uses and land use policies for the study area are heavily influenced by natural resource values. The discussion below summarizes land use plans and policies that would apply to the proposed project.

2030 SOUTH LAKE TAHOE GENERAL PLAN

The *2030 South Lake Tahoe General Plan Policy Document* (City General Plan) was adopted in 2011. The City General Plan designates the land use in the study area as Conservation. This designation provides for the

permanent preservation of natural resources, habitat protection, watershed management, public and quasi-public uses, areas that contain public health and safety hazards such as floodways, and areas containing environmentally sensitive features (CSLT 2011:LU-3).

TAHOE REGIONAL PLANNING AGENCY

The adopted plan for the Tahoe Basin is the *Regional Plan for the Tahoe Basin*, which establishes an overall framework for development and environmental conservation in the Lake Tahoe region. The study area is located within TRPA-designated Plan Area Statements (PASs) 99 and 100.

Plan Area Statements

The study area is located within PAS 99 (Al Tahoe) and PAS 100 (Truckee Marsh). Chapter 11, "Plan Area Statements and Plan Area Maps," of the TRPA Code of Ordinances requires that all projects and activities be consistent with the provisions of a particular area's applicable PAS. For each plan area, a statement is made describing how that particular area should be regulated to achieve regional environmental and land-use objectives and providing detailed plans and policies for specific areas of the basin. The following PAS descriptions include the land-use classification and management strategy.

PAS 99—Al Tahoe. A very small portion of the study area along the Bellevue Pump Station is located in PAS 99. The land-use classification for PAS 99 is residential and the management strategy is redirection. According to the planning statement for PAS 99, "The area should remain residential with upgrading in those areas identified as substandard."

PAS 100—Truckee Marsh. Most of the study area is located within PAS 100. The land-use classification for PAS 100 is conservation, and the management strategy is maximum regulation. This management strategy calls for strict regulation to ensure preservation and enhancement of the existing environment, with little or no additional development of residential, commercial, tourist, recreational, or public service uses. According to the planning statement for PAS 100, "This area should be managed primarily for its natural values including those management practices which contribute to the quality of fish and wildlife habitats, support dispersed recreation, and maintain the nutrient catchment capacity of the stream environment zone."

ENVIRONMENTAL IMPROVEMENT PROGRAM

TRPA's Environmental Improvement Program (EIP) focuses on efforts to protect Lake Tahoe for future generations. The program encompasses hundreds of capital improvement, research, program support, and operation and maintenance projects in the Tahoe Basin, all designed to help restore Lake Tahoe's clarity and environment. EIP projects are designed to achieve and maintain environmental thresholds that protect Lake Tahoe's resources. Both PAS 99 and PAS 100 state the following regarding EIP projects: "The capital improvement and other improvement programs required by the Regional Goals and Policies Plan and [EIP] for this area shall be implemented." EIP-listed projects within the study area included projects 22 and 904 and involved restoring Trout Creek (TRPA 2007). Both projects were completed by CSLT (TRPA 2010). The Upper Truckee River and Marsh Restoration Project which encompasses the entire marsh is also identified in as an EIP project (EIP Project #s 560, 650, 981, and 1002) and restoration activities are expected to begin construction as early as 2016.

3.10.2 DISCUSSION

a) Would the project physically divide an established community?

Less than Significant Impact. The proposed project would include adaptive management measures such as constructing pilot channels, creating hummocky surfaces along unpreferential flow paths, implementing vegetation enhancement measures, and removing impediments caused by road fill. All of these measures would be implemented in the study area. Temporarily closing portions of the study area could have a short-term effect on existing user-created trail access. However, the study area is a small portion of the Upper Truckee Marsh, which would remain open for informal recreation. It is expected that this surrounding area could absorb informal recreational activities displaced from the study area on an interim basis. The adaptive management measures would not adversely affect accessibility to the study area in the long-term, nor would they hinder existing transportation or access within or through the communities in the project vicinity, including the Al Tahoe residential subdivision. Because the closures would be temporary, alternative areas are available for informal recreation, and no long-term changes that would divide an established community, this impact would be less than significant.

b) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The proposed project would include adaptive management measures that would be consistent with the goals and policies of the TRPA Regional Plan, the CSLT General Plan, and specific policies and planning considerations of PASs 99 and 100. As described in "a" above, the proposed project includes adaptive management measures consistent with regionally important ecological, water quality, aesthetic, and recreational values of the marsh while still providing flood protection of the District's facilities. The proposed project does not propose any new land uses that would conflict with the planning statement for PAS 99 related to maintaining residential uses. In addition, the proposed project supports the planning statement for PAS 100 associated with managing the area for its natural values.

The land use within the study area is designated by CSLT as Conservation, which provides for the permanent preservation of natural resources, habitat protection, and watershed management. The proposed project supports creek restoration and vegetation enhancement; therefore, the proposed project would be consistent with the Conservation land use category of the City General Plan.

In summary, the proposed project would not conflict with applicable land-use plans, policies, or regulations intended to protect the environment, and in some cases would further implementation of the plans' goals or policies. No impact would occur.

c) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. No adopted or approved habitat conservation plans or natural community conservation plans that are in effect include the study area. Therefore, no impact would occur.

3.11 MINERAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. Mineral Resources. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

3.11.1 ENVIRONMENTAL SETTING

A review of the Mineral Land Classification of El Dorado County (Busch 2001) indicates that the study area does not contain any State-designated Mineral Resource Zones. The study area is underlain by floodplain deposits, which are composed of silty sand and sandy to clayey silt (Saucedo 2005). No economically viable deposits of clean sand or gravel are present. Furthermore, the study area is located within and along the Trout Creek stream corridor, a large portion of which is a TRPA-designated stream environment zone (SEZ). SEZs are protected because they provide numerous physical, chemical, and biological functions that are critical to sustaining healthy ecosystems and maintaining environmental quality; mining activities would not be a compatible land use within an SEZ.

3.11.2 DISCUSSION

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. The study area does not contain any known, State-designated mineral resources (Busch 2001). No economically viable deposits of clean sand or gravel are present. Thus, no impact would occur.

b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. The study area has not been designated as a locally important mineral resource recovery site in the 2004 El *Dorado County General Plan* (El Dorado County Planning Department 2004:136). Therefore, no impact would occur.

3.12 NOISE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. Noise. Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

3.12.1 ENVIRONMENTAL SETTING

BASICS OF ENVIRONMENTAL ACOUSTICS AND VIBRATION

Sound, Noise, and Acoustics

Sound is the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium, such as air. Noise is defined as sound that is unwanted (loud, unexpected, or annoying). Acoustics is the physics of sound. Excessive exposure to noise can result in adverse physical and psychological responses (i.e., hearing loss and other health effects, anger and frustration), in addition to interfering with sleep, speech, and concentration or diminishing the quality of life.

The amplitude of pressure waves generated by a sound source determines the perceived loudness of that source. A logarithmic scale is used to describe sound pressure level in terms of decibels (dB). The threshold of human hearing (near-total silence) is approximately 0 dB. A doubling of sound energy corresponds to an increase of 3 dB. In other words, when two sources at a given location are each producing sound of the same loudness, the resulting sound level at a given distance from that location is approximately 3 dB higher than the sound level produced by only one of the sources. For example, if one automobile produces a sound pressure level of 70 dB

when it passes an observer, two cars passing simultaneously do not produce 140 dB; rather, they combine to produce 73 dB.

The perceived loudness of sounds is dependent on many factors, including sound pressure level and frequency content. However, within the usual range of environmental sound levels, perception of loudness is relatively predictable, and can be approximated by frequency filtering using the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard descriptor for environmental noise assessment. All noise levels reported in this section are in terms of A-weighting.

As discussed above, doubling sound energy results in a 3-dB increase in sound. In typical noisy environments, noise-level changes of 1–2 dB are generally not perceptible by the healthy human ear; however, people can begin to detect 3-dB increases in noise levels. An increase of 5 dB is generally perceived as distinctly noticeable and a 10-dB increase is generally perceived as a doubling of loudness. The following are the sound level descriptors most commonly used in environmental noise analysis:

- **Equivalent sound level (L_{eq}):** An average of the sound energy occurring over a specified time period. In effect, the 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.

- **Maximum sound level (L_{max}):** The highest instantaneous sound level measured during a specified period.

- **Minimum sound level (L_{min}):** The lowest instantaneous sound level measured during a specified period.

- **Day-night average level (L_{dn}):** 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 (10 p.m.–7 a.m.).

- **Community Noise Equivalent Level (CNEL):** A measurement similar to L_{dn}: the energy average of the A-weighted sound levels occurring over a 24-hour period, with penalties of 10 dB and 5 dB, respectively, applied to A-weighted sound levels occurring during the nighttime hours (10 p.m.–7 a.m.) and the evening hours (7 p.m.–10 p.m.). The CNEL is usually within 1 dB of the L_{dn}, and for all intents and purposes, the two are interchangeable. Because it is easier to compute and more commonly used, the L_{dn} is used as the measure of long-term noise in this study.[1]

Sound from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, and the sound level attenuates (decreases) at a rate of 6 dB for each doubling of distance from a point/stationary source. Roadways and highways and, to some extent, moving trains consist of several localized noise sources on a defined path; these are treated as "line" sources, which approximate the effect of several point sources. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. Therefore, noise from a line source attenuates less with distance than noise from a point source.

[1] L_{dn} and CNEL values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered equivalent and are treated as such in this assessment. In general, a change in sound level of 3 dB is just barely noticeable to humans, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as a doubling or halving of sound level.

Negative Effects of Noise on Humans

Negative effects of noise exposure include physical damage to the human auditory system, interference, and disease. Exposure to noise may result in physical damage to the auditory system, which may lead to gradual or traumatic hearing loss. Gradual hearing loss is caused by sustained exposure to moderately high noise levels over a period of time; traumatic hearing loss is caused by sudden exposure to extremely high noise levels over a short period. Gradual and traumatic hearing loss both may result in permanent hearing damage. In addition, noise may interfere with or interrupt sleep, relaxation, recreation, and communication. Although most interference may be classified as annoying, the inability to hear a warning signal may be considered dangerous. Noise may also be a contributor to diseases associated with stress, such as hypertension, anxiety, and heart disease. The degree to which noise contributes to such diseases depends on the frequency, bandwidth, and level of the noise, and the exposure time (Caltrans 2013:2-59).

Groundborne Vibration

Groundborne vibration is energy transmitted in waves through the ground. Vibration attenuates at a rate of approximately 6–9 vibration decibels (VdB) for each doubling of distance from the source (FTA 2006:12-11). A more conservative reduction rate of 6 VdB per doubling of distance was used in this study. This approach considers only the attenuation from geometric spreading and tends to provide for a conservative assessment of vibration level at the receiver.

Vibration is an oscillatory motion that can be described in terms of the displacement, velocity, or acceleration. Vibration is typically described by its peak and root-mean-square (RMS) amplitudes. The RMS value can be considered an average value over a given time interval. The peak vibration velocity is the same as the "peak particle velocity" (PPV), generally presented in units of inches per second (in/sec). PPV is the maximum instantaneous positive or negative peak of the vibration signal and is generally used to assess the potential for damage to buildings and structures. The RMS amplitude is typically used to assess human annoyance to vibration.

EXISTING NOISE CONDITIONS

The study area encompasses 96 acres along Trout Creek that are generally bounded by U.S. 50 on the south, the Al Tahoe neighborhood on the northeast, Lake Tahoe to the north, and the Upper Truckee Marsh to the south and west.

Existing ambient noise levels in the project vicinity, except those areas closest to U.S. 50, are relatively quiet. The predominant noise sources in the study area are natural sources such as wind, moving water, and birds. Other noise sources include urban sounds such as dogs barking, people working (e.g., hammering or chopping wood) or recreating outdoors, occasional aircraft overflights, use of motorized watercraft on Lake Tahoe, and traffic noise from vehicles traveling on U.S. 50 and local residential streets.

No measurements of ambient noise levels were completed for the project. However, ambient noise levels were measured in the project vicinity on the perimeter of the Upper Truckee Marsh on October 1, 2007, during a field visit for the Upper Truckee River and Marsh Restoration Project (Conservancy et al. 2013:3.11-15). The 2007 noise study included off-site human-based noise sources, such as vehicle traffic, in the overall noise measurement. The ambient noise levels measured during that study (45.3 dBA L_{eq}, 53.5 dBA L_{max}, and 39.8 dBA L_{min}) were consistent with expectations, given the rural nature of the land surrounding the study area. Based on the ambient

noise levels measured for the Upper Truckee River and Marsh Restoration Project, ambient noise levels in the project vicinity are expected to be quite low—at or below 50 dBA L_{eq}, 45 dBA L_{eq}, and 40 dBA L_{eq} during the daytime, evening, and nighttime hours, respectively.

Ambient noise levels in the study area are affected primarily by vehicular traffic on nearby roadways. Roadways near the study area, including U.S. 50, frequently experience moderate to high levels of traffic on a seasonal basis, particularly in the summer and winter when the Tahoe Basin draws the most visitors. Existing traffic noise levels were modeled for affected roadway segments of U.S. 50 using the Federal Highway Administration's Traffic Noise Model (Table 3.12-1). Traffic volumes used in the traffic noise model for this project were obtained from a traffic analysis prepared for the Upper Truckee River and Marsh Restoration Project. Additional input data included day/night percentages of automobiles, medium- and heavy-duty trucks, vehicle speeds, ground attenuation factors, and roadway widths.

Table 3.12-1
Summary of Modeled Existing Traffic Noise Levels from Affected Roadway Segments

Roadway Segment	Modeling Assumptions					Distance (feet) from Roadway Edge to CNEL/L_{dn} (dBA)[1]				CNEL/L_{dn} (dBA) from Roadway Edge	
	Average[1] Daily Traffic Volume	Speed (mph)	Grade (%)	Traffic Distribution Percentages (%) Auto/Medium Truck/Heavy Truck	Day/ Evening/ Night	70 CNEL	65 CNEL	60 CNEL	55 CNEL	50 feet	300 feet
U.S. 50 at the Upper Truckee River Bridge in South Lake Tahoe	33,000	35	0	96/3/1	79/ 12.5/ 9.5	57.7	119.4	255.0	548.1	68.2	58.2

Note: CNEL = community noise equivalent level; dBA = A-weighted decibels; L_{dn} = day-night noise level; mph = miles per hour; U.S. 50 = U.S. Highway 50. Traffic noise modeling assumes no natural or human-made shielding (e.g., vegetation, berms, wall, or buildings).

[1] Day, evening, and night noise levels.

Source: Conservancy et al. 2013:Appendix J

Currently, traffic noise levels on affected segments of U.S. 50 are in attainment with the 300-foot, 65-dBA CNEL threshold established for U.S. 50 in the project vicinity (TRPA 2012a).

Noise-Sensitive Receptors

High noise levels can reduce the public's enjoyment of the natural environment, affect quality of life for residents, and disturb native wildlife. Land uses defined as noise-sensitive receptors under Federal, State, and local regulations vary slightly, but typically include schools, hospitals, rest homes, churches, long-term care facilities, mental care facilities, residences, convalescent (nursing) homes, hotels, certain parks, and other similar land uses. Under TRPA regulations, wildlife are also considered noise-sensitive receptors. Noise-sensitive receptors adjacent to the study area include the residential neighborhoods of Highland Woods to the south and Al Tahoe to the east. The closest sensitive receptors from these neighborhoods to the study area would be those located on El Dorado Avenue, all located directly adjacent to the study area.

REGULATORY SETTING

The proposed project would comply with applicable governmental regulations, as discussed below. The analysis takes into account that compliance with the applicable regulations is required, and thus, is essentially a part of the proposed project. Standard compliance with existing regulations pertinent to the proposed project cannot be considered mitigation for significant impacts under CEQA but may be identified in the impact analysis below as regulatory requirements.

California Department of Transportation

The California Department of Transportation (Caltrans) has developed guidelines for assessing the significance of vibration produced by transportation and construction sources (Table 3.12-2). These thresholds address the subjective reactions of people to both short-term vibration (e.g., from temporary construction activities) and long-term/permanent vibration (e.g., from transit operations).

Table 3.12-2
California Department of Transportation Guidelines on Potential Criteria for Vibration Annoyance

Human Response	Impact Levels, VdB re: 1 µin/sec (PPV, in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	80 (0.040)	68 (0.010)
Distinctly perceptible	96 (0.250)	80 (0.040)
Strongly perceptible	107 (0.900)	88 (0.100)
Severe	114 (2.000)	100 (0.400)

Notes: µin/sec = microinches per second; in/sec = inches per second; PPV = peak particle velocity; VdB = vibration decibels
Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: Caltrans 2004

Tahoe Regional Planning Agency Regional Plan

TRPA Code of Ordinances

Chapter 68, "Noise Limitations," of the TRPA Code of Ordinances implements the Goals and Policies of the Noise Subelement. Section 68.4 requires Plan Area Statements (PASs) to set forth CNELs that are not to be exceeded by any one activity or combination of activities, and states that community noise levels are not to exceed levels existing on August 26, 1982, where such levels are known (TRPA 2012b). Maximum CNELs specified for the PASs encompassing the study area and potentially affected sensitive receptors (PASs 099, 100, and 104) are noted below under "TRPA Plan Area Statements." Noise from TRPA-approved construction, maintenance, and structure demolition projects are exempt from the provisions of the Noise Limitations chapter between 8 a.m. and 6:30 p.m. (Section 68.9).

Goals and Policies

The Goals and Policies document of the *TRPA Regional Plan* (TRPA 2012a) establishes an overall framework for development and environmental conservation in the Lake Tahoe region. Chapter 2, "Land Use Element," of the

Goals and Policies document considers seven subelements, including the Noise Subelement. The following goal in the Noise Subelement of the Goals and Policies is relevant to the proposed project:

- **Goal N-2. Community noise equivalent levels shall be attained and maintained.** CNEL thresholds [shown below in Table 3.12-3] were adopted to reduce the annoyance associated with cumulative noise events on people and wildlife. In the Region, the main sources of noise are attributed to the major transportation corridors and the [Lake Tahoe] airport. Therefore, these policies are directed towards reducing the transmission of noise from those sources. …

Table 3.12-3
TRPA Regional Plan Cumulative Numerical Standard—Threshold dBA

Land Use Category	Average Noise Level or CNEL Range (dBA)
High-density residential areas	55
Low-density residential areas	50
Hotel/motel facilities	55
Commercial areas	65
Urban outdoor recreation areas	55
Rural outdoor recreation areas	50
Critical wildlife habitat areas	45
Policy Statement: It shall be a policy of the TRPA Governing Body in the development of the Regional Plan to define, locate, and establish CNEL levels for transportation corridors.	
Transportation Corridors[1]	
U.S. 50	65[2]
SR 89	55[2]
Lake Tahoe Airport	60[3]

Notes: CNEL = community noise equivalent level; dBA = A-weighted decibels; SR = State Route; TRPA = Tahoe Regional Planning Agency; U.S. 50 = U.S. Highway 50

[1] Recommended CNEL values for transportation corridors.

[2] This recommended threshold overrides the land use CNEL thresholds and is limited to an area within 300 feet from the edge of the road.

[3] This recommended threshold applies to those areas impacted by the approved flight paths. The above is also TRPA Threshold N-3.

Source: TRPA 2012a

TRPA Plan Area Statements

TRPA has divided the Lake Tahoe Basin into separate PASs based on similar land uses and the unique character of each geographic area. The study area is located within PAS 100 (Truckee Marsh). Sensitive receptors potentially affected by project-related noise are located within PAS 099 and PAS 104. Each PAS contains an outdoor CNEL standard consistent with the TRPA Regional Plan thresholds shown above in Table 3.12-3. The maximum CNELs for the study area and potentially affected sensitive receptors are as follows:

- *PA 99:* 55 dBA CNEL; 65 dBA CNEL for the U.S. 50 300-foot corridor
- *PA 100:* 50 dBA CNEL; 65 dBA CNEL for the U.S. 50 300-foot corridor; 60 dBA CNEL for approved flight paths
- *PA 104:* 55 dBA CNEL

City of South Lake Tahoe Noise Subelement

The Health and Safety Element of the *2030 City of South Lake Tahoe General Plan* (CSLT 2011) identifies one goal and supporting policies that guide development in regard to noise (the Noise Subelement):

Goal HS-8: To protect South Lake Tahoe's residents, workers, and visitors from the harmful and annoying effects of excessive exposure to noise.

- **Policy HS-8.1: Annoying and Excessive Nontransportation Noise Protection.** The City shall require all new nontransportation noise sources to not exceed the exterior noise level standards shown in Table HS-1 [Table 3.12-4, shown below]. These standards shall be measured from immediately within the property line of parcels designated as noise-sensitive uses.
- **Policy HS-8.2: Annoying and Excessive Nontransportation Noise Mitigation.** In instances where a noise-sensitive use is adversely affected by nontransportation noise levels in excess of standards shown in Table HS-1 [3.12-4], the City shall require appropriate mitigation to be incorporated into the project's design in order to achieve the standards shown in Table HS-1 [3.12-4], as measured immediately within the property line or within a designated outdoor activity area of the project (at the discretion of the Community Development Director).
- **Policy HS-8.3: Overall Background Noise Mitigation.** The City shall not allow any project to increase the overall background noise levels at receiving land uses by three or more decibels (dB) in instances when measured ambient noise levels exceed the standards contained within Table HS-1 [3.12-4].

Table 3.12-4
Exterior Noise Level Performance Standards for New Projects Affected by or Including Nontransportation Noise Sources

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly L_{eq}, dB	55	45

Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises (e.g., humming sounds, outdoor speaker systems). These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

The City can impose noise level standards that are more restrictive than those specified above based on determination of existing low ambient noise levels.

Fixed noise sources which are typically of concern include, but are not limited to, the following:

HVAC Systems	Cooling Towers/Evaporative Condensers
Pump Stations	Lift Stations
Emergency Generators	Boilers
Steam Valves	Steam Turbines
Generators	Fans
Air Compressors	Heavy Equipment
Conveyor Systems	Transformers
Pile Drivers	Grinders
Drill Rigs	Gas or Diesel Motors
Welders	Cutting Equipment
Outdoor Speakers	Blowers

The types of uses which may typically produce the noise sources described above include but are not limited to: industrial facilities including pump stations, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

Source: CSLT 2011:Table HS-1

DISCUSSION

a) Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?

No Impact. The applicable standards are noise level criteria contained in the TRPA Regional Plan's Noise Subelement and applicable PASs (PASs 99, 100, and 104), Chapter 68, "Noise Limitations," of the TRPA Code of Ordinances, and the *2030 City of South Lake Tahoe General Plan* Noise Subelement discussed above in "Regulatory Setting." The proposed project would not generate any permanent sources of noise. Construction noise in the TRPA plan area, including within the jurisdictional limits of CSLT, is regulated under Chapter 68, "Noise Limitations," of the TRPA Code of Ordinances. Section 68.9 exempts TRPA-approved construction, demolition, and structural demolition activities from the provisions of the Noise Limitations chapter, provided that it occurs between 8 a.m. and 6:30 p.m. As noted above, project-related construction activities would be limited to these hours; therefore, they are exempt from the noise level requirements specified in the applicable regional and local plans and ordinances referenced above. Therefore, no impact would occur.

b) Would the project result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant Impact. Heavy earth-moving equipment used during project construction activities would cause vibration, primarily during Year 1 planned improvements: temporary access, road fill removal, placement of hummocks, channel modifications, and water diversion and pumping. These activities would produce a vibration level of approximately 87 VdB (0.089 in/sec PPV) at a distance of 25 feet, which is the reference distance for measuring vibration levels from operation of a large bulldozer (FTA 2006; Caltrans 2004). The distance between construction activities using heavy earth-moving equipment (i.e., a full-size excavator) and the closest residential uses would be approximately 200–700 feet. Assuming a more conservative reduction of 6 VdB per doubling of distance, the project's construction vibration level at the closest sensitive receptors would be approximately 58–69 VdB. Based on Caltrans guidance for vibration-annoyance impact levels from construction activities (Table 3.12-2), 69 VdB is barely perceptible for continuous/frequent intermittent sources of vibration and would not likely be perceptible for more transient sources. Also, the calculated vibration level of 87 VdB represents a worst-case, conservative estimate, and the actual construction vibration levels for the project could be substantially less. Therefore, this impact would be less than significant.

c) Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

No Impact. The proposed project would involve only short-term construction activities and would not introduce any permanent sources of noise. Additionally, none of the proposed changes would increase the noise production/exposure associated with existing, permanent sources of noise in the study area. Therefore, no impact would occur.

d) Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less than Significant with Mitigation Incorporated. The proposed project would involve only short-term construction activities and would not introduce any permanent sources of noise. Construction activities requiring the use of heavy earth-moving equipment include temporary access, removal of fill from the abandoned road, construction of hummocks, channel modifications, and water diversion and pumping. The impact of construction noise is usually considered not significant for purposes of CEQA compliance if:

- the construction activity is temporary;
- use of heavy equipment and noisy activities is limited to daytime hours; and
- all feasible noise abatement measures are implemented for noise-producing equipment.

The use of heavy equipment is expected to occur primarily during the first year of construction, with limited or no use of heavy equipment thereafter. Intensive use of heavy equipment (including an excavator, front loader, and dump trucks) to remove fill from the abandoned road is expected to last approximately 4–10 days. Construction activity within the easement site, including construction of the hummocks, is expected to overlap with road fill removal activities and use the entire available construction window from September 1 to October 15, a 1½-month period. Heavy equipment use within the easement area would be limited to the intermittent use of a small front loader to transport soil and sod from the road fill removal area to the easement area for use in building the hummocks and similar activities on the floodplain. Additional use of an excavator to remove the debris plug at the central channel would occur for 1–2 days within the same construction time frame. Any additional project

improvements in Year 1 and proposed in Years 2–5 are expected to be completed by hand crews. As noted previously, project construction is expected to occur between 8 a.m. and 6:30 p.m. consistent with TRPA Code of Ordinances requirements.

Project construction noise was estimated using the Federal Highway Administration's Roadway Construction Noise Model and a list of heavy equipment that would likely be used. To estimate construction noise impacts, activities at two main locations in the study area where heavy equipment would be used near residential uses were considered: the road fill removal area and the easement area along the northern boundary.

It was assumed that a front loader, excavator, and dump truck could be operated in the road fill area simultaneously at any given time. The road fill removal area is approximately 200 feet from the closest residences. It was assumed that one front loader could be used in the easement area at any given time. The easement area is within 50 feet of the closest residences. Table 3.12-5 shows the unmitigated noise levels produced by this combination of equipment during the initial phase, when only road fill removal activities would occur; during the second phase, when both road fill removal and front loader use within the easement would occur; and during the latter phase, when only front loader use within the easement area would continue.

Noise levels were calculated at the location of the closest residences (200 feet from road fill removal and 50 feet from the easement). The distance for noise levels to attenuate to ambient levels (50 dBA L_{eq}) and to 60 dBA L_{eq} were calculated, assuming standard spherical spreading loss (-6 dB per doubling of distance). Because most people perceive a 10-dBA increase above ambient noise levels to be twice as loud, 60 dBA L_{eq} is considered to be a substantial increase for this analysis. The results shown in Table 3.12-5 represent worst-case, conservative noise exposure because they do not consider noise attenuation associated with ground and atmospheric absorption. Therefore, actual construction noise levels could be substantially less.

Table 3.12-5
Summary of Calculated Construction Noise Levels and Impacts

Construction Phase	Construction Noise Level (dBA L_{eq})	Distance to 50 dBA L_{eq} (feet)	Distance to 60 dBA L_{eq} (feet)
Removal of road fill	72	400	150
Removal of road fill and transport of fill within easement area	77	630	250
Transport of fill within easement area	76	550	220

Notes: dBA = A-weighted decibels; L_{eq} = 1-hour equivalent noise level (the sound energy averaged over a continuous 1-hour period)
Source: Data compiled by AECOM in 2014

As shown in Table 3.12-5, project-related construction average hourly noise levels would range from 72 dBA L_{eq} to 76 dBA L_{eq} at the sensitive receivers closest (immediately adjacent) to the study area. All sensitive receivers within 400–630 feet of the study area could experience a temporary increase above ambient noise levels. However, only those within 150–250 feet of the study area would experience a substantial (10-dBA) temporary increase above ambient noise levels. This would likely include residences between the study area and El Dorado Avenue and the first row of houses on the opposite side of El Dorado Avenue. This impact would be potentially significant.

Mitigation Measure NOI-1: Reduce Noise Levels from On-site Construction Equipment.

The following noise-reducing construction practice will be implemented to reduce impacts on noise-sensitive receivers during construction of the project:

- Before construction, all residences within 650 feet of construction areas will be notified in writing of the proposed construction activities. Construction scheduling and contact information will be clearly displayed on construction fencing.

Also, implementation of the following mitigation measures normally considered during construction activities is recommended to reduce construction noise exposure:

- Plan noisier operations during times of highest ambient noise levels.
- Keep noise levels relatively uniform; avoid excessive and impulse noises. Operate equipment to minimize banging, clattering, buzzing, and other annoying types of noises, especially near residential and other noise-sensitive areas.
- Turn off idling equipment.
- To the extent feasible, configure the construction site in a manner that keeps noisier equipment and activities as far as possible from noise-sensitive locations and nearby buildings.
- To the extent feasible, use construction equipment manufactured or modified to reduce noise and vibration emissions, such as electric instead of diesel-powered equipment.

Implementing Mitigation Measure NOI-1 would reduce temporary noise impacts during construction to a less-than-significant level.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The Lake Tahoe Airport is a public-use airport owned by CSLT. The north end of the airport runway is located approximately 2.1 miles from the study area boundary. The *Lake Tahoe Airport Comprehensive Land Use Plan* (CSLT ALUC 2007) does not encompass any part of the study area. The plan contains estimated 65-dB, 60-dB, 55-dB, and 50-dB CNEL noise contours for the year 2010. The study area (located in TRPA PA 100) has an established noise standard of 60 dBA CNEL for approved flight paths (TRPA 2012a). However, the estimated 2010 60-dB CNEL noise contour for the airport does not extend to the study area. No people currently reside inside the boundaries of the study area, and the project does not propose to add any noise-sensitive receptors that could be affected by noise from aircraft overflights originating from the Lake Tahoe Airport. As required by the Occupational Safety and Health Administration, construction workers would use hearing protection as needed for heavy-equipment use during project construction. However, the proposed project would not expose workers to excessive noise levels from aircraft overflights associated with the Lake Tahoe Airport. Therefore, no impact would occur.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The study area is not located within the influence area of any private airstrips. Therefore, no impact would occur.

3.13 POPULATION AND HOUSING

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII.	**Population and Housing. Would the project:**				
	a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
	b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
	c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.13.1 ENVIRONMENTAL SETTING

The study area is located within the South Lake Tahoe city limits in El Dorado County. The city's year-round population reached a peak in 2002 and has declined since that time. As of January 1, 2013, the California Department of Finance (DOF) estimated that South Lake Tahoe's population was approximately 21,498 (DOF 2013a). Approximately 12 percent of El Dorado County's population lives in South Lake Tahoe. As of January 2013, DOF estimated that the county's population was 182,286 (DOF 2013a).

The number of housing units in South Lake Tahoe, as of January 1, 2013, was estimated to be 15,087 (DOF 2013b). According to the California Department of Housing and Community Development, a housing vacancy rate of 5 percent is considered normal (HCD 2000). Vacancy rates below 5 percent indicate a housing shortage in a community. South Lake Tahoe had a vacancy rate of 40.9 percent in 2013. The number of housing units in the county, as of January 2013, was estimated to be 88,159, with a vacancy rate of 20.3 percent (DOF 2013b).

3.13.2 DISCUSSION

a) Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

b) Would the project displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?

c) Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed project would not induce substantial population growth, either directly or indirectly, or displace a substantial number of people or existing housing. The study area includes conservation/open space land, and no houses would be relocated as a result of the proposed project. As a result, the proposed project would

not induce substantial population growth or displace people or housing. Therefore, no impact on population or housing would occur.

3.14 PUBLIC SERVICES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. Public Services. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☐	☒
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

3.14.1 ENVIRONMENTAL SETTING

The South Lake Tahoe Fire Department (SLTFD) provides fire protection services to the study area. SLTFD serves 18 square miles along the south shore of Lake Tahoe; the study area is located in the northwestern portion of SLTFD's service area. SLTFD responds to structural fires, vegetation fires, hazardous-materials spills, water- and ice-rescue incidents, emergency medical incidents, and aircraft incidents. Fire Station 2 provides first response to the study area. This station is located at 2951 Lake Tahoe Boulevard, approximately 0.5 mile from the study area. Station 2 is staffed by one captain, one engineer, and two firefighters (SLTFD 2014).

Police service in the study area is provided by the South Lake Tahoe Police Department (SLTPD). SLTPD is located within the government complex at 1352 Johnson Boulevard, approximately 0.6 mile from the study area. SLTPD provides patrol and crime prevention operations, crime investigations, narcotics enforcement, a crisis team, a special weapons and tactic team, and canine units. On average, SLTPD responds to approximately 2,350 calls for service per month (SLTPD 2014).

There are no recognized parks or formal recreational facilities within or in the project vicinity. The marsh is very accessible and used extensively by the public through numerous user-created trails that provide access points from surrounding neighborhoods. In addition, the Conservancy maintains a pedestrian trail connects East Venice Drive and Cove East Beach on the west side of the marsh. The marsh is also accessible by boat from Lake Tahoe and by canoes, kayaks, and rafts from the Upper Truckee River. Visitors in the project vicinity use the marsh for numerous informal, dispersed recreation activities, including: rafting, kayaking, canoeing, walking, jogging, dog walking, wildlife viewing, photography and sightseeing, swimming, fishing, bicycling, and beach use.

The study area is located within the boundaries of the Lake Tahoe Unified School District. Elementary school students (grades kindergarten through 5th grade) in the project vicinity attend Bijou Community School, middle

school students (grades 6–8) attend South Tahoe Middle School, and high school students (grades 9–12) attend South Tahoe High School (Lake Tahoe Unified School District 2014).

3.14.2 DISCUSSION

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

i) Fire protection: No Impact. Emergency access to the study area would be maintained during construction, and in the event of a fire in the study area, there are access roads that could accommodate firefighting crews and equipment. In addition, the proposed project would not result in changes to the population of the study area, nor would it involve constructing any structures that would require additional fire protection services. No impact would occur.

ii) Police protection: **No Impact.** Emergency access to the study area would be maintained during construction. In addition, the proposed project would not create any new housing that would increase the population of the study area or include other development that would increase demand for police protection services and facilities. No impact would occur.

iii) Schools: No Impact. The proposed project would not provide any new housing that would increase the number of students in the community. Therefore, implementing the proposed project would not increase demand for school services and facilities. No impact would occur.

iv) Parks: No Impact. Although informal recreation occurs in the study area, there are no recognized parks or recreational facilities in the study area or vicinity. In addition, implementing the proposed project would not increase the population of the study area or increase demand for new or expanded park facilities. No impact would occur.

v) Other Public Facilities: No Impact. The proposed project would not provide any new housing, businesses, or other development that would increase demand for other public facilities. No impact would occur.

3.15 RECREATION

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV.	**Recreation. Would the project:**				
	a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
	b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

3.15.1 ENVIRONMENTAL SETTING

EXISTING RECREATIONAL FACILITIES

Recreation in the project vicinity is dispersed and does not currently include developed facilities, except for one trail constructed as part of the Lower West Side Wetland Restoration Project. With the exception of this trail, which connects East Venice Drive to Cove East Beach, the project vicinity does not contain officially designated trails or other facilities for recreational use. However, a network of user-created trails provides access to the project vicinity and the study area from adjoining neighborhoods. Similarly, user-created boat take-out areas exist along the Upper Truckee River.

Common recreational activities in the project vicinity include walking, running, beach activities, bicycling, wildlife viewing, fishing, and dog walking. The marsh is also accessible by boat from Lake Tahoe and by canoes, kayaks, and rafts from the Upper Truckee River. These uses occur primarily during late spring, summer, and early fall, and in that period are greatest during summer weekends and holidays. During summer weekends and holidays, recreation in the project vicinity can exceed 100–300 visitors per day, but during other days, the number of visitors is much smaller. Winter outdoor recreation use also includes cross-country skiing, snow play, and snowshoeing. Recreational use of off-road vehicles is prohibited in the marsh (Conservancy et al. 2013).

Most recreation in the project vicinity occurs west of the Upper Truckee River. Thus, the area east of the river, which includes the study area, provides dispersed recreation opportunities characterized by solitude and a lack of formal facilities or infrastructure. The Conservancy maintains a pedestrian trail connects East Venice Drive and Cove East Beach on the west side of the marsh. One informal recreation facility, a publicly owned open space area with a trail system, is located between the Upper Truckee River and Trout Creek, south of Pioneer Trail.

3.15.2 DISCUSSION

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less than Significant Impact. Because there are several access points to the study area from the adjacent neighborhood and from within the Upper Truckee Marsh, temporarily closing portions of the study area could have a short-term effect on existing informal recreational opportunities. However, there are no formal recreation facilities in the study area and the proposed project would not increase the demand for recreation. In addition, the study area is a small portion of the Upper Truckee Marsh, which would remain open for informal recreation. It is expected that this surrounding area could absorb informal recreational activities displaced from the study area on an interim basis. The area's accessibility would vary depending on the stages of active construction, hauling of materials, and revegetation efforts that may require closure of areas until plantings are established. Portions of the study area would remain accessible to members of the public, to the extent feasible and without compromising health and safety. Because the closures would be temporary, alternative areas are available for dispersed recreation, and no formal recreation facilities would be affected by the proposed project, this impact would be less than significant.

b) Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

No Impact. No recreation facilities are proposed as part of the project, and the project would not increase the demand for recreation. In addition, as discussed under item a above, there are no formal recreation facilities in the study area that would be affected by the adaptive management measures. Therefore, the proposed project would not require the construction or expansion of any recreational facilities, and no impact on recreational facilities would occur.

3.16 TRANSPORTATION/TRAFFIC

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. Transportation/Traffic. Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☒	☐	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

3.16.1 ENVIRONMENTAL SETTING

EXISTING ROADWAYS AND INTERSECTIONS

Regional access to the study area is provided via U.S. 50 and the residential roadways discussed below, which are located in the adjacent Al Tahoe neighborhood east of the study area. Exhibit 3.16-1 presents the roadway network in the study area.

Source: AECOM 2014

Exhibit 3.16-1 **Project Area Roadway Network**

U.S. 50, the first California highway, is the primary route providing access to and through South Lake Tahoe. U.S. 50 connects the city with Sacramento, California, to the west via Echo Summit and with Carson City, Nevada, to the east via Spooner Summit. From the signalized U.S. 50/State Route (SR) 89 intersection with Lake Tahoe Boulevard (the "wye"), SR 89 continues north-northwest and is also designated as Emerald Bay Road. Southeast and northeast of the wye, U.S. 50 is designated as Lake Tahoe Boulevard as it heads east through the city toward Stateline, Nevada, and south into the unincorporated county.

The physical characteristics of U.S. 50 vary in the Tahoe Basin. As the highway enters the basin from the south, U.S. 50 is a two-lane roadway. The posted speed along the two-lane segment ranges from 40 to 55 miles per hour (mph). At approximately F Street in South Lake Tahoe, U.S. 50 becomes a four-lane highway with a continuous center left-turn lane and a posted speed of 50 mph, although the speed limit drops from 50 to 40 mph at H Street and to 35 mph near D Street. U.S. 50 continues east through the city as a four-lane roadway with a continuous center turn lane and a speed limit of 35 mph.

Los Angeles Avenue is a two-lane roadway that extends from the eastern boundary of the study area to an unsignalized intersection on U.S. 50. The posted speed along Los Angeles Avenue is 25 mph.

Bellevue Avenue is a two-lane roadway that generally runs north-south parallel to the eastern boundary of the study area. This roadway extends from Lakeview Avenue, and travels southwest and then south before terminating at Stanford Avenue. The speed limit is not posted along Bellevue Avenue.

Lakeview Avenue is a two-lane roadway and one of numerous routes that link the Al Tahoe neighborhood adjacent to the study area with U.S. 50. This roadway extends for more than 0.5 mile from the study area to a signalized intersection on U.S. 50. The posted speed limit on Lakeview Avenue is 25 mph.

EXISTING TRAFFIC VOLUMES

Traffic counts conducted for the Upper Truckee River and Marsh Restoration Project in the project vicinity indicate the existing daily traffic volumes on Lakeview Avenue, which is at the north end of Bellevue Avenue, has a daily traffic volume of 1,795 and an estimated weekday peak-month traffic volume of 2,100. San Francisco Avenue, which is located between Lakeview Avenue and Los Angeles Avenue, has a daily traffic volume of 877 and an estimated weekday peak-month traffic volume of 1,000 (Conservancy et al. 2013).

EXISTING ALTERNATIVE TRANSPORTATION

BlueGO, a service provided by Tahoe Transportation District, provides fixed-route, demand-response service, ski shuttles, seasonal trolley service, and commuter express routes on the south shore of Lake Tahoe and to the Carson Valley. BlueGO is a coordinated public/private transportation system for the south shore region of Lake Tahoe that combines previously offered services under the same management. Buses on Route 52 provide service to Al Tahoe, east of the study area, and buses on Route 55 serve the Tahoe Keys Marina, west of the study area (Tahoe Transportation District 2013).

EXISTING BICYCLE AND PEDESTRIAN FACILITIES

No designated Class I, Class II, or Class II bicycle and pedestrian facilities (pedestrian and bicycle shared-use paths, bicycle lanes, or bicycle routes, respectively) are located in the study area. Class I facilities are physically separated from automobile traffic. Class II facilities are not physically separated from traffic, but the bicycle lane

is designated with striping. Class III facilities do not have striping, but signs are posted to alert drivers that they are sharing the traveling width with a bicycle route. U.S. 50, located along the study area's southern boundary, has bicycle facilities that alternate between Class III and Class I designations. North from U.S. 50 and on the east side of the study area, El Dorado Avenue and Bellevue Avenue have Class III bicycle facilities. From its intersection with Bellevue Avenue heading east away from the study area, Lakeview Avenue has Class II bicycle facilities.

AIRPORT FACILITIES

The Lake Tahoe Airport is the airport closest to the study area. The north approach to the airport is located approximately 2.1 miles south of the U.S. 50 crossing over the Upper Truckee River in South Lake Tahoe.

TRIP GENERATION AND VEHICLE MILES TRAVELED

According to Chapter 65, "Air Quality/Transportation," of the TRPA Code of Ordinances, a project that would expand gross floor area or change the type of generator on the Trip Table (normally indicated by a substantial change in products or service provided) would be considered a "change in operation" that would result in additional trip generation.

A project's impact on vehicle miles traveled (VMT) is based on the number of trips generated by the proposed land use. If a land use produces 100 or fewer daily trips (based on TRPA's Trip Table), the VMT increase is insignificant (TRPA Code of Ordinances, Chapter 65). If a land use produces 101–200 daily trips, the increase is considered minor. Any land use generating more than 200 daily trips results in a significant increase, which would require mitigation.

LEVEL OF SERVICE

Level of service (LOS) is a quantitative and qualitative measure of traffic conditions on isolated sections of roadway or intersections. LOS ranges from "A" (no congestion) to "F" (system failure with gridlock or stop-and-go conditions prevailing).

TRPA has established traffic capacity and LOS criteria for various types of highways, and an operational LOS for signalized intersections. To meet the goals of TRPA's transportation element and the *2030 Mobility: Lake Tahoe Regional Transportation Plan*, peak-period traffic flow should not exceed:

- LOS C on rural scenic/recreational roads,
- LOS D in rural developed areas,
- LOS D on urban roads, or
- LOS D for signalized intersections.

LOS E may be acceptable during peak periods not to exceed 4 hours per day.

3.16.2 DISCUSSION

a) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Less than Significant with Mitigation Incorporated. According to Chapter 65, "Air Quality/Transportation," of the TRPA Code of Ordinances, a project that would expand gross floor area or change the type of generator on the Trip Table (normally indicated by a substantial change in products or service provided) would be considered a "change in operation" that would result in additional trip generation and VMT. Because the proposed project would not change existing land uses, it would not result in additional trip generation, except that ongoing routine inspection, monitoring, and maintenance of the proposed adaptive management measures would generate a limited number of new vehicle trips for an interim period. Long-term trip generation and VMT would remain essentially the same; therefore, no impact would occur.

Although project uses would not result in significant long-term traffic impacts, additional trips would be generated on a short-term basis during project construction. The Year 1 improvements are planned for late summer/early fall 2014. Construction activities are expected to occur between September 1 and October 15, with planting activities continuing through December 15. Construction hours would be limited to those required by TRPA and CSLT unless specific permitting allows for longer hours. Contractors would be required to follow all conditions of approval for extended work hours. As discussed in Section 3.12, "Noise," the hours of construction would primarily be limited to between 8 a.m. and 6:30 p.m.

It is anticipated that the heaviest truck traffic would occur over a 1-month period, during which trucks would be entering and leaving the study area to import wood chips, travel mats, marsh mats, and other materials and to remove road fill material. A maximum of 33 trucks per day is expected during this period. A limited staging area is required for the proposed project because of the small amount of equipment and materials needed for the work. Construction equipment, materials, and employee vehicles would be staged along the roadway and shoulder (estimated at 600 square feet) near the Bellevue Pump Station. It is expected that the preferred haul route would be from U.S. 50 via Los Angeles Avenue to Bellevue Avenue. One-time access for equipment would be made via U.S. 50 and Rubicon Trail and existing pedestrian access routes. No staging area is anticipated for this access route because no significant material quantities would be imported or exported.

Construction activities would include excavation, fill removal and placement, planting and revegetation, cleanup, and materials transport. The construction equipment is expected to be limited low-ground-pressure equipment, including small loaders, an excavator, and trucks (haul and passenger). Materials and equipment would need to be imported to the study area for the proposed adaptive management measures. The amount of materials and equipment transported to and from the study area is expected to be minimal and would result in approximately 30 truck trips or 60 one-way trips over the duration of project construction.

Early estimates of cut-and-fill quantities indicate that implementing the proposed project would generate approximately 530 cubic yards of cut and 270 cubic yards of fill. The on-site cut would be used as much as possible for fill; however, an excess of 390 cubic yards of material would need to be removed from the study area. Given the limited turning radius within the study area, it is expected that 10-yard dump trucks with a capacity of

6–8 cubic yards of material would be used to transport the fill off site. This would generate approximately 62 truck trips (i.e., 124 one-way trips) over an approximately 1-week period. The excess clean fill material may be evaluated for use elsewhere or be transported out of the Tahoe Basin over Spooner Summit.

Construction of the proposed project would require approximately 20 on-site employees during the heaviest construction period and approximately 10 on-site employees at any given time for the duration of the construction period.

No designated Class I, II, or III bicycle and pedestrian facilities are located in the study area; however, trucks and equipment entering and leaving the study area may conflict with the Class III bicycle facility along Bellevue Avenue. Construction would occur primarily between September 1 and October 15 and would not coincide with peak summer bicycle use. However, crossing the bicycle facility could create potential short-term safety issues for bicycles and pedestrians.

Although the proposed project would not result in significant long-term traffic impacts, short-term construction-related traffic impacts from construction vehicle traffic would be potentially significant.

Mitigation Measure TRA-1: Prepare a Traffic Control Plan.

The District's contractor shall be responsible for providing an approved traffic control plan subject to review and comment by TRPA and the CSLT before construction. The plan will address project construction traffic and parking, and emergency access. At a minimum, the traffic control plan will discuss truck haul routes, truck turning movements at the project staging area, traffic control signage, potential bicycle and pedestrian traffic conflicts, and monitoring of the in-place traffic control plan to implement traffic control revisions, if necessary.

Implementing Mitigation Measure TRA-1 would reduce construction-related traffic impacts to a less than significant level.

b) Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less than Significant with Mitigation Incorporated. As discussed under item a above, the proposed project would not result in an increase in long-term project-related traffic because existing land uses would remain unchanged. However, short-term construction traffic could affect local roadways and intersections. Short-term construction-related traffic impacts would be potentially significant.

Implementing Mitigation Measure TRA-1, as described above, would reduce construction-related impacts on local roadways and intersections to a less than significant level.

c) Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The nearest airport to the study area is the Lake Tahoe Airport, which is located approximately 2.1 miles south of the study area. No private airstrips exist in the vicinity of the study area. In addition, the project does not propose any activities that could interfere with air traffic patterns. Therefore, no impact on air traffic patterns would occur.

d) Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. Existing land uses would remain unchanged; therefore, the proposed project would not create an incompatible use. No impact would occur related to increased hazards from a design feature or incompatible use.

e) Would the project result in inadequate emergency access?

Less than Significant with Mitigation Incorporated. As discussed under item a above, the proposed project would not result in an increase in long-term project-related traffic because existing land uses would remain unchanged. However, short-term construction traffic could affect local roadways and intersections, including emergency access. Short-term construction-related traffic impacts would be potentially significant.

Implementing Mitigation Measure TRA-1 would reduce impacts on emergency access to a less-than-significant level.

g) Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

No Impact. The proposed project would not cause a long-term change in recreational use and public access within the study area. In addition, construction-related impacts on public access would be temporary and would not affect any formal recreational facilities, and recreational use would be available in the project vicinity. No impact would occur related to policies, plans, or programs supporting alternative transportation.

3.17 UTILITIES AND SERVICE SYSTEMS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. Utilities and Service Systems. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

3.17.1 ENVIRONMENTAL SETTING

Potable water and sanitary sewer service in the project vicinity is provided by the District. The District's service area encompasses 32 square miles in South Lake Tahoe and an unincorporated area of El Dorado County in the Tahoe Basin.

The District is the largest water purveyor in the Tahoe Basin. Water supply is provided by 16 active supply wells and the District maintains several standby, sampling and monitoring, and inactive wells. The storage and distribution system is composed of 16 booster pump stations, 23 storage tanks, and 320 miles of potable-water pipe (District 2014). Potable-water lines run through the Al Tahoe neighborhood and at the southern end go into the Upper Truckee Marsh at the corner of Sacramento Avenue and El Dorado Avenue. An 8-inch water main, slipped in a 10-inch steel pipeline, crosses Trout Creek, upstream and east of the study area.

The District maintains 42 pump stations and more than 330 miles of force and gravity sewer mains. Wastewater flows are conveyed to the District's wastewater treatment plant. The wastewater treatment plant has an existing

capacity of 7.7 million gallons per day (mgd) and treats an average daily flow of 4.0 mgd. Peak average daily flows increase to up to approximately 5.0 mgd during summer holiday weekends (District 2014).

In the study area the District owns and operates the Bellevue Pump Station, an 8-inch-diameter gravity main, and a 10-inch-diameter force main. The pipelines are located in a 12-foot-wide sewer easement between Oakland Avenue and Bellevue Avenue in the study area. The force main generally lies within 4 feet of the ground surface, and the gravity main lies below the force main and has numerous laterals that enter from the private properties along the northeast side of the study area. The Bellevue Pump Station and associated force main serve approximately 640 residential units and have a design flow of about 223,000 gallons per day. The 8-inch gravity main serves approximately 150 units and has an estimated flow volume of approximately 47,000 gallons per day.

Solid waste generated in the South Lake Tahoe area is taken to a materials recovery facility operated by South Tahoe Refuse and Recycling located at 2140 Ruth Avenue in South Lake Tahoe, where it is sorted into recyclable components before disposal. Nonrecyclable, nonhazardous refuse is taken to the Lockwood Regional Landfill located in Sparks, Nevada. The Lockwood Regional Landfill is permitted to accept municipal solid waste and construction and demolition debris. The Lockwood Regional Landfill receives approximately 5,000 tons per day of waste and has a total maximum permitted capacity of 302.5 million cubic yards. The Lockwood Regional Landfill contains a waste volume of approximately 32.8 million cubic yards and has a remaining capacity of approximately 269.7 million cubic yards (NDEP 2014).

3.17.2 DISCUSSION

a) Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No Impact. The proposed project would not include any new development that would generate new sources of wastewater requiring wastewater treatment. During project construction, restroom facilities would be provided via portable toilets at the staging area near the Bellevue Pump Station. Therefore, the proposed project would not result in wastewater discharges that would exceed the Lahontan Regional Water Quality Control Board's requirements. No impact would occur.

b) Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. The proposed project would not include any new development that would require water or wastewater treatment. No, changes are proposed to existing facilitates at the Bellevue Pump Station and associated gravity or forced main infrastructure. The proposed adaptive management measures would protect existing infrastructure from effects associated with flooding and potential sewage spills into the Upper Truckee Marsh and Lake Tahoe. No impact would occur.

c) Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. The proposed project would not create or contribute runoff that would exceed the capacity of stormwater drainage systems. There are no stormwater drainage systems in the study area. Furthermore, the

proposed project does not include the construction of new impervious surfaces or other development that would require new stormwater drainage facilities or expansion of existing facilities. No impact would occur.

d) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Less than Significant Impact. The proposed project would not include any new development or other activities that would require permanent public water supplies. The temporary use of District's water supply may be required periodically for dust control and earthwork, and for temporary irrigation of vegetation. However, these activities would be minimal and temporary. Therefore, no new or expanded water supply entitlements would be needed. This impact would be less than significant.

e) Would the project result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?

No Impact. As discussed under items a and b above, the proposed project would not generate any wastewater. Therefore, the proposed project would not exceed a wastewater treatment provider's capacity. No impact would occur.

f) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less than Significant Impact. During construction, all excavated sod would be salvaged and used as sod plugs, placed in existing low areas, or incorporated into the overbank plugs. Excavated road fill would be used in construction of hummocks or used elsewhere as needed. Any excess road fill (conservatively estimated to be 400 cubic yards) would be assessed for reuse elsewhere within the Basin or potentially transported out of the Tahoe Basin to a site that could reuse the fill material. The clean fill material is not expected to affect landfill capacity. Any potential solid waste generated by construction activities would be minimal relative to the amount of waste currently generated by the population of South Lake Tahoe and nearby communities. Any solid waste generated during construction activities would be transported to the South Tahoe Refuse Facility and eventually disposed in the Lockwood Regional Landfill, which has a remaining capacity of approximately 269 million cubic yards. Therefore, it is anticipated that this facility could accommodate the small amount of solid waste that could be generated during construction activities. The proposed project would not result in long-term generation of solid waste. This impact would be less than significant.

g) Would the project comply with federal, state, and local statutes and regulations related to solid waste?

No Impact. As discussed under item f above, any temporary or short-term increase in solid-waste generation during construction would be minimal and would not cause any landfill to exceed its capacity. Solid waste would be transported and disposed in accordance with all applicable Federal, State, and local statutes and regulations related to solid waste. No impact would occur.

3.18 MANDATORY FINDINGS OF SIGNIFICANCE

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII.	**Mandatory Findings of Significance.**				
	a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
	b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒	☐	☐
	c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Authority: Public Resources Code Sections 21083 and 21087.
Reference: Public Resources Code Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.3, 21093, 21094, 21151; *Sundstrom v. County of Mendocino*, 202 Cal.App.3d 296 (1988); *Leonoff v. Monterey Board of Supervisors*, 222 Cal.App.3d 1337 (1990).

3.18.1 DISCUSSION

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?

Less-than-Significant Impact. The proposed project would not 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; reduce or restrict the range of rare or endangered plants or animals; or eliminate important examples of the major periods of California history or prehistory. As discussed in Section 3.4, "Biological Resources," and Section 3.5, "Cultural Resources," measures included as part of the AMP and as mitigation will be implemented by the District that would reduce potential impacts on biological resources and cultural resources to less than significant levels.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less than Significant with Mitigation Incorporated. The proposed project would involve implementing adaptive management measures along Trout Creek within the Upper Truckee Marsh to protect the District's sewer infrastructure. All of the project's impacts would be either less than significant or less than significant with mitigation incorporated. Many project impacts are site specific and would not combine with the impacts of other cumulative projects in the area. This is true for the following resource areas: aesthetics, agricultural resources, geology, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, public services, recreation, and utilities and service systems.

Air quality impacts have regional implications. Short-term emissions of pollutants generated during construction are temporary in nature, but can contribute to air quality violations and nonattainment conditions. Emissions are associated primarily with heavy-duty construction equipment and fugitive emissions from ground disturbance and earth-moving activities. Unmitigated emissions associated with the proposed project are not expected to exceed the applicable significance thresholds (82 pounds per day of reactive organic gases, oxides of nitrogen, or particulate matter less than 10 microns in diameter). Therefore, the project would not result in a cumulatively considerable contribution to a short-term cumulative air quality impact. With the exception of a very limited number of new vehicle trips related to ongoing routine inspection, monitoring, and maintenance of the adaptive management measures, the proposed project would not generate any long-term operational emissions. Therefore, the proposed project would not contribute to a cumulative long-term regional air quality impact. (Note: Global climate change and project-generated greenhouse gas emissions are discussed in Section 3.7, "Greenhouse Gas Emissions.")

For certain resource areas—biological resources, cultural resources, hydrology and water quality, and transportation and traffic—considering the past, current, or probable future projects in the project vicinity identified in Table 2-3 of Chapter 2, "Project Description," is warranted. Potential cumulative impacts for each of these resource areas are described briefly below. The cumulative effects on biological resources, cultural resources, hydrology and water quality, and transportation/traffic are discussed below. Separate impact conclusions are provided for each resource area. However, the most conservative impact conclusion listed below is provided under item b in the environmental checklist above.

BIOLOGICAL RESOURCES

Less than Significant Impact. Some past, present, and reasonably foreseeable future actions identified in Table 2-3 have contributed to habitat degradation, listing of species as endangered or threatened, and resulted in the introduction and spread of a number of invasive species in the watershed of the Upper Truckee River and Trout Creek. Other past, present, and reasonably foreseeable future actions include restoration projects whose long-term design features would function congruently with the project's intent to adaptively manage Trout Creek. Although the proposed project would result in some short-term construction-related impacts to habitat, implementation of measures identified in the AMP are expected to reduce these impacts to a less-than-significant level. In addition, the project would have a long-term beneficial effect on biological resources as discussed in Section 3.4, "Biological Resources." Therefore, the proposed project is not expected to have a considerable contribution to a cumulative effect on biological resources.

CULTURAL RESOURCES

Less than Significant with Mitigation Incorporated. Cumulative impacts on historic and unique archaeological resources are based on analysis of past, present, and reasonably foreseeable future actions in the project vicinity in combination with potential effects of the proposed project. In general, archaeological resources in the Tahoe Basin are the result of thousands of years of human occupation. Previous development has disturbed, destroyed, or compromised numerous archaeological resources and has resulted in a certain amount of degradation of the surrounding cultural landscape. However, with implementation of Mitigation Measures CUL-1 and CUL-2, which are designed to eliminate or minimize impacts on documented and presently unrecorded cultural resources and human remains, the project would not make a considerable contribution to cumulative effect on cultural resources.

HYDROLOGY/WATER QUALITY/SOILS

Less than Significant Impact. Implementing the proposed construction activities could temporarily degrade water quality by directly releasing soil and construction materials into water bodies, or by exposing the soil surface to the erosive effects of wind, runoff, or overbank creek flows and stream flows. These effects would be additive with similar effects caused by other construction projects in the watershed of Trout Creek, and thus could result in a short-term cumulative effect on water quality. However, the proposed project and other past, present, and reasonably foreseeable future projects are required to comply with all ordinances, permitting requirements, and conditions of approval established by jurisdictional agencies (TRPA, the Lahontan RWQCB, USACE, and CDFW). Implementation of standard erosion control measures (e.g., management, structural, and vegetative controls) would be required for all construction activities that expose soil; grading operations would be required to eliminate direct routes for conveying potentially contaminated runoff to drainage channels; and each project must identify measures to prevent or minimize the release of contaminants, along with methods to clean up releases if they do occur. The performance standards for best management practices (BMPs) for the reasonably foreseeable future projects would be expected to be the same as those for the measures identified for the proposed project; however, it is possible that the BMPs could fail, particularly if infrequent runoff or streamflow conditions exceeding the BMPs' design capacity were to occur.

Trout Creek has no dams or other flow-regulation facilities, and it is not possible to predict weather and runoff conditions before the onset of construction, especially construction that occurs over more than one season. The adaptive management measures would all be located along the same unregulated creek, and all would be scheduled without advance prediction of future storm events. However, major construction activities are proposed during low-flow periods and channel adjustments would occur with higher flows when background turbidity is higher. Construction related to the Upper Truckee River and Marsh Restoration project within the Upper Truckee Marsh is anticipated to begin in 2016; it is not expected that the proposed project would be constructed concurrently with that project. However, both projects are expected to have an adjustment period after completion (approximately 2–3 years). Furthermore, other projects occurring in the watershed may require a period of adjustment that could increase background turbidity. Implementation of BMPs identified in Chapter 2, "Project Description," and in Section 5.6 of the AMP would reduce the potential for the proposed project and related projects to cause excessive soil erosion or sedimentation. Implementing these measures would limit the likelihood and magnitude of potential short-term water quality degradation that could result in persistent turbidity above background levels and impair beneficial uses.

As described in Section 3.8, "Hydrology and Water Quality," the applicable standard used for the proposed project and past, present, and reasonably foreseeable future projects focuses on visible turbidity along the receiving waters of Trout Creek. Specifically, degradation of a magnitude and duration that impairs aesthetic values is considered significant. The strictest significance criterion is production of persistent visible turbidity, particularly during the recreation season and during low-flow, summer months when background conditions would be expected to result in high water clarity. Visible turbidity that lasts after the initial disturbance ends and/or disturbances that produce a recurring or chronic source of turbidity are considered significant and adverse. The potential exists for these combined projects to generate a cumulative contribution to surface and/or groundwater degradation of a magnitude and duration that would impair beneficial uses.

Channel adjustments caused by streambed or streambank erosion from the proposed project combined with the effects of other past, present, and reasonably foreseeable future projects could result in turbidity. The potential magnitude and duration of water quality degradation (e.g., turbidity) associated with natural channel adjustments would vary along the project reaches depending on the type of feature installed and preproject conditions, but the effects could violate water quality standards. The effects would be greatest in the immediate vicinity of project reach, and would dissipate upon cessation of a flood event; however, turbidity might be detectable and extend downstream of the project reach, at least for short periods of time. Turbidity effects could occur during and just after peak seasonal streamflow (spring snowmelt). They could also occur during a large flood event (i.e., 25-year recurrence peak flow), when background turbidity would be elevated and aesthetic beneficial uses are lower than during the primary recreation season. There would be only a low probability that project-related turbidity would be substantially worse than turbidity under existing flows and that it would impair beneficial uses outside the treatment reach during the channel's adjustment period. Possible channel and floodplain damage that could cause persistent or chronic degradation of water quality, including mobilization of fine sediment and organic matter in the newly reactivated channels, would be minimized with implementation of BMPs. These measures involve monitoring, control of any turbid water, staged activation of new flow paths, designs to encourage expansion of favorable flow paths primarily during periods of high flows, and temporary and remedial erosion control measures. The residual impacts of the proposed project would not be substantial on their own.

For the long term, the Upper Truckee River and Marsh Restoration project and other projects in the watershed would repair, restore, and/or reconstruct portions of the Upper Truckee River, and the Upper Truckee Marsh, which includes the project reach of Trout Creek. These projects would be expected to have a beneficial long-term overall effect on stream channel erosion rates. Among other effects, potential localized increases in erosion risks within their project study areas would be controlled through design and/or implementation of on-site, project-specific mitigation measures. The reduction of risk in stream channel erosion that could occur if a new channel were to form in the right overbank area would be additive with other stream channel erosion reductions within the Upper Truckee Marsh, increasing the total benefit. Therefore, implementation of the proposed project would be beneficial and would not contribute to a potentially significant cumulative adverse effect on stream channel erosion.

Implementing the proposed project in combination with other related projects could increase flooding risks if substantial changes to hydrology or hydraulics of the watershed were to occur. However, the most relevant projects would not be expected to result in adverse changes to the 100-year floodplain storage capacity, flow routes, or boundaries of the watershed. The proposed project would be designed so that flood flow velocities and water surface elevations would be expected to be similar to or lower than those under existing conditions, thus not increasing the potential for flooding off-site. Other related projects are expected to incorporate design features

and/or mitigation, similar to the proposed project, to remain flood neutral from the 100-year flood because they are also mapped in Federal Emergency Management Agency special hazard zones. Furthermore, implementing BMPs, discussed in Chapter 2, "Project Description," and Section 5.6 of the AMP would reduce the proposed project's contribution and would consider the combined effects adjacent projects on flooding such that the project would not contribute to a cumulatively considerable increase in flooding risks.

Highly uncertain climate change influences might overwhelm the possible long-term effects of the proposed project or related projects. It is possible that climate change may exacerbate impacts (e.g., further decrease delivery of coarse sediment) or counteract them. It is not yet practical to quantify the net effects of these factors with current scientific understanding, given the uncertainty associated with climate change, but effects could range from worse than the existing degraded condition to a possible improvement in erosion rates. Given the uncertainty of future climate change–related existing conditions, consideration of project-specific effects and potential cumulative impacts remains too speculative for a meaningful cumulative significance conclusion.

TRANSPORTATION/TRAFFIC

Less than Significant Impact with Mitigation Incorporated. Projects such as the Upper Truckee River and Marsh project, Sunset Stables Restoration and Resource Management Plan Project, and the El Dorado U.S. 50, Segment 2—Lake Tahoe Airport to U.S. 50/SR 89 Junction Water Quality Improvement Project would generate construction-related traffic in the project vicinity. Future projects could contribute to cumulative short-term impacts (from construction) and long-term traffic impacts (from new development and increased daily traffic). The proposed project would not generate long-term traffic, and therefore, would not contribute to any long-term cumulative traffic impacts. While most other projects proposed in the project vicinity would not be under construction at the same time as the proposed project, there is the potential for one or more projects to be under construction during the same time period. The proposed project would not contribute to long-term traffic impacts it could result in the proposed project contributing to a cumulative short-term traffic impact. However, with implementation of Mitigation Measure TRA-1, which is designed to address project construction traffic, parking, and emergency access, the project would not make a considerable contribution to a significant short-term cumulative traffic effect.

c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

Less than Significant Impact. No project-related environmental effects were identified that would cause substantial adverse effects on human beings. As discussed herein, the proposed project has the potential to create impacts on biological resources, cultural resources, water quality, and traffic during construction. However, with implementation of BMPs, monitoring, and mitigation measures by the District, these impacts would be reduced to less-than-significant levels.

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4 TRPA INITIAL ENVIRONMENTAL CHECKLIST AND EXPLANATIONS

I. PROJECT INFORMATION

Assessor's Parcel Numbers (APNs)/Project Location: Project construction is expected to occur within APN 026-200-011; however to assess potential impacts the study area encompass a larger area including APNs 026-210-31, 026-210-37 owned by the Conservancy and APN 026-12-107 owned by the District and other parcels in the Al Tahoe neighborhood only to consider environmental impacts. No construction is proposed within these additional parcels. A full list of APNs located within the study area is presented in Appendix C. The study area includes 96 acres along Trout Creek that are generally bounded by U.S. 50 on the south, the Al Tahoe neighborhood on the northeast, Lake Tahoe to the north, and the Upper Truckee Marsh to the south and west (see Exhibits 2-1 and 2-2 in Chapter 2, "Project Description").

Property Name: Upper Truckee Marsh—South Tahoe Public Utility District Easement and Adjacent Areas in the Upper Truckee Marsh

County/City: El Dorado County/South Lake Tahoe

Brief Description of Project: See Chapter 2, "Project Description"

II. ENVIRONMENTAL IMPACTS:

The following questionnaire will be completed by the applicant based on evidence submitted with the application. **All "yes" and "no, with mitigation" answers will require further written comments.**

1 LAND

Will the proposal result in:

a. Compaction or covering of the soil beyond the limits allowed in the land capability or Individual Parcel Evaluation System (IPES)?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not create any additional land coverage; therefore, it would not compact or cover soils beyond limits allowed under the land capability system. The AMP is a set of measures designed to be implemented and monitored over time that will encourage channel formation in a more favorable location, increase its hydraulic roughness with vegetation and hummocky surfaces to make it more resistant to any future channel avulsions along the District's easement. The project also proposes to remove compacted fill material along the abandoned roadfill area to restore floodplain function and hydrologic connectivity along Trout Creek and alleviate the threat of flooding the District's utility easement.

b. A change in the topography or ground surface relief features of site inconsistent with the natural surrounding conditions?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project is intended to protect the District's sewer infrastructure through minimally invasive measures such as constructing pilot channels in favorable flow paths, creating hummocky surfaces along unpreferential flow paths, implementing vegetation enhancement measures, and removing impediments caused by road fill. Proposed topographic changes are expected to be minimal so that there are no changes to jurisdictional wetlands and SEZ. Therefore, these changes would be consistent with the natural surrounding conditions.

c. Unstable soil conditions during or after completion of the proposal?

Yes	No	No, with Mitigation	Data Insufficient
	X		

As discussed in item b in Section 3.6, "Geology" and item a 3.9, "Hydrology and Water Quality," in Chapter 3, "CEQA Environmental Checklist and Explanations," construction-related disturbances occurring within and adjacent to the channel could result in soil erosion and associated sedimentation; however, several measures have been developed as part of the proposed project in order to avoid excessive erosion and to protect water quality. The District will minimize the duration, magnitude, and potential effects of sediment discharges through monitoring, control of any turbid water, staged activation of new flow paths, designs to encourage expansion of favorable flow paths primarily during periods of high flows, and temporary and remedial erosion control measures. All observations will be recorded and provided to the Lahontan RWQCB, as described in Appendix E of the AMP.

d. Changes in the undisturbed soil or native geologic substructures or grading in excess of 5 feet?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Most of the project-related work would be performed by hand crews, and excavation would not exceed a depth of 5 feet. Because soils in the study area have been disturbed by historical land uses such as grazing, fill, sewer installation, and ongoing maintenance activities it is not expected that the project would result in changes in undisturbed soil or native geologic structures.

e. The continuation of or increase in wind or water erosion of soils, either on or off the site?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Please see the discussion under item c above.

f. Changes in deposition or erosion of beach sand, or changes in siltation, deposition or erosion, including natural littoral processes, which may modify the channel of a river or stream or the bed of a lake?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Please see the discussion under item c above. The project does not propose any components that would affect natural littoral processes of Lake Tahoe, including changes in deposition or erosion of beach sand.

g. Exposure of people or property to geologic hazards such as earthquakes, landslides, backshore erosion, avalanches, mud slides, ground failure, or similar hazards?

Yes	No	No, with Mitigation	Data Insufficient
	X		

As discussed in item a in Section 3.6, "Geology and Soils," the proposed project would not expose people or property to geologic hazards. No portion of the study area is located in the vicinity of a known earthquake fault, steep slopes, or area subject to ground failure. The proposed project would not involve construction of any new building or structures, including housing, and would not expose people or structures to any such hazards.

2 AIR QUALITY

Will the proposal result in:

a. Substantial air pollutant emissions?

Yes	No	No, with Mitigation	Data Insufficient
		X	

Implementing the proposed project would result in a limited number of trips for inspection, monitoring, and maintenance of the proposed adaptive management measures for an interim period. After the interim period, project implementation would not require or result in trips or activities for operations and maintenance beyond existing conditions. Hand crews may perform other minor actions at any time to repair or enhance installed measures, maintain plantings, and remove debris. Any impacts of these activities would be minimal and would generate emissions less than the construction-related emissions listed in Table 3.3-2 in Section 3.3, "Air Quality." Therefore, operational emissions would not violate an ambient air quality standard or contribute substantially to an existing violation.

Construction emissions are short term or temporary and have the potential to result in a substantial adverse effect on air quality. Construction activities for the proposed project would generate temporary emissions of several pollutants: reactive organic gases, oxides of nitrogen, carbon monoxide, and respirable particulate matter with aerodynamic diameters of 10 micrometers or less and 2.5 micrometers or less (PM_{10} and $PM_{2.5}$, respectively). Such emissions would be generated from fill removal, construction equipment exhaust, worker commute trips, and materials transport. Implementing Mitigation Measure AQ-1 (see the discussion under item b in Section 3.3, "Air Quality") would reduce the effects of generation of fugitive PM_{10} and $PM_{2.5}$ dust. Therefore, the proposed project would not result in substantial air pollutant emissions.

b. Deterioration of ambient (existing) air quality?

Yes	No	No, with Mitigation	Data Insufficient
		X	

Operation of the proposed project would not require the ongoing operation of any new emissions sources. Therefore, operational emissions would not violate an ambient air quality standard or contribute substantially to an existing violation.

As discussed in item a above, construction emissions have the potential to result in a substantial adverse effect on air quality. With implementation of Mitigation Measure AQ-1, the proposed project's construction activities would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.

c. The creation of objectionable odors?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Operation of the proposed project would not add any new odor sources. Infrequent maintenance worker trips would not be anticipated to generate or expose any persons to substantial odor emissions. As a result, the proposed project would not create objectionable odors affecting a substantial number of people.

As described in Section 3.3, "Air Quality," potential construction-related sources of odors include diesel construction equipment that emit exhaust. However, because of the amount and types of equipment, the temporary nature of these emissions, and the highly diffusive properties of diesel exhaust, nearby receptors would not be affected by diesel exhaust odors associated with project construction. The proposed project would use typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Therefore, creation of objectionable odors by the project would be minimal and temporary.

d. Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project does not involve any activities that would alter air movement, moisture, or temperature. As discussed in Section 3.7, "Greenhouse Gas Emissions," the total emissions of 12 metric tons of carbon dioxide equivalent during proposed project construction and operation would be substantially less than any of the proposed or adopted greenhouse gas thresholds. Therefore, the proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a substantial adverse effect on the environment.

e. Increased use of diesel fuel?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Construction of the proposed project would require the temporary use of diesel fuel for the operation of construction equipment. Proposed construction equipment includes a maximum of one excavator and two loaders used for a period of 1.5 months and approximately 62 dump trucks used for a period of 4–10 days. Based on the limited amount of construction equipment and the schedule, the proposed project would not substantially increase the use of diesel fuel.

3 WATER QUALITY

Will the proposal result in:

a. Changes in currents, or the course or direction of water movements?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would have no effect on currents within Lake Tahoe. The AMP is intended to protect the District's sewer infrastructure through minimally invasive measures such as constructing pilot channels in favorable flow paths, creating hummocky surfaces along unpreferential flow paths, implementing vegetation enhancement measures, and removing impediments caused by road fill. The proposed project has been designed to maintain the rate and volume of surface runoff, and it would not increase the area of impermeable surfaces. Flood flow velocities and surface elevations would be expected to be similar to or lower than those under existing conditions, thus not increasing the potential for flooding off-site. Measures proposed as part of the AMP such as removal of roadfill and redirecting flows back into the pre-2011 channel will have a beneficial effect by not allowing a primary channel to form over the District's sewer easement.

b. Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff so that a 20 yr. 1 hr. storm runoff (approximately 1 inch per hour) cannot be contained on the site?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Measures proposed as part of the AMP would not change absorption rates, drainage patterns, or the rate and amount of surface-water storage as to prevent containment of the runoff from a 20-year, 1-hour storm event within the study area. As part of the project, planting of vegetation, creation of hummocks, and the installation of overbank flow plugs and woody debris structures would be added to redirect flows into the pre-2011 channel and away from the District's easement. The proposed project has been designed to maintain the rate and volume of surface runoff, and it would not increase the area of impermeable surfaces. No significant adverse effect on the site's ability to retain runoff from a 20-year, 1-hour storm would occur.

c. Alterations to the course or flow of 100-year flood waters?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project has been designed to reduce the risk of flood hazards to the District's sewer easement during low flows; however, adaptive management measures will continue to allow inundation of the sewer easement during large flood events. While the project would not increase flood hazards to private properties that adjoin the sewer easement along the western portion of the study area measures that encourage Trout Creek flows to the south of its avulsed channel may have a slight benefit to reducing flood hazards as shown on the FEMA map for the 100-year flood.

The proposed project has been designed to maintain the rate and volume of surface runoff by initiating new channel pathways and removing the artificial road fill impediments. Flood flow velocities and water surface

elevations would be expected to be similar to or lower than those under existing conditions, thus not increasing the potential for flooding off-site.

To monitor the success of the implemented AMP measures relative to flooding, the project includes a monitoring plan (Appendix E of the AMP) to evaluate the need for additional measures in years 2-5 and asses on-going performance of the improvements.

d. Change in the amount of surface water in any water body?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not change the amount of surface water in any water body. No additional impervious surfaces are proposed as part of the AMP. Dewatering activities may include discharging residual waters onto the floodplain as described in Section 5.6 of the AMP; however, this water would be from existing groundwater in the marsh and would be discharged as a rate that would allow infiltration. Residual turbid water would be treated and discharged or temporarily contained in a tank for discharge to the District's sewer system. It is possible that limited irrigation water may be necessary in the short term to water vegetation; however application rates would be limited, would infiltrate, and would not be applied in a manner that would allow excessive runoff to receiving waters.

e. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?

Yes	No	No, with Mitigation	Data Insufficient
	X		

As discussed in item b in Section 3.6, "Geology" and items a and e in 3.9, "Hydrology and Water Quality," in Chapter 3, "CEQA Environmental Checklist and Explanations," several measures have been developed as part of the proposed project in order to avoid excessive erosion and to protect water quality. The District will minimize the duration, magnitude, and potential effects of water quality impacts through monitoring, control of any turbid water, staged activation of new flow paths, designs to encourage expansion of favorable flow paths primarily during periods of high flows, and temporary and remedial erosion control measures. An increase in vegetation along Trout Creek is expected to be beneficial to temperatures and dissolved oxygen concentration found in the creek.

f. Alteration of the direction or rate of flow of groundwater?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not entail the use of groundwater and would not affect any nearby groundwater users. The AMP is a set of measures designed to be implemented and monitored over time that will encourage channel formation in a more favorable location, raise the easement area slightly and increase its hydraulic roughness to make it more resistant to any future channel avulsions. The District's easement would still provide overflow function during higher flows and the relatively high groundwater table existing within the Upper Truckee Marsh is expected to remain so that there are no changes to wetland functions. The AMP does not propose any new coverage that would interfere with groundwater recharge. Rerouting the current right overbank flows back to pre-2011 avulsion channels would not deplete groundwater supplies or interfere with groundwater recharge.

g. Change in the quantity of groundwater, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Please see the discussion under item f above.

h. Substantial reduction in the amount of water otherwise available for public water supplies?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not include any new development or other activities that would require permanent public water supplies. The temporary use of District's water supply may be required periodically for dust control and earthwork, and for temporary irrigation of vegetation. However, these activities would be minimal and temporary. Therefore, no new or expanded water supply entitlements would be needed.

i. Exposure of people or property to water related hazards such as flooding and/or wave action from 100-year storm occurrence or seiches?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Portions of the study area are located within the 100-year floodplain of Trout Creek (see Exhibit 3.9-4 in Section 3.9, "Hydrology and Water Quality"). No bridges, culverts, homes, or other structures are proposed as part of the project. The goal of the project is to protect the sewer infrastructure from flooding and reduce the risk of sewage discharges through the implementation of the AMP. The AMP is a set of measures designed to be implemented and monitored over time that will encourage channel formation in a more favorable location, raise the easement area slightly and increase its hydraulic roughness to make it more resistant to any future channel avulsions, and potentially improve flood conveyance and sediment transport. Flows would not be impeded, and redirected flows would maintain the natural function of the stream and riparian areas.

The project does not propose any new development that would place people or structures at increased risk for damage by a seiche, tsunami, or mudflow. The site is exposed to seiches, which are natural standing waves in a lake, reservoir, or bay. The risk from a seiche would remain unchanged with implementation of the proposed project, however; the proposed project does not include any elements that would increase the risk of public exposure to such hazards from seiches.

j. The potential discharge of contaminants to the groundwater or any alteration of groundwater quality?

Yes	No	No, with Mitigation	Data Insufficient
	X		

As discussed in item b in Section 3.6, "Geology" and items a and e in 3.9, "Hydrology and Water Quality," in Chapter 3, "CEQA Environmental Checklist and Explanations," several measures have been developed as part of the proposed project in order to avoid excessive erosion and to protect water quality. Furthermore, implementing the AMP will decrease risks associated with potential sewage spills that could affect groundwater quality.

k. Is the project located within 600 feet of a drinking water source?

The proposed project is located within 600 feet of a source of drinking water documented on the TRPA source water assessment maps (TRPA 2000). This wellis a source of public and private drinking water. The well is outside of study area and is located upgradient from affected areas. Several other private wells are located in the project vicinity; however, the proposed project would not adversely affect any drinking water sources.

4 VEGETATION

Will the proposal result in:

a. Removal of native vegetation in excess of the area utilized for the actual development permitted by the land capability/IPES system?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The project would not create any new land coverage; therefore, it would not remove more native vegetation than permissible under the land capability system. Some native vegetation would be disturbed during realignment, removal of abandoned roadfill, and to remove existing willow saplings from the newly formed sand bank; however, sod and topsoil would be replaced and additional native vegetation planted.

b. Removal of riparian vegetation or other vegetation associated with critical wildlife habitat, either through direct removal or indirect lowering of the groundwater table?

Yes	No	No, with Mitigation	Data Insufficient
	X		

As described in Section 3.4, "Biological Resources," vegetation removal is expected to be very minimal and include removal of willow saplings along the newly formed sand bank and possibly a few plants that may require temporary disturbance to gain access along the creek channel. The AMP proposes to increase riparian habitat through additional planting to reroute flows from the right overflow area, to establish pilot channels, hydraulic roughness, and maintain overall stability of the channel. A net long-term benefit would result from project implementation related to the establishment of naturally functioning riparian vegetation and willow plantings. As described in Appendix E of the AMP, vegetative cover and vigor will be monitored using transects, site observations, and photos. Monitoring will be based primarily on visual observations for each of the implemented features, but will be supplemented by transects for the abandoned road fill removal and hummocks. Three transects will be established in the road fill removal area and three will be established across constructed fill hummocks. If hydrologic changes occur that affect species composition or vigor in areas outside of construction area, baseline data will be re-taken from the baseline transects and used for comparison. Because the proposed project would not result in any loss of riparian habitat, temporary impacts to wetlands would be minimized through minimally invasive construction techniques and monitoring described in the AMP there would be no adverse direct or indirect effect to critical habitat.

c. Introduction of new vegetation that will require excessive fertilizer or water, or will provide a barrier to the normal replenishment of existing species?

Yes	No	No, with Mitigation	Data Insufficient
	X		

While willow plantings and other vegetation are unlikely to require temporary irrigation, soil amendments, or fertilizer, the AMP provides for some temporary irrigation on an as needed basis. Any irrigation needed would be minor, and would not use excessive water, or provide a barrier to the normal replenishment of existing species. No fertilizer use is proposed as part of the project.

d. Change in the diversity or distribution of species, or number of any species of plants (including trees, shrubs, grass, crops, micro flora and aquatic plants)?

Yes	No	No, with Mitigation	Data Insufficient
	X		

See responses to items a, b, and c above.

e. Reduction of the numbers of any unique, rare or endangered species of plants?

Yes	No	No, with Mitigation	Data Insufficient
	X		

During EDAW's (now AECOM) special-status plant survey that included the study area (July 25–27, 2007), American mannagrass (approximately 35 flowering stems were observed in a 10-foot square area) was found in one location at the northwestern boundary of the District's study area growing on a low mud bench within one of the active channels of Trout Creek just above the surface water.

No American mannagrass was observed in 2007 within the study area and direct impacts to this species are not anticipated, however this plant species does occur just outside of the study area approximately 1,500 feet downstream of proposed ground disturbing activities and could be indirectly impacted by project activities (Exhibit 3.4-2). If additional American mannagrass populations are found within the study area, the populations could become flooded or dewatered and individual plants could be harmed by construction activities. The AMP proposes American mannagrass surveys prior to any ground disturbance, and if new populations are discovered within the study area they will be avoided (see Section 5 in the AMP) or other mitigation such as transplanting will be developed to avoid impacts to those populations. Indirect impacts to the known American mannagrass

population downstream of the study area would be limited to minor and temporary hydrologic alterations or increases in turbidity that fall within the range of natural variability, and significant alterations to the basic functions of Trout Creek are not anticipated. These indirect impacts are unlikely to adversely affect the existing American Mannagrass population because of their temporary nature, distance upstream of the known population, and the range of variability within the natural functions of Trout Creek to which this species is adapted.

f. Removal of streambank and/or backshore vegetation, including woody vegetation such as willows?

Yes	No	No, with Mitigation	Data Insufficient
	X		

See responses to items a and b above.

g. 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?

Yes	No	No, with Mitigation	Data Insufficient
	X		

No trees removal is proposed as part of the project.

h. A change in the natural functioning of an old growth ecosystem?

Yes	No	No, with Mitigation	Data Insufficient
	X		

No old-growth forest ecosystem exists within the study area. Therefore, the project would not cause a change in the natural functioning of an old-growth ecosystem.

5 WILDLIFE

Will the proposal result in:

a. Change in the diversity or distribution of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, insects, mammals, amphibians or microfauna)?

Yes	No	No, with Mitigation	Data Insufficient
	X		

No adverse changes in diversity of animal species, population abundance, or species distributions are expected as a result of project implementation.

Implementing fish capture and translocation measures as part of the proposed project before creek diversion and dewatering would minimize fish mortality that could otherwise occur from construction activities; however, some common benthic macroinvertebrates, terrestrial invertebrates, and other microfauna could be displaced or killed during construction of the creek alteration elements (i.e., during creek diversion and dewatering, channel alteration, and materials transport). While these minor impacts are anticipated, they would not result in an adverse change in the diversity, population or distribution of these species impacted.

Activities within or adjacent to the riparian corridor could also result in the temporary disturbance of vegetation that could provide nesting habitat for birds. Construction could also result in noise, dust, and other disturbances to nesting birds in the vicinity, resulting in potential nest abandonment and mortality to eggs and chicks. Because project construction is scheduled outside of the nesting season for bird species, and preconstruction surveys are included in the AMP, impacts to birds would not result in an adverse change in the diversity, population, or distribution of these species. Potential effects of project implementation on sensitive animal species are discussed in response to item b below.

b. Reduction of the number of any unique, rare or endangered species of animals?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Project effects on unique, rare, or endangered species of wildlife and fish are discussed below. Separate impact conclusions are provided for wildlife and fish. However, the most conservative impact conclusion listed below is provided in the box above.

WILDLIFE

As described in Section 3.4, "Biological Resources," twelve special-status wildlife species were identified as having a moderate or high potential to occur within the study area (Conservancy et al. 2013)

Bald eagle, osprey, northern goshawk, and waterfowl are designated as special-interest species by TRPA. The regulatory status, habitat associations, known or potential presence in the study area, and potential response to project implementation of each of these special-status species are described in Section 3.4, "Biological Resources," of Chapter 3, "CEQA Environmental Checklist and Explanations." Measures to avoid and minimize potential direct and indirect construction impacts to yellow warbler, long-eared owl, waterfowl, willow flycatcher, and northern harrier are included in the AMP. While most construction would occur outside of the nesting season for all of these species (nesting is approximately March 1-August 31), and construction is scheduled to begin September 1, if construction would occur during the nesting season or if the nesting season is extended because of weather (discussed below), preconstruction surveys for these species will be conducted prior to any construction activity. In a very wet and cold spring/summer, the nesting season could extend into September and in this case pre-construction surveys would be implemented as per the AMP after August 31. In addition, prior to Year 1 construction activities, protocol-level willow flycatcher surveys will be conducted to determine if any willow flycatchers are exhibiting territorial behavior or are nesting within the vicinity of construction activities. If any of these surveys find that nesting is occurring, avoidance measures will be implemented in coordination with the appropriate agencies. Implementation of these avoidance and minimization measures included in the AMP would prevent the project from reducing the number of any unique, rare, or endangered wildlife species.

FISH

Four special-status fish species were identified as having a moderate or high potential to occur within the study area (Conservancy et al. 2013): Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*), Lahontan Lake tui chub (*Gila bicolor pectinifer*), Lahontan redside (*Richardsonius egregius*), and Mountain sucker (*Catostomus platyrhynchus*) as described in Section 3.4, "Biological Resources," of Chapter 3, "CEQA Environmental Checklist and Explanations."

Based on the analysis provided in Chapter 3, project activities could cause short-term habitat degradation through increased turbidity within and downstream of the construction footprint, stranding during dewatering or diversion activities, short-term disruption of fish passage/migration, and the introduction and spread of aquatic invasive species; however, several measures have been developed as part of the AMP to limit the potential for erosion, sedimentation, and prevent stranding of aquatic biota that result in the loss or take of special-status fish. No long-term adverse impacts are anticipated because project activities would not alter flows, hydrologic or physical connectivity in Trout Creek, and could increase shading and topographic complexity through willow plantings and creation of overflow distributaries.

Based on the information regarding construction management and monitoring proposed as part of the AMP, project-related construction and post-construction channel adjustments are not expected to cause or contribute impacts associated with short-term disruption of fish passage/migration, and the introduction and spread of aquatic invasive species.

c. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Project construction activities would occur in and around Trout Creek. During construction, flows from the avulsed channel would be diverted to preferred flow paths along the left bank of the channel and the avulsed channel progressively dewatered. This would result in a temporary barrier to migration and movement of fish and other aquatic organisms; however, none of the fish species that have the potential to occur in Trout Creek would require movement or migration through the avulsed channel that would be diverted and dewatered during project construction to complete their life history. Once main channel pathways are reestablished, the creek channel would be rewetted, and migration and movement would be restored and improved from existing conditions. Ultimately, the restored creek channel would provide improved habitat conditions and would not result in a barrier to migration or movement of fish or other aquatic organisms.

The proposed project would not create barriers to the movement or migration of terrestrial wildlife. The potential for project implementation to create barriers or impede wildlife movements is discussed in item d of Section 3.4, "Biological Resources." Wildlife potentially introduced to the study area would be limited to aquatic nuisance species that could travel via construction or surveyor equipment (e.g., New Zealand mud snail [*Potamopyrgus antipodarum*]). However, as described in Section 5 of the AMP, all motorized and non-motorized equipment used for in-channel work would be thoroughly cleaned and sanitized prior using a dilute quaternary disinfectant solution (or the equivalent) and allowed to dry before being used in Trout Creek. Therefore, the potential to introduce aquatic nuisance species to Trout Creek during project construction would not occur.

d. Deterioration of existing fish or wildlife habitat quantity or quality?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Based on the analysis provided in Chapter 3, project activities could cause short-term habitat degradation through increased turbidity within and downstream of the construction footprint, stranding during dewatering or diversion activities, short-term disruption of fish passage/migration, and the introduction and spread of invasive species; however, several measures have been developed as part of the AMP to limit the potential for erosion, sedimentation, prevent stranding of aquatic biota that result in the loss or take of special-status fish and the spread of invasive weeds. The AMP has proposed BMPs including staging and maintenance at the Bellevue Pump Station, cleaning and sanitizing construction equipment, the use of wattles, wood chips, steel plates, temporary mats, and other measures. No long-term adverse impacts are anticipated because project activities would not alter flows, hydrologic or physical connectivity in Trout Creek, and could increase shading and topographic complexity through willow plantings and creation of overflow distributaries.

Based on the information regarding construction management and monitoring proposed as part of the AMP, project-related construction and post-construction channel adjustments are not expected to cause or contribute impacts associated with fish and wildlife habitat. Additionally, the study area currently experiences moderate levels of human disturbance from recreation and residential uses, and a temporary increase in disturbance levels during construction would be short term and minor. Over the long term, this project is expected to improve the quality of habitat for fish and wildlife species that occupy the study area and it may provide additional habitat features or enhance conditions for species that do not currently use the area.

6 NOISE

Will the proposal result in:

a. Increases in existing Community Noise Equivalency Levels (CNEL) beyond those permitted in the applicable Plan Area Statement, Community Plan or Master Plan?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not introduce any permanent noise sources in the study area or increase noise production/exposure associated with existing permanent noise sources in the project vicinity. Therefore, the project would not result in any long-term changes in ambient noise levels in the project vicinity. Project-related construction would result in a temporary (4-week to 1½-month) increase in noise levels above ambient conditions in the study area (in Plan Area Statement [PAS] 100) and at sensitive receptors closest to the study area (in PAS 099 and PAS 104). The predicted temporary construction noise levels are expected to exceed the existing CNEL permitted by the applicable PASs: PAS 099 = 55 A-weighted decibels (dBA) CNEL, PAS 100 = 50 dBA CNEL, and PAS 104 = 55 dBA CNEL. However, Section 68.9 of the TRPA Code of Ordinances exempts construction noise from these standards provided that it occurs between the hours of 8 a.m. and 6:30 p.m. All construction activities associated with the proposed project would occur during these times. Therefore, the proposed project would not result in an increase in existing CNEL beyond those permitted in the applicable PASs.

b. Exposure of people to severe noise levels?

Yes	No	No, with Mitigation	Data Insufficient
		X	

As discussed above, the proposed project would have no long-term impact on noise levels, and therefore, would not result in the exposure of people to long-term/permanent severe noise levels.

As shown in Table 3.12-5, "Summary of Calculated Construction Noise Levels and Impacts," in Section 3.12, "Noise," construction activities associated with the removal of road fill and the transport of fill within the

easement area would generate average hourly noise levels ranging from 72 dBA to 77 dBA at sensitive receivers immediately adjacent to the study area for a period of 4–8 weeks. Sensitive receivers within approximately 150–250 feet of the study area (in the vicinity of these activities) would experience noise levels at least 10 dBA above ambient noise levels. A 10-dBA increase above ambient noise levels is perceived as twice as loud to most people and is typically considered to be "severe." Residences in PAS 099 located between the study area and El Dorado Avenue and the first row of houses on the opposite side of El Dorado Avenue are those most likely to be temporarily exposed to severe noise levels. Mitigation Measure NOI-1 (see the discussion under item d in Section 3.12, "Noise") incorporates construction noise reduction practices to reduce the exposure of people to severe noise levels. Intermittent, short-term exposure of people to severe noise levels within a 4- to 8-week period may occur during hours exempt from TRPA noise standards between 8:00 a.m. and 6:30 p.m.

c. Single event noise levels greater than those set forth in the TRPA Noise Environmental Threshold?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Chapter 68, "Noise Limitations," of the TRPA Code of Ordinances establishes single-event noise thresholds that address aircraft, marine craft, motor vehicles, motorcycles, off-road vehicles, and over-snow vehicles. The proposed project would not introduce any such single-event noise sources in the study area and would have no effect on existing permanent noise sources, including single-event noise sources, in the project vicinity. Construction would occur between 8:00 a.m. and 6:30 p.m.; Section 68.9 of the TRPA Code of Ordinances exempts construction noise during these hours from the TRPA noise thresholds. Therefore, the proposed project would not result in single-event noise levels greater than those set forth in the TRPA Noise Environmental Threshold.

d. The placement of residential or tourist accommodation uses in areas where the existing CNEL exceeds 60 dBA or is otherwise incompatible?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would include adaptive management measures such as constructing pilot channels, creating hummocky surfaces along unpreferential flow paths, implementing vegetation enhancement measures, and removing impediments caused by road fill. The project would not involve constructing any new residential or tourist accommodation uses. Therefore, no residential or tourist accommodations would be placed in an area where the existing CNEL exceeds 60 dBA or is otherwise incompatible.

e. The placement of uses that would generate an incompatible noise level in close proximity to existing residential or tourist accommodation uses?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not alter existing uses in the study area or introduce new uses that would generate noise. Therefore, the proposal would not result in the placement of uses that would generate incompatible noise levels near nearby residential uses.

f. Exposure of existing structures to levels of ground vibration that could result in structural damage?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not introduce any new permanent sources of vibration or alter any existing sources of vibration within or adjacent to the study area. As discussed in item b in Section 3.12, "Noise," the operation of heavy earth-moving equipment associated with the removal of road fill would occur approximately 200 feet from the closest residential structures. The California Department of Transportation's (Caltrans's) *Transportation and Construction Vibration Guidance Manual* recommends that a standard of 0.2 inch per second (in/sec) peak particle velocity (PPV) not be exceeded for the protection of normal residential buildings, and that 0.08 in/sec PPV not be exceeded for the protection of old or historically significant structures (Caltrans 2004). Studies show that most heavy construction equipment and activities (e.g., large bulldozers, loaded haul trucks) do not exceed 0.10 in/sec PPV at 25 feet from the source (FTA 2006), which is half the Caltrans-recommended standard of 0.2 in/sec PPV for the protection of normal residential buildings. Ground-borne vibration decreases rapidly with distance. Ground-borne vibration from the use of heavy construction equipment in the vicinity of sensitive receptors, such as a large bulldozer that generates approximately 0.089 in/sec PPV at 25 feet (FTA 2006), would attenuate to approximately 0.07 in/sec PPV at 30 feet. This is below the Caltrans-recommended standard of 0.08 in/sec PPV for the protection of even extremely fragile historic buildings (Caltrans 2004). Based on the Caltrans guidance and the fact that use of heavy construction equipment in the study area would occur approximately 200 feet from the closest residential structures, the proposed project would not result in exposure of existing structures to levels of vibration that could result in structural damage.

7 LIGHT AND GLARE

Will the proposal:

a. Include new or modified sources of exterior lighting?

Yes	No	No, with Mitigation	Data Insufficient
	X		

b. Create new illumination which is more substantial than other lighting, if any, within the surrounding area?

Yes	No	No, with Mitigation	Data Insufficient
	X		

c. Cause light from exterior sources to be cast off-site or onto public lands?

Yes	No	No, with Mitigation	Data Insufficient
	X		

d. Create new sources of glare through the siting of the improvements or through the use of reflective materials?

Yes	No	No, with Mitigation	Data Insufficient
	X		

a), b), c) and d) The proposed project involves implementing adaptive management measures such as constructing pilot channels, creating hummocky surfaces along unpreferential flowpaths, implementing vegetation enhancement measures, and removing impediments caused by road fill. The proposed adaptive management measures would be consistent with the character of the surrounding area, and no new sources of light or glare (including reflective materials) are proposed as part of the project; therefore, no impacts related to light, glare, the use of reflective materials are anticipated to occur as a result of the proposed project.

8 LAND USE

Will the proposal:

a. Include uses which are not listed as permissible uses in the applicable Plan Area Statement, adopted Community Plan, or Master Plan?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The study area is not located within a TRPA-adopted community plan or master plan area. The proposed project involves implementing adaptive management measures such as constructing pilot channels, creating hummocky surfaces along unpreferential flow paths, implementing vegetation enhancement measures, and removing impediments caused by road fill.

The project would be consistent with goals and policies of the TRPA Regional Plan. The study area is located within TRPA-designated Plan Area Statements (PASs) 99 and 100; the proposed project would be consistent with specific policies and planning considerations of these PASs. The proposed project includes adaptive management measures consistent with regionally important ecological, water quality, aesthetic, and recreational values of the marsh while still providing flood protection of the District's facilities. The proposed project does not propose any new land uses that would conflict with the planning statement for PAS 99 related to maintaining residential uses. In addition, the proposed project supports the planning statement for PAS 100 associated with managing the area for its natural values. Therefore, the proposed project does not include uses that are not listed as permissible in the applicable PAS.

b. Expand or intensify an existing non-conforming use?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Please see the discussion under item a above.

9 NATURAL RESOURCES

Will the proposal result in:

a. A substantial increase in the rate of use of any natural resources?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Because the proposed project would involve limited hauling of materials, it would not use substantial amounts of fuel or energy, nor would it result in an increase in demand on existing energy sources or require the development of new sources. Energy in the form of diesel fuel, gasoline, oil, electricity, and natural gas may be consumed to operate heavy equipment and machinery during project construction; however no adverse effect would occur from this short-term limited use.

b. Substantial depletion of any non-renewable natural resource?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Please see the discussion under item a above.

10 RISK OF UPSET

Will the proposal:

a. Involve a risk of an 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 conditions?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Heavy construction equipment that uses small amounts of hazardous materials, such as oils, fuels, and other potentially flammable substances, would be used only in the short term (approximately 1.5 months). Therefore, the potential for project construction activities to create an environmental hazard from explosion, upset, or accident conditions involving the release of these hazardous materials into the environment is considered minor. The District would be legally required to conform to all applicable regulations and permitting requirements of the Lahontan Regional Water Quality Control Board and TRPA pertaining to construction discharges and water quality standards, as discussed in item a in Section 3.9, “Hydrology and Water Quality.” Furthermore, the intent

of the adaptive management measures is to reduce the potential flood-related risks and associated release of sewage into the Upper Truckee Marsh and Lake Tahoe.

b. Involve possible interference with an emergency evacuation plan?

Yes	No	No, with Mitigation	Data Insufficient
		X	

Project-related activities would occur in the area south of Al Tahoe, along the Trout Creek stream corridor. The majority of equipment access and material delivery would occur via Bellevue Avenue, which terminates at the District's pump station. A portion of the roadway and shoulder (estimated at 600 square feet) near the Bellevue Pump Station would be used for staging; this area is located approximately 120 feet from the nearest residential driveway. One-time access for LGP equipment would be made via U.S. 50 and Rubicon Trail and existing pedestrian access routes. No staging area is anticipated for this access route because no significant material quantities would be imported or exported. As discussed in Section 3.16, "Transportation/Traffic" under item a, the proposed project would not result in an increase in long-term project-related traffic because existing land uses would remain unchanged. However, short-term construction traffic could affect local roadways and intersections, including emergency access. Implementing Mitigation Measure HAZ-1 (see the discussion under item g in Section 3.8, "Hazardous Materials") would reduce the effects on emergency access.

11 POPULATION

Will the proposal:

a. Alter the location, distribution, density, or growth rate of the human population planned for the Region?

Yes	No	No, with Mitigation	Data Insufficient
	X		

b. Include or result in the temporary or permanent displacement of residents?

Yes	No	No, with Mitigation	Data Insufficient
	X		

a), b) The proposed project would not induce substantial population growth, either directly or indirectly, nor would it displace a substantial number of people. The study area is currently conservation land, and no residents

would be relocated as a result of the proposed project. As a result, the project would not induce substantial population growth or displace people. Therefore, there would be no adverse effect on population.

12 HOUSING

Will the proposal:

a. Affect existing housing, or create a demand for additional housing?

To determine if the proposal will affect existing housing or create a demand for additional housing, please answer the following questions:

(1) Will the proposal decrease the amount of housing in the Tahoe Region?

Yes	No	No, with Mitigation	Data Insufficient
	X		

(2) Will the proposal decrease the amount of housing in the Tahoe Region historically or currently being rented at rates affordable by lower and very-low-income households?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Number of Existing Dwelling Units: 0
Number of Proposed Dwelling Units: 0

b. Will the proposal result in the loss of housing for lower-income and very-low-income households?

a), b) The proposed project would not induce substantial population growth, either directly or indirectly, nor would it displace a substantial number of existing housing units or create or remove any homes. The study area is currently conservation land, and no houses would be relocated as a result of the proposed project. As a result, the project would not result in the loss of housing for lower income and very-low-income households. Therefore, there would be no adverse effect on housing.

13 TRANSPORTATION/CIRCULATION

Will the proposal result in:

a. Generation of 100 or more new daily vehicle trip ends (DVTE)?

Yes	No	No, with Mitigation	Data Insufficient
	X		

According to Chapter 65, "Air Quality/Transportation," of the TRPA Code of Ordinances, a project that would expand gross floor area or change the type of generator on the trip table (normally indicated by a substantial change in products or service provided) would be considered a "change in operation" that would result in additional trip generation and vehicle miles traveled (VMT). The proposed project would not result in additional long-term trip generation because it would not change existing land uses. Trip generation and VMT would remain the same.

For construction-related traffic impacts, please see the discussion under item c below.

b. Changes to existing parking facilities, or demand for new parking?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not change recreational use or public access in the study area. There are currently no recreational facilities or parking spaces in the study area, and all recreational use of the study area is informal. The proposed project would not result in long-term parking-related impacts because public use levels would remain the same as current levels. Therefore, parking demand would not increase as a consequence of the project.

c. Substantial impact upon existing transportation systems, including highway, transit, bicycle or pedestrian facilities?

Yes	No	No, with Mitigation	Data Insufficient
		X	

As described in Section 3.16, "Transportation/Traffic," the proposed project would not change existing land uses, it would not result in additional trip generation, except that ongoing routine inspection, monitoring, and maintenance of the proposed adaptive management measures would generate a limited number of new vehicle trips for an interim period. Long-term trip generation and VMT would remain essentially the same.

Although project uses would not result in significant long-term traffic impacts, additional trips would be generated on a short-term basis during project construction. The Year 1 improvements are planned for late summer/early fall 2014. Construction activities are expected to occur between September 1 and October 15, with planting activities continuing through December 15.

It is anticipated that the heaviest truck traffic would occur over a 1-month period, during which trucks would be entering and leaving the study area to import wood chips, travel mats, marsh mats, and other materials, and to remove fill material. A limited staging area is required for the proposed project because of the small amount of equipment and materials needed for the work. Construction equipment, materials, and employee vehicles would be staged along the roadway and shoulder (estimated at 600 square feet) near the Bellevue Pump Station. It is expected that the preferred haul route would be from U.S. 50 via Los Angeles Avenue to Bellevue Avenue. However, one-time access for LGP equipment would be made via U.S. 50 and Rubicon Trail and existing pedestrian access routes. No staging area is anticipated for this access route because no significant material quantities would be imported or exported.

Materials and equipment would need to be imported to the study area for the proposed adaptive management measures. The amount of materials and equipment transported to and from the study area is expected to be minimal and would result in approximately 30 truck trips or 60 one-way trips over the duration of project construction.

Early estimates of cut-and-fill quantities indicate that implementing the proposed project would generate approximately 530 cubic yards of cut and 270 cubic yards of fill. The on-site cut would be used as much as possible for fill; however, an excess of 390 cubic yards of material would need to be removed from the study area. Given the limited turning radius within the study area, it is expected that 10-yard dump trucks with a capacity of 6–8 cubic yards of material would be used to transport the fill off site. This would generate approximately 62 truck trips (i.e., 124 one-way trips) over an approximately 1-week period. The excess clean fill material may be evaluated for use elsewhere or be transported out of the Tahoe Basin.

Construction of the proposed project would require approximately 20 on-site employees during the heaviest construction period and approximately 10 on-site employees at any given time for the duration of the construction period.

No designated Class I, II, or III bicycle and pedestrian facilities are located in the study area; however, trucks and equipment entering and leaving the study area may conflict with the Class III bicycle facility along Bellevue Avenue. Construction would occur primarily between September 1 and October 15 and would not coincide with peak summer bicycle use. However, crossing the bicycle facility could create potential short-term safety issues for bicycles and pedestrians.

Although the proposed project would not result in long-term adverse traffic impacts, short-term construction-related traffic impacts from construction vehicle traffic could occur. With implementation of Mitigation Measure TRA-1 (see the discussion under item a in Section 3.16, “Transportation/Traffic”) no adverse construction-related traffic impacts would occur.

d. Alterations to present patterns of circulation or movement of people and/or goods?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project includes adaptive management measures that would not affect circulation patterns in the study area or project vicinity. In addition, the project would not change recreational use in the study area. Therefore, no long-term adverse effects related to the patterns of circulation or movement of people and/or goods would occur.

e. Alterations to waterborne, rail or air traffic?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The project does not propose any alterations to waterborne, rail, or air traffic. The Lake Tahoe Airport is the airport closest to the study area. The north approach to the airport is located approximately 2.1 miles south of the study area. No private airstrip exists in the vicinity of the study area. The nearest railroad is located in Truckee, approximately 45 miles from the study area. The project does not propose any activities that could interfere with waterborne traffic on Lake Tahoe, or with air or railroad traffic patterns. Therefore, no alterations to waterborne, rail, or air traffic would occur.

f. Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Existing land uses would remain unchanged; therefore, the proposed project would not create hazards as a result of a design feature or incompatible use. No impact would occur related to an increase in traffic hazards to motor vehicles, bicyclists, or pedestrians.

14 PUBLIC SERVICES

Will the proposal have an unplanned effect upon, or result in a need for new or altered governmental services in any of the following areas?

a. Fire protection?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not result in an increase in population in the study area, nor would it involve constructing any structures that would require additional fire protection services. No adverse effects to fire protection would occur.

b. Police protection?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not provide any new housing that would increase the number of residents or include other development that would increase demand for police protection services and facilities. No adverse effects to police protection would occur.

c. Schools?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not provide any new housing that would increase the number of students in the community. Therefore, implementing the proposed project would not increase the demand for schools. No adverse effects to schools would occur.

d. Parks or other recreational facilities?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Temporarily closing portions of the study area could have a short-term effect on existing informal recreational opportunities; however, there are no recognized parks or formal recreational facilities in the study area or vicinity. In addition, the proposed project would not provide any new housing that would increase the number of residents who would require new or expanded park and recreational facilities. No adverse effects to parks or other recreational facilities would occur.

e. Maintenance of public facilities, including roads?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not provide any new housing, businesses, or other development that would increase the maintenance of public facilities. No adverse effects to public facilities would occur.

f. Other governmental services?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not provide any new housing, businesses, or other development that would increase demand for other government services. No adverse effects to governmental services would occur.

15 ENERGY

Will the proposal result in:

a. Use of substantial amounts of fuel or energy?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would include adaptive management measures such as constructing pilot channels, creating hummocky surfaces along unpreferential flow paths, implementing vegetation enhancement measures, and removing impediments caused by road fill; therefore, the project would not include any development that would use substantial amounts of fuel or energy. There would be no substantial use of fuel or energy. Please also see the discussion of diesel fuel use under item e in Section 2, "Air Quality," earlier in this chapter.

b. Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Please see the discussion under item a above.

16 UTILITIES

Except for planned improvements, will the proposal result in a need for new systems, or substantial alterations to the following utilities:

a. Power or natural gas?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would include adaptive management measures such as constructing pilot channels, creating hummocky surfaces along unpreferential flow paths, implementing vegetation enhancement measures, and removing impediments caused by road fill; therefore, the project would not include any development that would increase the demand for power or natural gas supplies or require the construction or expansion of power or natural gas facilities. There would be no adverse effects to power or natural gas.

b. Communication systems?

Yes	No	No, with Mitigation	Data Insufficient
	X		

As discussed in a above, the project would not include any development that would result in the need for new or expanded communication systems. There would be no adverse effects to communication systems.

c. Utilize additional water which amount will exceed the maximum permitted capacity of the service provider?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not include any new development or other activities that would require permanent public water supplies. Periodic temporary use of the District's water supply may be required for dust control and earthwork or to provide temporary irrigation for vegetation. However, these activities would be minimal and temporary. Therefore, the proposed project would not use additional water in an amount that would exceed the maximum permitted capacity of a service provider.

d. Utilize additional sewage treatment capacity which amount will exceed the maximum permitted capacity of the sewage treatment provider?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not include any new development that would require water or wastewater treatment. No, changes are proposed to existing facilitates at the Bellevue Pump Station and associated gravity or forced main infrastructure. Therefore, the project would not affect the capacity of any wastewater treatment facilities.

e. Storm water drainage?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not create or contribute runoff that would exceed the capacity of stormwater drainage systems. There are no stormwater drainage systems in the study area. Furthermore, the proposed project does not include construction of new impervious surfaces or other development that would require new stormwater drainage facilities or expansion of existing facilities.

f. Solid waste and disposal?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Any excess road fill (conservatively estimated to be 400 cubic yards) would be assessed for reuse elsewhere within the Basin or potentially transported out of the Tahoe Basin to a site that could reuse the fill material. The clean fill material is not expected to affect landfill capacity. Any potential solid waste generated by construction activities would be minimal relative to the amount of waste currently generated by the population of South Lake Tahoe and nearby communities. Any solid waste generated during construction activities would be transported to the South Tahoe Refuse Facility and eventually disposed in the Lockwood Regional Landfill, which has a remaining capacity of approximately 269 million cubic yards. Therefore, it is anticipated that this facility could accommodate the small amount of solid waste that could be generated during construction activities. The

proposed project would not result in long-term generation of solid waste. This impact would be less than significant. The proposed project would not result in long-term generation of solid waste. Therefore, the proposed project would not result in the construction, expansion, or exceedance of existing facilities.

17 HUMAN HEALTH

Will the proposal result in:

a. Creation of any health hazard or potential health hazard (excluding mental health)?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Please see the discussion under item a in Section 10, "Risk of Upset," above.

b. Exposure of people to potential health hazards?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Much of the study area is recognized by El Dorado County Vector Control District as a breeding ground for mosquitoes, and thus, they monitor the abundance of mosquito larva and implement treatments to control mosquitoes, as necessary. The AMP is designed to decrease water on the right overbank which currently provides areas of slower standing water suitable for mosquito breeding in areas close to existing residential areas. The proposed project does not include measures that increase standing water elsewhere in the study area. Therefore, the potential for exposure of people to mosquito-borne viruses would remain comparable to existing conditions and El Dorado County Vector Control District would continue to monitor and treat the study area as needed.

The proposed project is intended to prevent long-term environmental impacts which could threaten exposure of the District's sewer lines and potentially release raw sewage into Lake Tahoe.

18 SCENIC RESOURCES/COMMUNITY DESIGN

Will the proposal:

a. Be visible from any state or federal highway, Pioneer Trail or from Lake Tahoe?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed adaptive management measures would be consistent with the character of the surrounding area. In addition, none of the project activities would be visible from Lake Tahoe, U.S. 50, or Pioneer Trail. Proposed creek modifications would include natural materials and revegetation that would be consistent with the natural setting.

b. Be visible from any public recreation area or TRPA designated bicycle trail?

Yes	No	No, with Mitigation	Data Insufficient
	X		

No TRPA-designated public recreation areas that are listed in the *1993 Scenic Resources Evaluation* have views of the study area (TRPA 1993). The study area is visible from informal trails within the Upper Truckee Marsh; however, no formal trails or recreation areas have views of the study area. As discussed in item a above, proposed adaptive management measures would include natural materials and revegetation that would be consistent with the natural setting and would maintain the scenic character as viewed from the informal trail in the project vicinity.

c. Block or modify an existing view of Lake Tahoe or other scenic vista seen from a public road or other public area?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would include adaptive management measures such as constructing pilot channels, creating hummocky surfaces along unpreferential flow paths, implementing vegetation enhancement measures, and removing impediments caused by road fill. However, none of these activities would be change the views from any scenic vistas, including Lake Tahoe or U.S. 50. In addition, implementing the adaptive management measures would involve the use of natural materials and revegetation that would be consistent with the natural setting and visual character of Trout Creek and the Upper Truckee Marsh.

d. Be inconsistent with the height and design standards required by the applicable ordinance or Community Plan?

Yes	No	No, with Mitigation	Data Insufficient
	X		

No building structures are proposed that would be subject to TPRA height and design standards.

e. Be inconsistent with the TRPA Scenic Quality Improvement Program (SQIP) or Design Review Guidelines?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed adaptive management measures would not be visible from the TRPA Roadway Travel Unit Roadway Travel Unit 35, or Shoreline Unit 33, Truckee Marsh. Proposed activities would include the use of natural materials and revegetation that would be consistent with the natural setting; therefore, long-term views of the study area would be consistent with the existing character the surrounding area. Therefore, the proposed project would not be inconsistent with the SQIP or design review guidelines.

19 RECREATION

Will the proposal:

a. Create additional demand for recreation facilities?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Temporarily closing portions of the study area could have a short-term effect on existing informal recreational opportunities; however, there are no formal recreation facilities in the study area and the proposed project would not increase the demand for recreation. In addition, the study area is a small portion of the Upper Truckee Marsh, which would remain open for informal recreation. It is expected that this surrounding area could absorb informal recreational activities displaced from the study area on an interim basis. The area's accessibility would vary depending on the stages of active construction, hauling of materials, and revegetation efforts that may require closure of areas until plantings are established. Portions of the study area would remain accessible to members of the public, to the extent feasible and without compromising health and safety.

b. Create additional recreation capacity?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project includes adaptive management measures along Trout Creek and does not involve any changes to recreational uses or facilities. No additional recreation capacity would be created. Therefore, there would be no adverse effect on recreation capacity.

c. Have the potential to create conflicts between recreation uses, either existing or proposed

Yes	No	No, with Mitigation	Data Insufficient
	X		

Temporarily closing portions of the study area would have a short-term impact on existing informal recreational opportunities locally. However, because the study area is a small portion of the Upper Truckee Marsh, which would remain open for informal recreation, it is expected that the surrounding area could absorb informal recreational activities displaced from the study area on an interim basis. Portions of the study area would remain accessible to members of the public, potentially on a very limited basis, to the extent feasible and without compromising health and safety. The area's accessibility would vary depending on the stages of active construction, hauling of materials, and revegetation efforts that may require closure of areas until plantings are established. In addition, the proposed project would not change existing recreational uses or introduce any new uses that could result in conflicts between existing or proposed recreational uses. Because the closures for construction would be temporary and alternative areas are available for dispersed recreation, and there would be no change to recreational uses within the study area, no recreation conflicts would occur whether existing or proposed.

d. Result in a decrease or loss of public access to any lake, waterway, or public lands?

Yes	No	No, with Mitigation	Data Insufficient
	X		

As discussed above under items a and b, there are no formal recreational facilities in the study area. Temporarily closing portions of the study area would have a short-term effect on existing informal recreational opportunities locally. However, there would be no long-term change in public access to any lake, waterway, or public lands.

20 ARCHAEOLOGICAL/HISTORICAL

a. Will the proposal result in an alteration of or adverse physical or aesthetic effect to a significant archaeological or historical site, structure, object or building?

Yes	No	No, with Mitigation	Data Insufficient
		X	

Two known historic-era cultural resources are documented in the project area: CA-ELD-721H (Old Placerville Road) and CA-ELD-2239H (historic-era fence lines). Each has been evaluated for listing in the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR) and recommended not eligible for either the NRHP or CRHR. The U.S. Bureau of Reclamation (Reclamation) has submitted the study findings for the Upper Truckee River Marsh Restoration Project and State Historic Preservation Office concurrence is expected before construction begins for the District's proposed project (Soule, pers. comm., 2014).

As part of the proposed project, road fill in the study area that is associated with CA-ELD-721H (Old Placerville Road) would be removed to eliminate the Trout Creek channel's constriction downstream of the Bellevue Pump Station and decrease the potential for future channel avulsion onto the District's easement. CA-ELD-721H was recommended not eligible because it has lost its integrity, no longer conveying its original construction or use; therefore, no further consideration is needed.

However, given that prehistoric and historic-era resources have been identified in the project vicinity, it is possible that previously undiscovered historical resources may be encountered during project-related, ground-disturbing activities. Because project construction activities could disturb previously unknown, buried, and important cultural resources, this effect is potentially adverse. With Implementation of Mitigation Measures CUL-1 and CUL-2 (see the discussion under items a and b in Section 3.5, "Cultural Resources") no adverse effect to the disturbance of documented and potentially buried important cultural resources would occur.

b. Is the proposed project located on a property with any known cultural, historical, and/or archaeological resources, including resources on TRPA or other regulatory official maps or records?

Yes	No	No, with Mitigation	Data Insufficient
		X	

See discussion under item a above.

c. Is the property associated with any historically significant events and/or sites or persons?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Research undertaken as part of the cultural resources investigation for the Upper Truckee River and Marsh Restoration Project and the District's proposed project revealed that the property is associated with the historic theme of early transportation; however, the only resource associated with the theme has been recommended as not eligible for listing in either the CRHR or NRHP.

Native American consultation was undertaken for the Upper Truckee River and Marsh Restoration Project, which encompasses the study area. Consultation with the Native American community was initiated by EDAW (now AECOM) in November 2007. A letter was sent to the Native American Heritage Commission (NAHC) requesting a list of local Native American representatives and/or tribal contacts. This letter also requested a search of the NAHC's sacred lands file to determine whether any properties of cultural concern to the Native American community are situated within or near the study area. No such properties had been documented in the area.

Additional Native American consultation was conducted by AECOM in August 2012. This consultation took the form of a project site meeting with Daryl Cruz, tribal historic preservation officer for the Washoe Tribe of Nevada and California, Myrnie Mayville and William Soule from the U.S. Bureau of Reclamation; Danielle Hughes of AECOM; and Scott Carroll and Peter Eichar from the Conservancy. No concerns about the study area were raised during the meeting.

d. Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Please see the discussion under items a and c above. Research and Native American contact and consultation did not result in the identification of unique ethnic cultural values that could be affected by the project.

e. Will the proposal restrict historic or pre-historic religious or sacred uses within the potential impact area?

Yes	No	No, with Mitigation	Data Insufficient
	X		

Please see the discussion under item c above. Research and Native American contact and consultation did not result in the identification of prehistoric or historic religious or sacred uses of land in the study area.

21 FINDINGS OF SIGNIFICANCE

a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California or Nevada history or prehistory?

Yes	No	No, with Mitigation	Data Insufficient
	X		

The proposed project would not 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; reduce or restrict the range of rare or endangered plants or animals; or eliminate important examples of the major periods of California history or prehistory. As discussed in Section 3.4, "Biological Resources," and Section 3.5, "Cultural Resources," because measures included as part of the AMP and as mitigation will be implemented by the District there would be no adverse effect to biological or cultural resources.

b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time, while long-term impacts will endure well into the future.)

Yes	No	No, with Mitigation	Data Insufficient
	X		

Many of the environmental effects of the project would be short term (e.g., construction impacts), or are mitigated in such a way that the long-term environmental effects would be mitigated into the future (e.g., vegetation, fishery, and water quality impacts). The long-term operational environmental effects of the project are not, therefore, anticipated to change over time, and the project would not result in long-term environmental impacts that conflict with environmental goals but in fact the project is intended to prevent long-term environmental impacts which could threaten exposure of the District's sewer lines and potentially release raw sewage into Lake Tahoe.

c. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant).

Yes	No	No, with Mitigation	Data Insufficient
		X	

The proposed project would involve implementing adaptive management measures along Trout Creek within the Upper Truckee Marsh to protect the District's sewer infrastructure. All of the project's impacts would be either less than significant or less than significant with mitigation incorporated. Many project impacts are site specific and would not combine with the impacts of other cumulative projects in the area. This is true for the following resource areas: aesthetics, agricultural resources, geology, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, public services, recreation, and utilities and service systems.

Air quality impacts have regional implications. Short-term emissions of pollutants generated during construction are temporary in nature, but can contribute to air quality violations and nonattainment conditions. Emissions are associated primarily with heavy-duty construction equipment and fugitive emissions from ground disturbance and earth-moving activities. Unmitigated emissions associated with the proposed project are not expected to exceed the applicable significance thresholds (82 pounds per day of reactive organic gases, oxides of nitrogen, or particulate matter less than 10 microns in diameter). Therefore, the project would not result in a cumulatively considerable contribution to a short-term cumulative air quality impact. With the exception of a very limited number of new vehicle trips related to ongoing routine inspection, monitoring, and maintenance of the adaptive management measures, the proposed project would not generate any long-term operational emissions. Therefore, the proposed project would not contribute to a cumulative long-term regional air quality impact. (Note: Global climate change and project-generated greenhouse gas emissions are discussed in Section 3.7, "Greenhouse Gas Emissions.")

For certain resource areas—biological resources, cultural resources, hydrology and water quality, and transportation and traffic—considering the past, current, or probable future projects in the project vicinity identified in Table 2-3 of Chapter 2, "Project Description," is warranted. Potential cumulative impacts for each of these resource areas are described in Chapter 3, Section 3.18, "Mandatory Findings." However, the most conservative impact conclusion is provided under item c in the environmental checklist above.

d. Does the project have environmental impacts which will cause substantial adverse effects on human beings, either directly or indirectly?

Yes	No	No, with Mitigation	Data Insufficient
		X	

No project-related environmental effects were identified that would cause substantial adverse effects on human beings. As discussed herein, the proposed project has the potential to create impacts related to biological resources, cultural resources, water quality, and traffic during construction. However, with implementation of BMPs, monitoring, and mitigation measures committed to by the District, no adverse effects will occur.

III. CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this initial evaluation to the best of my ability, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Signature _____ Date _____

Written Comments: (use additional sheets as necessary)

IV. DETERMINATION (TO BE COMPLETED BY TRPA)

[Note: This page is intentionally left blank. TRPA staff will complete and sign this determination during review of the TRPA project application anticipated for submittal in spring/summer 2014.]

On the basis of this evaluation:

a. The proposed project could not have a significant effect on the environment and a finding of no significant effect shall be prepared in accordance with TRPA's Rules of Procedure.

Yes	No

b. The proposed project could have a significant effect on the environment, but due to the listed mitigation measures which have been added to the project, could have no significant effect on the environment and a mitigated finding of no significant effect shall be prepared in accordance with TRPA's Rules and Procedures.

Yes	No

c. The proposed project may have a significant effect on the environment and an environmental impact statement shall be prepared in accordance with this chapter and TRPA's Rules of Procedure.

Yes	No

_____ _____

Signature of Evaluator *Date*

_____

Title of Evaluator

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5 LIST OF PREPARERS

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6 REFERENCES

CHAPTER 1, "INTRODUCTION"

No references cited.

CHAPTER 2, "PROJECT DESCRIPTION"

Barbour, M. G., E. Kelley, P. Maloney, D. Rizzo, E. Royce, and J. Fites-Kaufmann. 2002. Present and Past Old-Growth Forests of the Lake Tahoe Basin, California, Sierra Nevada. *Journal of Vegetation Science* 13:461–472.

CAL FIRE. *See* California Department of Forestry and Fire Protection.

California Department of General Services, Real Estate Services Division, and California Tahoe Conservancy. 2008 (March 19). *Final Alternatives Evaluation Memorandum for the Sunset Stables Restoration and Resource Management Plan Project*. Sacramento and South Lake Tahoe, CA. Prepared by ENTRIX, South Lake Tahoe, CA.

California Tahoe Conservancy and California Department of General Services, Real Estate Services Division. 2003. *Upper Truckee River and Wetland Restoration Project Processes and Functions of the Upper Truckee Marsh.* South Lake Tahoe and Sacramento, CA. Prepared by EDAW, Stateline, NV, and ENTRIX, Sacramento, CA.

California Tahoe Conservancy, California Department of General Services, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency. 2013 (February). *Upper Truckee River and Marsh Restoration Project Draft Environmental Impact Report/Environmental Impact Statement/Environmental Impact Statement*. State Clearinghouse No. 2007032099. Prepared by AECOM, Sacramento, CA, and Cardno ENTRIX, Zephyr Cove, NV.

City of South Lake Tahoe. 2011. *2030 General Plan: City of South Lake Tahoe*. South Lake Tahoe, CA: City Planning Division, Public Works Department.

Conservancy and DGS. *See* California Tahoe Conservancy and California Department of General Services, Real Estate Services Division.

Conservancy et al. *See* California Tahoe Conservancy, California Department of General Services, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency.

CSLT. *See* City of South Lake Tahoe.

DGS and Conservancy. *See* California Department of General Services, Real Estate Services Division, and California Tahoe Conservancy.

Ferry, Brendan. Senior planner. El Dorado County Department of Transportation, South Lake Tahoe, CA. August 29, 2007—e-mail to Gretchen Eichar of EDAW (now AECOM) regarding erosion control projects in

Christmas Valley and the North Upper Truckee area, the Cold Creek fisheries restoration project, and the Angora Fire response.

Herbst, D. B. 2009 (September). *Trout Creek Restoration Monitoring: Changing Benthic Invertebrate Indicators in a Reconstructed Channel*. Mammoth Lakes, CA: Sierra Nevada Aquatic Research Laboratory, University of California.

Lindström, S. 1996. *Phase I Addendum Archaeological Field Inventory, Upper Truckee River Wetlands Restoration Project, 400 Acres, South Lake Tahoe*. Sacramento, CA. Prepared for Global Environmental, Sacramento, CA. Report on file at North Central Information Center, California State University, Sacramento.

Murphy, D. D., and C. M. Knopp (eds.). 2000. *Lake Tahoe Watershed Assessment*. General Technical Report PSW-GTR-175. Albany, CA: U.S. Forest Service, Pacific Southwest Research Station.

Reclamation. *See* U.S. Bureau of Reclamation.

Reclamation et al. *See* U.S. Bureau of Reclamation, City of South Lake Tahoe, and Tahoe Regional Planning Agency.

TRPA. *See* Tahoe Regional Planning Agency.

U.S. Bureau of Reclamation. 2008 (January). *Truckee River Operating Agreement Final Environmental Impact Statement/Environmental Impact Report*. Prepared along with U.S. Fish and Wildlife Service, U.S. Bureau of Indian Affairs, and California Department of Water Resources.

U.S. Bureau of Reclamation, City of South Lake Tahoe, and Tahoe Regional Planning Agency. 2008. *Upper Truckee River Restoration Project, Middle Reaches 3 and 4, Joint NEPA/CEQA/TRPA Environmental Document*. Truckee, CA. Sacramento and South Lake Tahoe, CA, and Stateline, NV. Prepared by Camp, Dresser & McKee, Truckee, CA.

U.S. Forest Service. 2008. Proposed Action for the High Meadows Forest Plan Designation; Ecosystem Restoration; and Access Travel Management Project. Pacific Southwest Region, Lake Tahoe Basin Management Unit. Available: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm9_046072.pdf. Accessed May 2, 2008.

U.S. Forest Service, Tahoe Regional Planning Agency, Nevada Tahoe Resource Team, Nevada Division of Forestry, Nevada Division of State Lands, Nevada Fire Safe Councils, California Department of Forestry and Fire Protection, California Tahoe Conservancy, California State Parks, North Tahoe Fire Protection District, North Lake Tahoe Fire Protection District, Tahoe-Douglas Fire Protection District, Lake Valley Fire Protection District, Meeks Bay Fire Protection District, South Lake Tahoe Fire Department, and Fallen Leaf Fire Department. 2007. *Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy*. South Lake Tahoe, CA: U.S. Forest Service, Lake Tahoe Basin Management Unit.

USFS. *See* U.S. Forest Service.

USFS et al. *See* U.S. Forest Service, Tahoe Regional Planning Agency, Nevada Tahoe Resource Team, Nevada Division of Forestry, Nevada Division of State Lands, Nevada Fire Safe Councils, California Department of Forestry and Fire Protection, California Tahoe Conservancy, California State Parks, North Tahoe Fire Protection District, North Lake Tahoe Fire Protection District, Tahoe-Douglas Fire Protection District, Lake Valley Fire Protection District, Meeks Bay Fire Protection District, South Lake Tahoe Fire Department, and Fallen Leaf Fire Department.

Vail Resorts. 2007 (May). *Heavenly Mountain Resort Master Plan Amendment EIR/EIS/EIS*. Broomfield, CO.

CHAPTER 3, "CEQA ENVIRONMENTAL CHECKLIST AND EXPLANATIONS"

SECTION 3.1, "AESTHETICS"

Tahoe Regional Planning Agency. 2012 (October 24). *2011 Threshold Evaluation Report.* Final. Stateline, NV. Chapter 9, "Scenic Resources."

TRPA. *See* Tahoe Regional Planning Agency.

SECTION 3.2, "AGRICULTURE AND FORESTRY RESOURCES"

California Department of Conservation. 2013 (October 13). El Dorado County Williamson Act FY 2013/2014. Division of Land Resource Protection, Conservation Program Support. Available: ftp://ftp.consrv.ca.gov/pub/dlrp/wa/. Select files *ElDorado_e_13_14_WA.pdf* and *ElDorado_w_13_14_WA.pdf*. Accessed January 6 and February 27, 2014.

DOC. *See* California Department of Conservation.

SECTION 3.3, "AIR QUALITY"

California Division of Mines and Geology. 2000. A General Location Guide for Ultramafic Rocks in California—Areas More Likely to Contain Naturally Occurring Asbestos. Sacramento: California Department of Conservation. Available: ftp://ftp.consrv.ca.gov/pub/dmg/pubs/ofr/ofr_2000-019.pdf. Accessed February 2014.

CDMG. *See* California Division of Mines and Geology.

Tahoe Regional Planning Agency. 2012. *TRPA Code of Ordinances.* Adopted by Governing Board December 12, 2012; effective February 9, 2013. Stateline, NV. Chapter 65, "Air Quality/Transportation."

TRPA. *See* Tahoe Regional Planning Agency.

SECTION 3.4, "BIOLOGICAL RESOURCES"

AECOM. 2011. 2011 Willow Flycatcher and Shorebird Surveys at the Upper Truckee Marsh, South Lake Tahoe, California. Draft memorandum submitted to California Tahoe Conservancy December 21, 2011.

————. 2012. 2012 Willow Flycatcher and Nocturnal Owl Surveys at the Upper Truckee Marsh, South Lake Tahoe, California. Draft memorandum submitted to California Tahoe Conservancy November 16, 2012.

————. 2014. *Wetland Delineation for the Trout Creek Upper Truckee Marsh Sewer Protection Project*. Prepared for South Tahoe Public Utilities District. South Lake Tahoe, CA.

Bombay, H. L. 1999. *Scale Perspectives in Habitat Selection and Reproductive Success for Willow Flycatchers* (Empidonax traillii) *in the Central Sierra Nevada, California*. Master's thesis, California State University, Sacramento. Sacramento, CA.

Borgmann, K. L., and M. L. Morrison. 2004. *Wildlife Inventory and Monitoring in the Lake Tahoe Basin, California: Pre-Restoration.* A report to the Lake Tahoe Basin Management Unit, U.S. Forest Service, South Lake Tahoe, CA.

California Tahoe Conservancy, Department of General Services, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency. 2013. *Upper Truckee River and Marsh Restoration Project Draft Environmental Impact Report/ Environmental Impact Statement/Environmental Impact Statement*. South Lake Tahoe, CA. Prepared by AECOM and Cardno ENTRIX.

California Tahoe Conservancy. 1997. *Upper Truckee River & Wetlands Restoration Project, Conceptual Design Report.* South Lake Tahoe, CA. Prepared by Global Environmental, Sacramento, CA.

EDAW. 2007. *Results of Special Status Plant Survey for the Upper Truckee River and Marsh Restoration Project.* Letter report dated September 19, 2007 to Rick Robinson, Conservancy.

Green, G. A., H. L. Bombay, and M. L. Morrison. 2003. *Conservation Assessment of the Willow Flycatcher in the Sierra Nevada*. Unpublished report.

Richardson, Will. Co-Executive Director Tahoe Institute for Natural Science, Tahoe Bird Expert. February 2, 2014 – email correspondence with Andy Hatch of AECOM regarding Long-eared owl in the Upper Truckee Marsh.

Sanders, S. D., and M. A. Flett. 1989. *Ecology of a Sierra Nevada Population of Willow Flycatchers* (Epidonax trailii) 1986–1987. *Wildlife Management Branch Administrative Report 88-3*. Sacramento: California Department of Fish and Game.

SECTION 3.5, "CULTURAL RESOURCES"

AECOM. 2012. *Cultural Resources Inventory and Evaluation Report, Upper Truckee River and Marsh Restoration Project*. Sacramento, CA. Prepared for California Tahoe Conservancy, South Lake Tahoe, CA, and California Department of General Services Real Estate Services Division, West Sacramento, CA.

Barrett, S. A. 1917. The Washo Indians. *Bulletin of the Public Museum of the City of Milwaukee* 2(1):1–52. Facsimile reprint by Coyote Press, Salinas, CA.

d'Azevedo, Warren. 1984. Washoe. In *Handbook of North American Indians,* Volume 11, ed. W. d'Azevedo, 466–498. Washington, DC: Smithsonian Institution.

Elston, R. G., J. O. Davis, A. Leventhal, and C. Covington. 1976. *The Archeology of the Tahoe Reach of the Truckee River*. Report to Tahoe Truckee Sanitation Agency, Truckee, CA. Report on file in special collections, Getchell Library, University of Nevada, Reno.

Heizer, R. F., and A. B. Elsasser. 1953. *Some Archaeological Sites and Cultures of the Central Sierra Nevada.* University of California Archaeological Survey Reports, No. 21. Berkeley, CA.

Hoover, M. B., H. E. Rensch, and E. G. Rensch. 1966. *Historic Spots in California.* Revised by D. E. Kyle. Stanford, CA: Stanford University Press.

Hull, K. L. 2007. The Sierra Nevada: Archeology in the Range of Light. In *California Prehistory, Colonization, Culture, and Complexity*, ed. T. L. Jones and K. A. Klar, 177–190. Lanham, MD: Alta Mira Press.

Kroeber, A. L. 1925. *Handbook of the Indians of California.* New York: Dover Publications.

Lindström, S. 1996. *Phase I Addendum Archaeological Field Inventory, Upper Truckee River Wetlands Restoration Project, 400 Acres, South Lake Tahoe*. Truckee, CA. Prepared for Global Environmental, Sacramento, CA. Report on file at North Central Information Center, California State University, Sacramento.

————. 2002. *Tahoe Vista Affordable Housing Project Heritage Resource Inventory, Tahoe Vista, California, Placer County (Kings Beach 7.5' Quadrangle).* Truckee, CA. Prepared for AHDC, Inc., Clovis, CA.

Moratto, M. J. 1984. *California Archaeology.* Salinas, CA: Coyote Press.

Saucedo, G. J. 2005. Geologic Map of the Lake Tahoe Basin, California and Nevada. Version 1.0. Scale 1:100,000. Sacramento: California Geological Survey.

Scott, E. B. 1957. *The Saga of Lake Tahoe*. Volume I. Crystal Bay, NV: Sierra-Tahoe Publishing Company.

Soule, William. Archaeologist. U.S. Bureau of Reclamation, Sacramento, CA. February 11, 2014—personal communication between Danielle Hughes of AECOM regarding State Historic Preservation Officer concurrence for the Upper Truckee Marsh Restoration Project.

SECTION 3.6, "GEOLOGY AND SOILS"

California Geological Survey. 2005. Earthquake Shaking Potential Map for Portions of Eastern California and Western Nevada. CGS Map Sheet 56. Sacramento, CA. Available: http://www.seismic.ca.gov/pub/shaking_CANV751.pdf. Accessed February 6, 2014.

———. 2012. Alquist-Priolo Earthquake Fault Zone Maps. Available: http://www.conservation.ca.gov/cgs/rghm/ap/Pages/index.aspx. Accessed February 6, 2014.

CGS. *See* California Geological Survey.

Ichinose, G. A., K. Satake, J. G. Anderson, R. A. Schweickert, and M. W. Lahren. 2000. The Potential Hazard from Tsunami and Seiche Waves Generated by Future Large Earthquakes within the Lake Tahoe Basin. *California-Nevada, Geophysical Research Letters* 27:1203–1206.

NHC. *See* Northwest Hydraulic Consultants.

Northwest Hydraulic Consultants. 2013. *Upper Truckee Marsh Sewer Facilities Adaptive Management Plan, Review Draft.* Prepared for South Tahoe Public Utility District, South Lake Tahoe, CA.

NRCS. *See* U.S. Natural Resources Conservation Service.

Saucedo, G. J. 2005. Geologic Map of the Lake Tahoe Basin, California and Nevada. California Geological Survey Regional Geologic Map Series Map No. 4, 1:100,000 scale. Sacramento, CA.

Sawyer, T. L. (compiler). 1999. East Tahoe Fault, fault number 1651. In U.S. Geological Survey, *Quaternary Fault and Fold Database of the United States.* Available: http://geohazards.usgs.gov/cfusion/qfault/qf_web_disp.cfm?qfault_or=658&ims_cf_cd=cf&disp_cd=C. Accessed February 6, 2014.

Schweickert, R. A., M. M. Lahren, K. Smith, R. Karlin, J. Howle. 2000. *Lake Tahoe Active Faults, Landslides, and Tsunamis*. GSA Field Guide 2, Great Basin Sierra Nevada.

Seitz, G. G., and G. Kent. 2004. *Closing the Gap Between On and Offshore Paleoseismic Records in the Lake Tahoe Basin.* Volume 46, U.S. Geological Survey External Research Support, Annual Project Summaries.

Smith, K. D., D. von Seggern, G. Blewitt, L. Preston, J. G. Anderson, B. P. Wernicke, and J. L. Davis. 2004. Evidence for Deep Magma Injection Beneath Lake Tahoe, Nevada-California. *Science* 305:1277–1280.

U.S. Natural Resources Conservation Service. 2014. Web Soil Survey. Available: http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed February 6, 2014.

SECTION 3.7, "GREENHOUSE GAS EMISSIONS"

ARB. *See* California Air Resources Board.

California Air Resources Board. 2008 (December). *Climate Change Scoping Plan: A Framework for Change Pursuant to AB 32, The California Global Warming Solutions Act of 2006*. Sacramento, CA.

Intergovernmental Panel on Climate Change. 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.* Geneva, Switzerland.

IPCC. *See* Intergovernmental Panel on Climate Change.

San Diego County. 2013 (November 7). *County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements: Climate Change*. San Diego, CA: Land Use and Environment Group, Department of Planning and Land Use, Department of Public Works.

San Luis Obispo Air Pollution Control District. 2012 (April). *CEQA Air Quality Handbook. A Guide for Assessing the Air Quality Impacts for Projects Subject to CEQA Review*. San Luis Obispo, CA.

SCAQMD. *See* South Coast Air Quality Management District.

SLOAPCD. *See* San Luis Obispo Air Pollution Control District.

South Coast Air Quality Management District. 2010. Greenhouse Gas CEQA Significance Threshold Stakeholder Working Group Meeting #15. Available: http://www.aqmd.gov/ceqa/handbook/GHG/2010/sept28mtg/ghgmtg15-web.pdf. Accessed February 26, 2014.

SECTION 3.8, "HAZARDS AND HAZARDOUS MATERIALS"

California Department of Toxic Substances Control. 2014. EnviroStor. Available: http://www.envirostor.dtsc.ca.gov/public/. Accessed February 7, 2014.

Camp Dresser & McKee. 2007. *Draft Preliminary Wildlife Hazard Assessment, Lake Tahoe Airport.* Prepared for the Upper Truckee River Middle Reach Stream Environment Zone Restoration Study, Reaches 3 and 4. South Lake Tahoe, CA.

City of South Lake Tahoe Airport Land Use Commission. 2007. *Lake Tahoe Airport Comprehensive Land Use Plan*. Initial publication July 1990; revised April 1992, August 1995, September 2002, December 9, 2004, and May 10, 2007. South Lake Tahoe, CA. Prepared by J. G. Brand and R. D. French, South Lake Tahoe, CA.

CSLT ALUC. *See* City of South Lake Tahoe Airport Land Use Commission.

DTSC. *See* California Department of Toxic Substances Control.

EPA. *See* U.S. Environmental Protection Agency.

FAA. *See* Federal Aviation Administration.

Federal Aviation Administration. 2007 (August 28). *Advisory Circular: Hazardous Wildlife Attractants on or Near Airports*. AC No. 150/5200-33B. Washington, DC: Office of Airport Safety and Standards.

————. 2013. Wildlife Strike Database. Search terms: *Airport, Lake Tahoe Airpt.* Available: http://wildlife.faa.gov/database.aspx. Last updated September 30, 2013. Accessed February 7, 2014.

State Water Resources Control Board. 2014. GeoTracker. Available: http://geotracker.waterboards.ca.gov/. Accessed February 7, 2014.

SWRCB. *See* State Water Resources Control Board.

U.S. Environmental Protection Agency. 2013. Search Superfund Site Information. Available: http://cumulis.epa.gov/supercpad/cursites/srchsites.cfm. Last updated November 22, 2013. Accessed February 7, 2014.

————. 2014. Envirofacts. Available: http://www.epa.gov/envirofw/. Last updated February 4, 2014. Accessed February 7, 2014.

U.S. Forest Service. 2013 (May). *Meyers Landfill Fact Sheet: Update on Remedial Activities and Supplemental Groundwater Investigation*. South Lake Tahoe, CA: Lake Tahoe Basin Management Unit. Available: http://www.fs.usda.gov/detail/ltbmu/landmanagement/?cid=fsm9_046751. Accessed February 7, 2014.

U.S. Forest Service, Tahoe Regional Planning Agency, Nevada Tahoe Resource Team, Nevada Division of Forestry, Nevada Division of State Lands, Nevada Fire Safe Councils, California Department of Forestry and Fire Protection, California Tahoe Conservancy, California State Parks, North Tahoe Fire Protection

District, North Lake Tahoe Fire Protection District, Tahoe-Douglas Fire Protection District, Lake Valley Fire Protection District, Meeks Bay Fire Protection District, South Lake Tahoe Fire Department, and Fallen Leaf Fire Department. 2007 (September 20). *Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy: 10 Year Plan*. South Lake Tahoe, CA: U.S. Forest Service Lake Tahoe Basin Management Unit. Available: http://resources.ca.gov/tahoefirecommission/downloads/Final_Draft_LTB-FUELS-10_YEAR_PLAN.pdf. Accessed February 7, 2014.

USFS. *See* U.S. Forest Service.

USFS et al. *See* U.S. Forest Service, Tahoe Regional Planning Agency, Nevada Tahoe Resource Team, Nevada Division of Forestry, Nevada Division of State Lands, Nevada Fire Safe Councils, California Department of Forestry and Fire Protection, California Tahoe Conservancy, California State Parks, North Tahoe Fire Protection District, North Lake Tahoe Fire Protection District, Tahoe-Douglas Fire Protection District, Lake Valley Fire Protection District, Meeks Bay Fire Protection District, South Lake Tahoe Fire Department, and Fallen Leaf Fire Department.

SECTION 3.9, "HYDROLOGY AND WATER QUALITY"

California Tahoe Conservancy and California Department of General Services, Real Estate Services Division. 2003. *Upper Truckee River and Wetland Restoration Project, Processes and Functions of the Upper Truckee Marsh.* South Lake Tahoe and Sacramento, CA. Prepared by EDAW, Stateline, NV, and ENTRIX, Sacramento, CA.

California Tahoe Conservancy, California Department of General Services Real Estate Services Division, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency. 2013 (February). *Upper Truckee River and Marsh Restoration Project Draft Environmental Impact Report/Environmental Impact Statement/Environmental Impact Statement*. State Clearinghouse No. 2007032099. Prepared by AECOM, Sacramento, CA, and Cardno ENTRIX, Zephyr Cove, NV.

Conservancy and DGS. *See* California Tahoe Conservancy and California Department of General Services, Real Estate Services Division.

Conservancy et al. *See* California Tahoe Conservancy, California Department of General Services Real Estate Services Division, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency.

FEMA. *See* Federal Emergency Management Agency.

Ichinose, G. A., K. Satake, J. G. Anderson, R. A. Schweickert, and M. W. Lahren. 2000. The Potential Hazard from Tsunami and Seiche Waves Generated by Future Large Earthquakes within the Lake Tahoe Basin. *California-Nevada, Geophysical Research Letters* 27:1203–1206.

Lahontan Regional Water Quality Control Board. 1995. *Water Quality Control Plan for the Lahontan Region.* Plan effective March 31, 1995, amendments effective August 1995 through December 2005. South Lake Tahoe and Victorville, CA.

Lahontan Regional Water Quality Control Board and Nevada Division of Environmental Protection. 2007. *Charting a Course to Clarity: The Lake Tahoe Total Maximum Daily Load (TMDL).* Available: http://www.waterboards.ca.gov/lahontan/water_issues/programs/tmdl/lake_tahoe/docs/cac_208_09_final.pdf. Accessed February 5, 2014.

Lahontan RWQCB. *See* Lahontan Regional Water Quality Control Board.

Lahontan RWQCB and NDEP. *See* Lahontan Regional Water Quality Control Board and Nevada Division of Environmental Protection.

Nevada Earthquake Safety Council. 2007. Probabilities of Earthquakes of Various Magnitudes Occurring within 50 Years within 50 Kilometers of Major Communities in Nevada. Available: http://www.nbmg.unr.edu/Geohazards/Earthquakes/eqprob/eqprob.htm. Accessed February 5, 2014.

NESC. *See* Nevada Earthquake Safety Council.

NHC. *See* Northwest Hydraulic Consultants.

Northwest Hydraulic Consultants. 2013. *Upper Truckee Marsh Sewer Facilities Adaptive Management Plan, Review Draft.* Prepared for South Tahoe Public Utility District, South Lake Tahoe, CA.

Rowe, T. G., and K. K. Allander. 2000. *Surface- and Ground-Water Characteristics in the Upper Truckee River and Trout Creek Watersheds, South Lake Tahoe, California and Nevada, July–December 1996.* Water-Resources Investigations Report 00-4001. Prepared in co-operation with the Tahoe Regional Planning Agency. Carson City, NV: U.S. Geological Survey.

Rowe, T. G., D. K. Saleh, S. A. Watkins, and C. R. Kratzer. 2002. *Streamflow and Water-Quality Data for Selected Watersheds in the Lake Tahoe Basin, California and Nevada, through September 1998.* Water Resources Investigations Report 02-4030. Prepared in co-operation with the Lahontan Regional Water Quality Control Board, Tahoe Regional Planning Agency, and University of California, Davis. Carson City, NV: U.S. Geological Survey.

Schweickert, R. A., M. M. Lahren, K. D. Smith, J. F. Howle, and G. Ichinose. 2004. Transtensional Deformation in the Lake Tahoe Region, California and Nevada, USA. *Tectonophysics* 392(1–4):303–323.Simon, A. 2006 (May). *Estimates of Fine-Sediment Loadings to Lake Tahoe from Channel and Watershed Sources*. U.S. Department of Agriculture Agricultural Research Service, National Sedimentation Laboratory Technical Report 52. Prepared for University of California, Davis; the Nevada Division of Environmental Protection; and the Lahontan Regional Water Quality Control Board.

Simon, A., E. Langendoen, R. Bingner, R. Wells, A. Heins, N. Jokay, and L. Jaramillo. 2003. *Lake Tahoe Basin Framework Implementation Study: Sediment Loadings and Channel Erosion*. U.S. Department of Agriculture Agricultural Research Service, National Sedimentation Laboratory Research Report. No. 39. Prepared for U.S. Army Corps of Engineers.

Stubblefield, A. P., M. I. Escobar, and E. W. Larsen. 2006. Retention of Suspended Sediment and Phosphorus on a Freshwater Delta, South Lake Tahoe, California. *Wetlands Ecology and Management* 14(4):287–302.

UCD. *See* University of California, Davis.

University of California, Davis. 2013. *Tahoe: State of the Lake Report*. Chapter 11, Clarity. Tahoe Environmental Research Center. Available: http://terc.ucdavis.edu/stateofthelake/. Accessed February 5, 2014.

Winter, S. M. 2003. *Sediment Retention on a Deltaic Floodplain in Response to Climate and Land-Use Changes*. Master's thesis in hydrologic sciences, University of California, Davis.

SECTION 3.10, "LAND USE AND PLANNING"

City of South Lake Tahoe. 2011. *2030 South Lake Tahoe General Plan Policy Document*. Adopted by the South Lake Tahoe City Council May 17, 2011. South Lake Tahoe, CA. Prepared by Mintier Harnish Planning Consultants in association with Pacific Municipal Consultants, LSC Transportation Consultants, JC Brennan, and Ambient. Land Use Element.

CSLT. *See* City of South Lake Tahoe.

Tahoe Regional Planning Agency. 2007 (August). *Restoration in Progress: 1997–2007 Environmental Improvement Program Progress Report*. Stateline, NV.

————. 2010. Restoration in Progress: Environmental Improvement Program Update, Planning Horizon through 2018. Stateline, NV.

TRPA. *See* Tahoe Regional Planning Agency.

SECTION 3.11, "MINERAL RESOURCES"

Busch, L. 2001. *Mineral Land Classification of El Dorado County, California*. Open File Report 2000-03. Sacramento: California Department of Conservation, Division of Mines and Geology.

El Dorado County Planning Department. 2004. *2004 El Dorado County General Plan, A Plan for Managed Growth and Open Roads; A Plan for Quality Neighborhoods and Traffic Relief*. Adopted by the Board of Supervisors July 19, 2004, Resolution Number 235-2004. Placerville, CA. Conservation and Open Space and Element.

Saucedo, G. J. 2005. *Geologic Map of the Lake Tahoe Basin, California and Nevada*. California Geological Survey Regional Geologic Map Series Map No. 4, 1:100,000 scale. Sacramento, CA.

SECTION 3.12, "NOISE"

California Department of Transportation. 2004. Tr*ansportation and Construction-Induced Vibration Guidance Manual.* Sacramento, CA.

———. 2013. *Technical Noise Supplement.* Sacramento, CA.

California Tahoe Conservancy, California Department of General Services Real Estate Services Division, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency. 2013 (February). *Upper Truckee River*

and Marsh Restoration Project Draft Environmental Impact Report/Environmental Impact Statement/Environmental Impact Statement. State Clearinghouse No. 2007032099. Prepared by AECOM, Sacramento, CA, and Cardno ENTRIX, Zephyr Cove, NV.

Caltrans. *See* California Department of Transportation.

City of South Lake Tahoe. 2011. *2030 South Lake Tahoe General Plan Policy Document*. Adopted by the South Lake Tahoe City Council May 17, 2011. South Lake Tahoe, CA. Prepared by Mintier Harnish Planning Consultants in association with Pacific Municipal Consultants, LSC Transportation Consultants, JC Brennan, and Ambient.

City of South Lake Tahoe Airport Land Use Commission. 2007. *Lake Tahoe Airport Comprehensive Land Use Plan*. Initial publication July 1990; revised April 1992, August 1995, September 2002, December 9, 2004, and May 10, 2007. South Lake Tahoe, CA. Prepared by Janis G. Brand and Richard D. French, South Lake Tahoe, CA.

Conservancy et al. *See* California Tahoe Conservancy, California Department of General Services Real Estate Services Division, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency

CSLT. *See* City of South Lake Tahoe.

CSLT ALUC. *See* City of South Lake Tahoe Airport Land Use Commission.

Federal Transit Administration. 2006 (May). *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06. Washington, DC: Office of Planning and Environment.

FTA. *See* Federal Transit Administration.

Tahoe Regional Planning Agency. 2012a. *TRPA Regional Plan.* Adopted by Governing Board December 12, 2012; effective February 9, 2013. Stateline, NV.

———. 2012b. *TRPA Code of Ordinances.* Adopted by Governing Board December 12, 2012; effective February 9, 2013. Stateline, NV.

TRPA. *See* Tahoe Regional Planning Agency.

SECTION 3.13, "POPULATION AND HOUSING"

California Department of Finance. 2013a (May). E-1 Population Estimates for Cities, Counties, and the State—January 1, 2012 and 2013. Available: http://www.dof.ca.gov/research/demographic/reports/estimates/e-1/view.php. Accessed January 29 and February 12, 2014.

————. 2013b (May). E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011–2013, with 2010 Census Benchmark. Available: http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2011-20/view.php. Accessed January 29 and February 12, 2014.

California Department of Housing and Community Development. 2000 (May 22). *Raising the Roof—California Housing Development Projections and Constraints 1997–2020.* Sacramento, CA. Chapter 6, "Past and Future Housing Shortfalls." Available: http://www.hcd.ca.gov/hpd/hrc/rtr/. Accessed February 12, 2014.

DOF. *See* California Department of Finance.

HCD. *See* California Department of Housing and Community Development**.**

SECTION 3.14, "PUBLIC SERVICES"

Lake Tahoe Unified School District. 2014. Schools. Available: http://www.ltusd.org/schools.php. Accessed January 7, 2014.

South Lake Tahoe Fire Department. 2014. Stations. Available: http://www.cityofslt.us/index.aspx?NID=180. Accessed January 7, 2014.

South Lake Tahoe Police Department. 2014. Police Department. Available: http://www.cityofslt.us/index.aspx?nid=302. Accessed January 7, 2014.

SLTFD. *See* South Lake Tahoe Fire Department.

SLTPD. *See* South Lake Tahoe Police Department.

SECTION 3.15, "RECREATION"

California Tahoe Conservancy, California Department of General Services Real Estate Services Division, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency. 2013 (February). *Upper Truckee River and Marsh Restoration Project Draft Environmental Impact Report/Environmental Impact Statement/Environmental Impact Statement*. State Clearinghouse No. 2007032099. Prepared by AECOM, Sacramento, CA, and Cardno ENTRIX, Zephyr Cove, NV.

Conservancy et al. *See* California Tahoe Conservancy, California Department of General Services Real Estate Services Division, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency.

SECTION 3.16, "TRANSPORTATION/TRAFFIC"

California Tahoe Conservancy, California Department of General Services Real Estate Services Division, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency. 2013 (February). *Upper Truckee River and Marsh Restoration Project Draft Environmental Impact Report/Environmental Impact Statement/Environmental Impact Statement*. State Clearinghouse No. 2007032099. Prepared by AECOM, Sacramento, CA, and Cardno ENTRIX, Zephyr Cove, NV.

Tahoe Transportation District. 2013. BlueGO Information Page. Available: http://www.tahoetransportation.org/transit/bluego. Accessed January 10, 2013.

Conservancy et al. *See* California Tahoe Conservancy, California Department of General Services Real Estate Services Division, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency.

SECTION 3.17, "UTILITIES AND SERVICE SYSTEMS"

District. *See* South Tahoe Public Utility District.

Nevada Division of Environmental Protection. 2014. Lockwood Regional Landfill. Available https://ndep.nv.gov/bwm/landfill_lockwood.htm. Last updated February 7, 2014. Accessed February 7, 2014.

NDEP. *See* Nevada Division of Environmental Protection.

South Tahoe Public Utility District. 2014. District Information. Available: http://www.stpud.us/districtinfo.html. Accessed February 7, 2014.

SECTION 3.18, "MANDATORY FINDINGS OF SIGNIFICANCE"

No references cited.

CHAPTER 4, "TRPA INITIAL ENVIRONMENTAL CHECKLIST AND EXPLANATIONS"

SECTION 1, "LAND"

No references cited.

SECTION 2, "AIR QUALITY"

No references cited.

SECTION 3, "WATER QUALITY"

Tahoe Regional Planning Agency. 2000 (June). *Lake Tahoe Source Water Protection Program, Project Report.* Zephyr Cove, NV.

SECTION 4, "VEGETATION"

EDAW. 2007. Results of Special Status Plant Survey for the Upper Truckee River and Marsh Restoration Project. Letter report dated September 19, 2007 to Rick Robinson, Conservancy.

SECTION 5, "WILDLIFE"

California Tahoe Conservancy, Department of General Services, U.S. Bureau of Reclamation, and Tahoe Regional Planning Agency. 2013. Upper Truckee River and Marsh Restoration Project Draft Environmental Impact Report/Environmental Impact Statement/Environmental Impact Statement. South Lake Tahoe, CA. Prepared by AECOM and Cardno ENTRIX.

Richardson, Will. Co-Executive Director Tahoe Institute for Natural Science, Tahoe Bird Expert. February 2, 2014 – email correspondence with Andy Hatch of AECOM regarding Long-eared owl in the Upper Truckee Marsh.

SECTION 6, "NOISE"

California Department of Transportation. 2004. *Transportation and Construction Induced Vibration Guidance Manual: Transportation Related Earthborne Vibrations (Caltrans Experiences).* Technical Advisory, Vibration TAV-04-01-R0201. Sacramento, CA.

Caltrans. *See* California Department of Transportation.

Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment Guidance.* FTA-VA-90-1003-06. Washington, DC: Office of Planning and Environment.

FTA. *See* Federal Transit Administration.

SECTION 7, "LIGHT AND GLARE"

No references cited.

SECTION 8, "LAND USE"

No references cited.

SECTION 9, "NATURAL RESOURCES"

No references cited.

SECTION 10, "RISK OF UPSET"

No references cited.

SECTION 11, "POPULATION"

No references cited.

SECTION 12, "HOUSING"

No references cited.

SECTION 13, "TRANSPORTATION/CIRCULATION"

No references cited.

SECTION 14, "PUBLIC SERVICES"

No references cited.

SECTION 15, "ENERGY"

No references cited.

SECTION 16, "UTILITIES"

No references cited.

SECTION 17, "HUMAN HEALTH"

No references cited.

SECTION 18, "SCENIC RESOURCES/COMMUNITY DESIGN"

Tahoe Regional Planning Agency. 1993 (November). *1993 Scenic Resource Evaluation.* Stateline, NV. Prepared by Wagstaff and Brady, Berkeley, CA.

TRPA. *See* Tahoe Regional Planning Agency.

SECTION 19, "RECREATION"

No references cited.

SECTION 20, "ARCHAEOLOGICAL/HISTORICAL"

Soule, William. Archaeologist. U.S. Bureau of Reclamation, Sacramento, CA. February 11, 2014—personal communication between Danielle Hughes of AECOM regarding State Historic Preservation Officer concurrence for the Upper Truckee Marsh Restoration Project.

SECTION 21, "FINDINGS OF SIGNIFICANCE"

No references cited.

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APPENDIX A

A Preliminary Alternatives Evaluation

ALTERNATIVE	NAME	EASE OF CONSTRUCTION	PUBLIC ACCEPTANCE	EFFECTIVENESS AND RELIABILITY	PERMITTING REQUIREMENTS	ENVIRONMENTAL EFFECTS	ESTIMATED PRELIMINARY COST ($)
1	**Trout Creek Re-Route (Pre-1968 Main Channel)**	• Simple – Moderately Complex o Complexity of construction depends mostly on amount of existing channel to be filled and connection of historical channel at downstream end. o Excavation can be minimized by reconnecting existing reaches of former channel segments. o Reuse of former channel segments minimizes need for revegetation and stabilization. o May require two seasons to allow for revegetation of existing channel and downstream connection. o Aquatic organism relocation required for long length of existing channel.	• High (Low Impact) to Moderate o Public acceptance depends on individual stakeholder perception of existing conditions o Access route affects a small number of neighboring homeowners (4 total). o May be favorably viewed as restoring historical channel alignment, and does not encroach reduce functional SEZ area. o Alleviates long duration low flow flooding to properties neighboring east margin of Truckee Marsh. o Improves access and lowers costs to maintain recreation trails along east margin of Truckee Marsh.	• Moderate to High o Reliability depends on the likelihood that the channel will remain in historical alignment and not avulse back to its present location (needs to be assessed) o Most effective alternative in reducing risks, especially lateral migration and long duration flooding affecting District sewer facilities, neighboring properties and recreation trails. o May not address pump station flooding in major events. o May require management to ensure that re-established channel remains stable.	• Moderate o CEQA ▪ Simplified if CTC serves as lead agency and adds project to the Upper Truckee River & Marsh Restoration Project (UTR-MRP). o USACOE Section 404 Permit ▪ Moderate (mitigation may be avoidable) if existing channel remains functional SEZ. Requires USFWS consultation for LCT. o LRWQCB Section 401 WQC and General Permits ▪ Moderate if existing vegetated stream channel segments are used and temporary diversion can be minimized. Requires dewatering existing channel. o CDFG Section 1600 Permit ▪ May be simplified if majority of construction performed within “dry” channel segments and project increases aquatic habitat. o TRPA Grading Permit ▪ Environmental review may be simplified if added to CTC’s UTR MRP. o Construction easement ▪ Temporary easements required from a small number of property owners.	• Low to Moderate Temporary Impacts o Requires protection/ restoration of access routes in SEZ o Reconnection to vegetated channel segments minimizes impacts to water quality during construction. Some risk in new channel areas and filled existing channel. o Existing channel would be dewatered, but habitat would be replaced on historical channel almost immediately. o Identification and protection of sensitive species will be needed. Benefits o Re-watering channel segments with better riparian vegetation could increase aquatic and riparian habitat. o Re-watered channel would connect to complex meander belt (near center of marsh). o Restores channel to area with more complex riparian cover in center of marsh	Capital Cost 600K to 1.2 M Management Cost Assuming minor channel improvements every three to five years, estimate 120K-150K per three to five years. 50-year PV cost: 1.2M to 1.8M

ALTERNATIVE	NAME	EASE OF CONSTRUCTION	PUBLIC ACCEPTANCE	EFFECTIVENESS AND RELIABILITY	PERMITTING REQUIREMENTS	ENVIRONMENTAL EFFECTS	ESTIMATED PRELIMINARY COST ($)
2	**Trout Creek Dredging (Pre-2010 Channel)**	• Moderate o Affects a relatively short reach of channel (approx. 500 lf) o Requires excavation with minimal placement of fill to relocate existing flow path. o Construction dewatering and temporary discharge system likely. May require stockpiling and drying. o May require intensive vegetative stabilization or phased approach to revegetate previous channel prior to rewatering. o Requires tie-in of restored channel and plugging of existing flow path or channel (to the extent that channel forms) o Aquatic organism relocation likely required for at least a portion of existing channel; area much smaller than Alternative 1.	• High to moderate o Re-establishes previous channel and set-back to pre-2010 distance between Trout Creek and neighboring properties/facilities bordering east margin of Truckee Marsh. o Construction impacts (noise, dust, vibration, traffic) will occur near property owners on El Dorado Avenue. o Public access may be restricted along east margin of Truckee Marsh during construction.	• Low to Moderate o Does not fully address lateral migration over the long term, but makes improvement o Does not address pump station flooding in major events. o Unless other actions taken, channel likely to fill and avulse again, requiring recurring dredging/channel maintenance.	• Moderate o CEQA ▪ Compared to Alternative 1 reduces affected area. Initial Study may be simplified using information in UTR&MRP DEIR/DEIS document. o USACOE Section 404 Permit ▪ May be simpler than Alternative 1, as project is smaller and mostly excavation of sand-filled channel; restoration of pre-existing channel may avoid mitigation if no net loss of functional SEZ. o LRWQCB Section 401 WQC and General Permits ▪ Permitting simplified if existing flow path remains vegetated, need for temporary diversion is minimized, and restored channel is vegetated. o CDFG Section 1600 Permit ▪ Relatively simple with temporary BMPs; restores functional stream channel in place of overbank flow path. o TRPA ▪ Requires access and excavation within SEZ, but similar to previous projects. o Construction Easement ▪ Construction solely within CTC property.	• Low-Moderate Temporary Impacts o Requires protection/restoration of access routes in SEZ, but relatively short o May require fill plugging of partial channel development, but would be replaced by restored channel. o Revegetation of restored channel would minimize short-term water quality impacts. Some risk at tie-in. Benefits o Restores aquatic habitat and functional main channel for short channel length o No benefits compared to pre-2010 conditions	Capital Cost 300K to 500K Management Cost Assuming minor channel improvements similar to Alt 1, but smaller in scale, estimate 50K-75K per three to five years. 50-year PV cost: 550K to 800K

ALTERNATIVE	NAME	EASE OF CONSTRUCTION	PUBLIC ACCEPTANCE	EFFECTIVENESS AND RELIABILITY	PERMITTING REQUIREMENTS	ENVIRONMENTAL EFFECTS	ESTIMATED PRELIMINARY COST ($)
3	**Utility Easement Improvements**	• Simple - Moderate o May be complicated by grading and drainage improvements needed on private property north of easement. o Bank protection/ channel controls may be required. o Would likely require import of fill and revegetation of SEZ edge o Could potentially be combined with construction of recreational access improvements identified in UTR&MRP alternatives o Could consider causeway or boardwalk style access (especially if combined with recreational access) but would increase costs and constrain types of maintenance vehicles	• Low - Moderate o Grading improvements needed may not be acceptable to neighboring property owners (28 homeowners along meadow side of El Dorado Avenue). o Public acceptance may be improved if integrated with planned recreational improvements along east margin of Truckee Marsh. o Fill may be perceived as undesirable reduction in functional SEZ and visual impact	• Moderate - High o Addresses stream migration risk if it incorporates protection along easement, but hardened margin may have impacts o Effectively addresses long duration flooding risk and reduces I&I potential o Does not address pump station flooding risk in major events. o Maintenance and emergency activities would occur near main channel.	• Difficult o CEQA ▪ Environmental review may be complicated if alternative not accepted by neighboring property owners. o USACOE Section 404 Permit ▪ May require a lengthy permitting process, as individual permit may be required for activity resulting in loss of wetland area. Mitigation likely required at compensation ratio greater than 1:1. o LRWQCB Section 401 WQC ▪ Findings required to support permanent fill in SEZ may be difficult to attain. o CDFG Section 1600 Permit ▪ May require re-establishment of active channel as for Alternative 1 or 2 if CDFW regards Trout Creek as currently flowing within easement. o TRPA ▪ Environmental review would be complicated by extensive use of fill within SEZ. o Construction Easement ▪ Would require multiple construction easements from affected property owners.	• Moderate o Would convert an area of ~3,750 SF from wetland to utility maintenance road o Could affect drainage off and onto neighboring properties o Potential visual impacts would need to be addressed. Benefits o No environmental benefits identified (other than reduced risk to water quality through protection of sewers)	Capital Cost 200K – 400K Management Cost Assuming response to major flood events requires repair of bank protection along easement, estimate 100K to 120K per 10 years. 50-year PV cost: 350K to 600K

ALTERNATIVE	NAME	EASE OF CONSTRUCTION	PUBLIC ACCEPTANCE	EFFECTIVENESS AND RELIABILITY	PERMITTING REQUIREMENTS	ENVIRONMENTAL EFFECTS	ESTIMATED PRELIMINARY COST ($)
4	**Relocate Sewer Utilities**	• Very Complex o Extensive deep excavation and complex construction required. o Construction dewatering required. o Complex controls and instrumentation required. o Complex sewer flow modeling evaluation required. o Major traffic, noise, and utility service impacts during construction. o Would require some access/disturbance in SEZ for decommissioning existing facilities.	• Low o Construction impacts (noise, dust, vibration, traffic, limited access, temporary utility outages) to ~50 homeowners on Bellevue, El Dorado and Oakland Avenues. o Additional disturbance needed to construct lift stations and re-routing of sewer laterals on 28 properties bordering Truckee Marsh.	• High - Moderate o Provides reliable protection for sewer gravity and force mains. o Does not address pump station flooding risk during major events. o Use of lift stations will increase complexity and O&M, reducing system reliability through area.	• Low to Moderate o CEQA IS/ND Process ▪ Reduced disturbance required within SEZ, but significant temporary construction impacts. o Lahontan General Permits ▪ Typical construction BMPs and control of water required. o TRPA Grading Permit ▪ TRPA Environmental Review simplified by minimal disturbance within SEZ, but would be other temporary impacts and potential tree removal. . o Construction easement ▪ Would be complicated by easements required from affected property owners to maintain dedicated lift stations for property sewer connection.	• Low - Moderate o Requires minimal construction activity within SEZ o Significant construction impacts to local residents	Capital Cost 3M – 3.5M Management Cost Increased cost for monitoring and managing pumped lateral system; additional pump stations, estimate 100K-300K per year. 50-year PV cost: 4.5M to 8M

ALTERNATIVE	NAME	EASE OF CONSTRUCTION	PUBLIC ACCEPTANCE	EFFECTIVENESS AND RELIABILITY	PERMITTING REQUIREMENTS	ENVIRONMENTAL EFFECTS	ESTIMATED PRELIMINARY COST ($)
5	**Adaptive Management Alternative**	• Simple o Use of multiple small low-cost/low impact individual projects, reliant on hand placed construction methods. o Permanent or temporary berms and vegetation/re-vegetation management to encourage channel formation in favorable locations. o Minor excavation to encourage flows into historical channel locations (see Alternative 1) o Use of beaver management program to remove downstream flow restrictions. o Reliance on monitoring to guide project development.	• Low to High o Depends on individual stakeholders perceptions about flooding, vegetation types, recreation, beavers – but allows for interaction and cooperation with homeowners o Could include alternative or emergency access over private property agreements for improved access to District facilities o Success dependent on long-term commitment from CTC and District and neighboring property owners	• Moderate o Presumes "natural" conditions were manageable in past and can be re-established, but alternative is somewhat experimental. Some potentially effective management actions (e.g., beaver control) might meet with resistance. o May require longer time frame to achieve desired results. o Specific actions not yet identified – requires better understanding of processes	• Low to Moderate o Requires disturbance in SEZ, but if guiding principle is management of natural processes to avoid major disturbance, could gain consensus and support from permitting agencies o Permits might be required from all of the agencies listed for Alternatives 1,2,and 3; number of permits and complexity likely reduced by lower intensity activities o Long term agreements (MOUs) might be desirable to provide adaptive management flexibility and rapid response to emergencies	• Low o Maintains or enhances functional SEZ o Relies on low-impact, but potentially labor intensive construction methods	Capital Cost 400K to 700k (50K - 150K, Year 1; 50 – 100K /year, Years 2 – 5) Management Cost Assume management activities continue at about one fourth Year 2-5 rate, estimate 15K-25K per year 50-year PV cost: 600K to 1.1M

APPENDIX B

Air Quality Modeling Results

Trout Creek

Lake Tahoe Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	15.00	User Defined Unit	15.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	72
Climate Zone	14			**Operational Year**	2015
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Estimated project area

Construction Phase - Estimated construction schedule

Off-road Equipment - Estimated construction equipment

Off-road Equipment - Estimated construction equipment

Trips and VMT - Estimated daily truck trips for fill removal (31 trips per day) and delivery of materials and equipment (2 trips per day).

Grading - Estimated acreage

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	33.00
tblConstructionPhase	PhaseEndDate	10/22/2014	9/5/2014
tblConstructionPhase	PhaseStartDate	10/16/2014	9/1/2014
tblLandUse	LotAcreage	0.00	15.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblProjectCharacteristics	OperationalYear	2014	2015
tblTripsAndVMT	HaulingTripNumber	0.00	30.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	10.00
tblTripsAndVMT	WorkerTripNumber	3.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	1.1717	11.1834	9.5080	0.0131	0.1871	0.6905	0.8776	0.0498	0.6352	0.6850	0.0000	1,347.4344	1,347.4344	0.3323	0.0000	1,354.4124
Total	**1.1717**	**11.1834**	**9.5080**	**0.0131**	**0.1871**	**0.6905**	**0.8776**	**0.0498**	**0.6352**	**0.6850**	**0.0000**	**1,347.4344**	**1,347.4344**	**0.3323**	**0.0000**	**1,354.4124**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	1.1717	11.1834	9.5080	0.0131	0.1871	0.6905	0.8776	0.0498	0.6352	0.6850	0.0000	1,347.4344	1,347.4344	0.3323	0.0000	1,354.4124
Total	**1.1717**	**11.1834**	**9.5080**	**0.0131**	**0.1871**	**0.6905**	**0.8776**	**0.0498**	**0.6352**	**0.6850**	**0.0000**	**1,347.4344**	**1,347.4344**	**0.3323**	**0.0000**	**1,354.4124**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.6000e-004	2.0000e-005	1.5800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.4800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.6000e-004**	**2.0000e-005**	**1.5800e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**	**0.0000**	**3.4800e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.6000e-004	2.0000e-005	1.5800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.4800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.6000e-004**	**2.0000e-005**	**1.5800e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**	**0.0000**	**3.4800e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Easement Site	Site Preparation	9/1/2014	10/15/2014	5	33	
2	Fill Removal	Trenching	9/1/2014	9/5/2014	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Easement Site	Tractors/Loaders/Backhoes	2	8.00	75	0.37
Fill Removal	Excavators	1	8.00	162	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Easement Site	2	10.00	0.00	30.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Fill Removal	1	10.00	0.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Easement Site - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5698	5.4628	3.7463	4.8200e-003		0.4291	0.4291		0.3948	0.3948		511.9563	511.9563	0.1513		515.1333
Total	**0.5698**	**5.4628**	**3.7463**	**4.8200e-003**	**0.0000**	**0.4291**	**0.4291**	**0.0000**	**0.3948**	**0.3948**		**511.9563**	**511.9563**	**0.1513**		**515.1333**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0326	0.3680	0.3248	6.7000e-004	0.0158	7.3700e-003	0.0232	4.3300e-003	6.7800e-003	0.0111		68.8332	68.8332	6.5000e-004		68.8469
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0657	0.0672	0.9346	1.0000e-003	0.0822	1.1000e-003	0.0833	0.0218	1.0000e-003	0.0228		87.5680	87.5680	7.1000e-003		87.7171
Total	**0.0983**	**0.4352**	**1.2594**	**1.6700e-003**	**0.0980**	**8.4700e-003**	**0.1064**	**0.0261**	**7.7800e-003**	**0.0339**		**156.4012**	**156.4012**	**7.7500e-003**		**156.5641**

3.2 Easement Site - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.5698	5.4628	3.7463	4.8200e-003		0.4291	0.4291		0.3948	0.3948	0.0000	511.9563	511.9563	0.1513		515.1333
Total	**0.5698**	**5.4628**	**3.7463**	**4.8200e-003**	**0.0000**	**0.4291**	**0.4291**	**0.0000**	**0.3948**	**0.3948**	**0.0000**	**511.9563**	**511.9563**	**0.1513**		**515.1333**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0326	0.3680	0.3248	6.7000e-004	0.0158	7.3700e-003	0.0232	4.3300e-003	6.7800e-003	0.0111		68.8332	68.8332	6.5000e-004		68.8469
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0657	0.0672	0.9346	1.0000e-003	0.0822	1.1000e-003	0.0833	0.0218	1.0000e-003	0.0228		87.5680	87.5680	7.1000e-003		87.7171
Total	**0.0983**	**0.4352**	**1.2594**	**1.6700e-003**	**0.0980**	**8.4700e-003**	**0.1064**	**0.0261**	**7.7800e-003**	**0.0339**		**156.4012**	**156.4012**	**7.7500e-003**		**156.5641**

3.3 Fill Removal - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4235	5.0563	3.4248	5.2900e-003		0.2485	0.2485		0.2286	0.2286		561.2224	561.2224	0.1659		564.7052
Total	**0.4235**	**5.0563**	**3.4248**	**5.2900e-003**		**0.2485**	**0.2485**		**0.2286**	**0.2286**		**561.2224**	**561.2224**	**0.1659**		**564.7052**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0144	0.1619	0.1429	3.0000e-004	6.9600e-003	3.2400e-003	0.0102	1.9000e-003	2.9800e-003	4.8900e-003		30.2866	30.2866	2.9000e-004		30.2927
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0657	0.0672	0.9346	1.0000e-003	0.0822	1.1000e-003	0.0833	0.0218	1.0000e-003	0.0228		87.5680	87.5680	7.1000e-003		87.7171
Total	**0.0801**	**0.2291**	**1.0775**	**1.3000e-003**	**0.0891**	**4.3400e-003**	**0.0935**	**0.0237**	**3.9800e-003**	**0.0277**		**117.8546**	**117.8546**	**7.3900e-003**		**118.0098**

3.3 Fill Removal - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4235	5.0563	3.4248	5.2900e-003		0.2485	0.2485		0.2286	0.2286	0.0000	561.2224	561.2224	0.1659		564.7052
Total	**0.4235**	**5.0563**	**3.4248**	**5.2900e-003**		**0.2485**	**0.2485**		**0.2286**	**0.2286**	**0.0000**	**561.2224**	**561.2224**	**0.1659**		**564.7052**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0144	0.1619	0.1429	3.0000e-004	6.9600e-003	3.2400e-003	0.0102	1.9000e-003	2.9800e-003	4.8900e-003		30.2866	30.2866	2.9000e-004		30.2927
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0657	0.0672	0.9346	1.0000e-003	0.0822	1.1000e-003	0.0833	0.0218	1.0000e-003	0.0228		87.5680	87.5680	7.1000e-003		87.7171
Total	**0.0801**	**0.2291**	**1.0775**	**1.3000e-003**	**0.0891**	**4.3400e-003**	**0.0935**	**0.0237**	**3.9800e-003**	**0.0277**		**117.8546**	**117.8546**	**7.3900e-003**		**118.0098**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.320870	0.094274	0.238571	0.206098	0.075442	0.008797	0.016964	0.018847	0.004948	0.001370	0.008840	0.000682	0.004297

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.6000e-004	2.0000e-005	1.5800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.4800e-003
Unmitigated	1.6000e-004	2.0000e-005	1.5800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.4800e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.6000e-004	2.0000e-005	1.5800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.4800e-003
Total	**1.6000e-004**	**2.0000e-005**	**1.5800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**		**3.4800e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.6000e-004	2.0000e-005	1.5800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.4800e-003
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6000e-004**	**2.0000e-005**	**1.5800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**		**3.4800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Trout Creek

Lake Tahoe Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	15.00	User Defined Unit	15.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	72
Climate Zone	14			**Operational Year**	2015
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Estimated project area

Construction Phase - Estimated construction schedule

Off-road Equipment - Estimated construction equipment

Off-road Equipment - Estimated construction equipment

Trips and VMT - Estimated daily truck trips for fill removal (31 trips per day) and delivery of materials and equipment (2 trips per day).

Grading - Estimated acreage

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	33.00
tblConstructionPhase	PhaseEndDate	10/22/2014	9/5/2014
tblConstructionPhase	PhaseStartDate	10/16/2014	9/1/2014
tblLandUse	LotAcreage	0.00	15.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblProjectCharacteristics	OperationalYear	2014	2015
tblTripsAndVMT	HaulingTripNumber	0.00	30.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	5.00	10.00
tblTripsAndVMT	WorkerTripNumber	3.00	10.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.0125	0.1108	0.0979	1.2000e-004	1.7600e-003	7.8500e-003	9.6100e-003	4.7000e-004	7.2200e-003	7.7000e-003	0.0000	11.5469	11.5469	2.7700e-003	0.0000	11.6051
Total	**0.0125**	**0.1108**	**0.0979**	**1.2000e-004**	**1.7600e-003**	**7.8500e-003**	**9.6100e-003**	**4.7000e-004**	**7.2200e-003**	**7.7000e-003**	**0.0000**	**11.5469**	**11.5469**	**2.7700e-003**	**0.0000**	**11.6051**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.0125	0.1108	0.0979	1.2000e-004	1.7600e-003	7.8500e-003	9.6100e-003	4.7000e-004	7.2200e-003	7.7000e-003	0.0000	11.5469	11.5469	2.7700e-003	0.0000	11.6051
Total	**0.0125**	**0.1108**	**0.0979**	**1.2000e-004**	**1.7600e-003**	**7.8500e-003**	**9.6100e-003**	**4.7000e-004**	**7.2200e-003**	**7.7000e-003**	**0.0000**	**11.5469**	**11.5469**	**2.7700e-003**	**0.0000**	**11.6051**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0000e-005	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0000e-005**	**0.0000**	**1.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0000e-005	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.8000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0000e-005**	**0.0000**	**1.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Easement Site	Site Preparation	9/1/2014	10/15/2014	5	33	
2	Fill Removal	Trenching	9/1/2014	9/5/2014	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Easement Site	Tractors/Loaders/Backhoes	2	8.00	75	0.37
Fill Removal	Excavators	1	8.00	162	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Easement Site	2	10.00	0.00	30.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Fill Removal	1	10.00	0.00	2.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Easement Site - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.4000e-003	0.0901	0.0618	8.0000e-005		7.0800e-003	7.0800e-003		6.5100e-003	6.5100e-003	0.0000	7.6632	7.6632	2.2600e-003	0.0000	7.7108
Total	**9.4000e-003**	**0.0901**	**0.0618**	**8.0000e-005**	**0.0000**	**7.0800e-003**	**7.0800e-003**	**0.0000**	**6.5100e-003**	**6.5100e-003**	**0.0000**	**7.6632**	**7.6632**	**2.2600e-003**	**0.0000**	**7.7108**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.2000e-004	6.1900e-003	6.7100e-003	1.0000e-005	2.5000e-004	1.2000e-004	3.7000e-004	7.0000e-005	1.1000e-004	1.8000e-004	0.0000	1.0293	1.0293	1.0000e-005	0.0000	1.0295
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-003	1.2600e-003	0.0177	2.0000e-005	1.3000e-003	2.0000e-005	1.3200e-003	3.5000e-004	2.0000e-005	3.6000e-004	0.0000	1.3138	1.3138	1.1000e-004	0.0000	1.3161
Total	**1.8200e-003**	**7.4500e-003**	**0.0244**	**3.0000e-005**	**1.5500e-003**	**1.4000e-004**	**1.6900e-003**	**4.2000e-004**	**1.3000e-004**	**5.4000e-004**	**0.0000**	**2.3431**	**2.3431**	**1.2000e-004**	**0.0000**	**2.3456**

3.2 Easement Site - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.4000e-003	0.0901	0.0618	8.0000e-005		7.0800e-003	7.0800e-003		6.5100e-003	6.5100e-003	0.0000	7.6632	7.6632	2.2600e-003	0.0000	7.7108
Total	**9.4000e-003**	**0.0901**	**0.0618**	**8.0000e-005**	**0.0000**	**7.0800e-003**	**7.0800e-003**	**0.0000**	**6.5100e-003**	**6.5100e-003**	**0.0000**	**7.6632**	**7.6632**	**2.2600e-003**	**0.0000**	**7.7108**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.2000e-004	6.1900e-003	6.7100e-003	1.0000e-005	2.5000e-004	1.2000e-004	3.7000e-004	7.0000e-005	1.1000e-004	1.8000e-004	0.0000	1.0293	1.0293	1.0000e-005	0.0000	1.0295
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-003	1.2600e-003	0.0177	2.0000e-005	1.3000e-003	2.0000e-005	1.3200e-003	3.5000e-004	2.0000e-005	3.6000e-004	0.0000	1.3138	1.3138	1.1000e-004	0.0000	1.3161
Total	**1.8200e-003**	**7.4500e-003**	**0.0244**	**3.0000e-005**	**1.5500e-003**	**1.4000e-004**	**1.6900e-003**	**4.2000e-004**	**1.3000e-004**	**5.4000e-004**	**0.0000**	**2.3431**	**2.3431**	**1.2000e-004**	**0.0000**	**2.3456**

3.3 Fill Removal - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0600e-003	0.0126	8.5600e-003	1.0000e-005		6.2000e-004	6.2000e-004		5.7000e-004	5.7000e-004	0.0000	1.2728	1.2728	3.8000e-004	0.0000	1.2807
Total	**1.0600e-003**	**0.0126**	**8.5600e-003**	**1.0000e-005**		**6.2000e-004**	**6.2000e-004**		**5.7000e-004**	**5.7000e-004**	**0.0000**	**1.2728**	**1.2728**	**3.8000e-004**	**0.0000**	**1.2807**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	4.1000e-004	4.5000e-004	0.0000	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	1.0000e-005	1.0000e-005	0.0000	0.0686	0.0686	0.0000	0.0000	0.0686
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.9000e-004	2.6800e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1991	0.1991	2.0000e-005	0.0000	0.1994
Total	**2.2000e-004**	**6.0000e-004**	**3.1300e-003**	**0.0000**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**5.0000e-005**	**1.0000e-005**	**6.0000e-005**	**0.0000**	**0.2677**	**0.2677**	**2.0000e-005**	**0.0000**	**0.2680**

3.3 Fill Removal - 2014

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0600e-003	0.0126	8.5600e-003	1.0000e-005		6.2000e-004	6.2000e-004		5.7000e-004	5.7000e-004	0.0000	1.2728	1.2728	3.8000e-004	0.0000	1.2807
Total	**1.0600e-003**	**0.0126**	**8.5600e-003**	**1.0000e-005**		**6.2000e-004**	**6.2000e-004**		**5.7000e-004**	**5.7000e-004**	**0.0000**	**1.2728**	**1.2728**	**3.8000e-004**	**0.0000**	**1.2807**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-005	4.1000e-004	4.5000e-004	0.0000	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	1.0000e-005	1.0000e-005	0.0000	0.0686	0.0686	0.0000	0.0000	0.0686
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	1.9000e-004	2.6800e-003	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1991	0.1991	2.0000e-005	0.0000	0.1994
Total	**2.2000e-004**	**6.0000e-004**	**3.1300e-003**	**0.0000**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**5.0000e-005**	**1.0000e-005**	**6.0000e-005**	**0.0000**	**0.2677**	**0.2677**	**2.0000e-005**	**0.0000**	**0.2680**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.320870	0.094274	0.238571	0.206098	0.075442	0.008797	0.016964	0.018847	0.004948	0.001370	0.008840	0.000682	0.004297

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0000e-005	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.8000e-004
Unmitigated	1.0000e-005	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.8000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.8000e-004
Total	**1.0000e-005**	**0.0000**	**1.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.8000e-004
Total	**1.0000e-005**	**0.0000**	**1.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**0.0000**	**2.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/ Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/ Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

APPENDIX C

Assessor Parcel Information for the Study Area

Assesor Parcel Information for the Study Area

APN	STREET NAME	OWNER NAME
02-620-008		AL TAHOE CO
02-612-104	EL DORADO AVE	BENEDETTI DONALD J TR
02-614-101	EL DORADO AVE	BERBERICH JEFFREY
02-612-219	EL DORADO AVE	BRAND LEONARD G TR
02-614-117	EL DORADO AVE	BRAZIL LAURELLE DAVIS
02-612-202	EL DORADO AVE	CEMBELLIN LARRY P & J TR
02-612-113	EL DORADO AVE	FEDOR MICHAEL S
02-612-207	EL DORADO AVE	FLYNN JOSEPH M
02-612-234	EL DORADO AVE	GRIFFITHS GARY TR
02-612-215	EL DORADO AVE	HAROOTUNIAN GLORIA
02-612-235	EL DORADO AVE	HAROOTUNIAN GLORIA JEAN TR
02-614-105	EL DORADO AVE	HUARD PAUL R TR
02-612-241	EL DORADO AVE	MCDONALD THOMAS NILES
02-612-103	EL DORADO AVE	MCINTYRE MONIQUE A
02-612-231	EL DORADO AVE	MYERS STEPHEN D TR
02-612-233	EL DORADO AVE	MYERS STEPHEN T TR
02-612-111	EL DORADO AVE	NELSON LISA
02-612-240	EL DORADO AVE	POSELEY GREGORY J TR
02-612-112	EL DORADO AVE	RING REXANNE C
02-612-218	EL DORADO AVE	SENIOR ED JR
02-609-104	ARGONAUT AVE	SMITH KENNETH C TR
02-612-107	BELLEVUE AVE	SOUTH TAHOE PUBLIC UTIL DT
02-612-232	EL DORADO AVE	SOWERS ROBERT AYER
02-612-210	EL DORADO AVE	STATE OF CALIFORNIA
02-612-212	EL DORADO AVE	STATE OF CALIFORNIA
02-614-106	EL DORADO AVE	STATE OF CALIFORNIA
02-620-011		STATE OF CALIFORNIA
02-221-031		STATE OF CALIFORNIA
02-612-213	EL DORADO AVE	STATE OF CALIFORNIA
02-612-208	EL DORADO AVE	STATE OF CALIFORNIA
02-612-211	EL DORADO AVE	STATE OF CALIFORNIA
02-612-209	EL DORADO AVE	STATE OF CALIFORNIA
02-614-116	EL DORADO AVE	STATE OF CALIFORNIA
02-612-214	EL DORADO AVE	STATE OF CALIFORNIA
02-221-037		STATE OF CALIFORNIA
02-609-907	EL DORADO AVE	UNITED STATES OF AMERICA
02-612-109	EL DORADO AVE	WALLACE DOUG
02-612-220	EL DORADO AVE	WARLOW JAMES RICHARD
02-612-110	EL DORADO AVE	WASHICK TIMOTHY J
02-612-221	EL DORADO AVE	ZARO PAUL