NOTICE OF AVAILABILITY AND PUBLIC COMMENT PERIOD

FOR THE

GREENHORN SEDIMENT REMOVAL AT ROLLINS RESERVOIR PROJECT

DRAFT ENVIRONMENTAL IMPACT REPORT

Nevada Irrigation District (NID) is the Lead Agency for the Proposed Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project). The Draft Environmental Impact Report (Draft EIR) is published and open for public review and comment from April 16, 2019 through May 16, 2019.

Project Objectives:

The Greenhorn Sediment Removal Project objectives are as follows:

- Maintain the water storage capacity in the Greenhorn Arm of Rollins Reservoir in perpetuity by conducting annual sediment maintenance activities to remove accumulated sediments which could enter the main reservoir during high flows.
- To the extent possible, make progress in restoration of the historic water storage capacity in the Greenhorn Arm of Rollins Reservoir.
- Prevent further migration of suspended sediment from the Greenhorn Arm of Rollins Reservoir into the main body of the reservoir.
- Restore recreational opportunities in the Greenhorn Arm of Rollins Reservoir through the removal of accumulated sediment thereby increasing water depth and improving deep-water aquatic habitat and boating access.
- Economically remove and dispose of the sediment removed from the Greenhorn Arm of Rollins Reservoir.

Brief Project Description:

The Project includes the annual removal of sediment from the Greenhorn Arm of Rollins Reservoir. Due to the annual migration of aggregate from Greenhorn Creek into the Project Site, the Project will be ongoing with the ultimate goal of maintaining water storage capacity in Rollins Reservoir. Ultimately, NID would like to restore historic water storage capacity in Rollins Reservoir, returning the Project Site to pre-1965 conditions (following construction of Rollins Reservoir). However, with the extent of sediment build-up and the annual migration of aggregate to the Greenhorn Arm of Rollins Reservoir, it is unlikely that NID will be able to fully restore historic water storage capacity. Three primary Project components will be implemented annually: (1) notification/mobilization; (2) sediment removal; and (3) demobilization. The Project site encompasses all areas necessary for implementation of the Project. This includes the access road, staging areas, haul roads, stockpile area, and sediment removal area (i.e., Work Area). In addition, the Project includes implementation of a water quality and methylmercury monitoring program.

Project Location:

The Project is in unincorporated Nevada County, California, approximately 6 miles north of the City of Colfax on the Greenhorn Arm of Rollins Reservoir. Hansen Bros. Enterprises Greenhorn Gravel Plant is located directly north of the Project Site. The Project is located within Sections 2, 3, 10, and 11 of

Township 15N and Range 9E on the Chicago Park 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle. The Project Site is located within the Federal Energy Regulatory Commission (FERC) Project boundary for Nevada Irrigation District's (NID) Yuba-Bear Hydroelectric Project (FERC Project No. 2266). Land within the Project Site boundary is primarily owned by NID.

Project Issues Discussed in the Document:

Project issues discussed in the document are provided in the table below.

Aesthetics	Land Use
Air Quality	Noise
Biological Resources	Recreation
Cultural Resources	Transportation
Energy	Public Utilities and Services
Greenhouse Gas Emissions	Wildfire
Hazards and Hazardous Materials	Cumulative Effects
Hydrology and Water Quality	

Significant unavoidable environmental effects from the Project are anticipated for noise.

Public Meeting:

NID will conduct a public meeting on the Draft EIR for the Project. Meeting information is provided below.

May 8, 2019
Time: 6:00 pm – 8:00 pm
Nevada Irrigation District
1036 West Main Street
Grass Valley, California 95945

The meeting will begin with a presentation at 6:00 pm followed by a question and answer period.

Public Review:

The NID Greenhorn Sediment Removal at Rollins Reservoir Project Draft EIR is published and open for review and comment from April16, 2019 through May 16, 2019. The Draft EIR is available for public review on the NID website (www.nidwater.com) and at the following locations:

Nevada Irrigation District
1036 West Main Street
Grass Valley, California 95945

Madelyn Helling Library
980 Helling Way
Nevada City, California 95959

Written comments must be received by 5:00 p.m. on May 16, 2019.

The NID encourages all commenters to submit their comments on the Draft EIR in writing. All comments or questions regarding the Draft EIR should be addressed to:

Greenhorn Sediment Removal at Rollins Reservoir
c/o Kris Stepanian
Nevada Irrigation District
1036 West Main Street
Grass Valley, California 95945
E-mail: stepaniank@nidwater.com

DRAFT

Environmental Impact Report for the Greenhorn Sediment Removal at Rollins Reservoir Project

State Clearinghouse No. 2017052054

April 2019

Prepared for:

Nevada Irrigation District

Prepared by:

Janelle Nolan & associates

With assistance from:

Cardno®

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Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter
AADT	annual average daily traffic
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ACHP	Advisory Council on Historic Preservation
ADA	American Disabilities Act
ADT	average daily traffic
AF	acre-feet
AG	Agriculture
APE	Area of Potential Effect
ATCM	Airborne Toxic Control Measure
ATLS	Advisory Tissue Levels
BAAP	Breeding Area Avoidance Plan
BAC	Bollard Acoustical Consultants Inc.
BACT	best available control technology
BAGEPA	Bald and Golden Eagle Protection Act
bhp	brake horsepower
BLM	Bureau of Land Management
BLM-S	Considered a Sensitive Species by the BLM
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAP	Corrective Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CAT	Climate Action Team

CCAR	California Climate Action Registry
CCR	California Code of Regulations
CDFG	California Department of Fish and Game (now known as CDFW)
CDFW	California Department of Fish and Wildlife (formerly known as CDFG)
CDPR	California Department of Recreation
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CNDDB	California Natural Diversity Database
CNEL	community noise level equivalent
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2E	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CSC	Considered a Species of Special Concern by the CDFW
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
CWWP	Community Wildfire Protection Plan
CY	cubic yards
dB	decibel
dBA	A-weighted decibel
DEH	Department of Environmental Health
DO	dissolved oxygen
DPM	diesel particulate matter
DSOD	Division of Safety of Dams

ECOS	Environmental Conservation Online System
EIA	U.S. Energy Information Administration
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESAL	equivalent single axle loads
EST	Estate
FCT	Federal Candidate Species
FE	Federally Endangered
FEMA	Federal Emergency Management
FERC	Federal Energy Regulatory Commission
FHSZ	Fire Hazard Severity Zone
FHWA	Federal Highway Administration
FP	Fully Protected under the California Fish and Wildlife Code
FPA	Federal Power Act
FPT	Federally Proposed Threatened
FT	Federally Threatened
FTA	Federal Transit Administration, Office of Planning and Environment
FYLF	foothill yellow-legged frogs
GHG	Greenhouse Gas
GIS	Geographic Information System
GVWR	gross vehicle weight rating
GWP	global warming potential
HCP	Habitat Conservation Plan
HFC	hydrofluorocarbon
HMBP	Hazardous Materials Business Plan
HMP	Hydrologic Management Plan
HP	horsepower
HPMP	Historic Properties Management Plan
HRFA	Healthy Forest Restoration Act
I	Interstate
IGP	Industrial General Permit

IPaC	Information for Planning and Conservation
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
L_{dn}	average day-night sound level
L_{eq}	equivalent sound level
LHMP	Local Hazard Mitigation Plan
L_{max}	maximum sound level
LOS	level of service
LSAA	Lake or Streambed Alteration Agreement
LTAM	long-term acoustic monitoring
LUDC	Land Use & Development Codes
MBTA	Migratory Bird Treaty Act
MCAB	Mountain Counties Air Basin
MCV	Manual for California Vegetation
MLD	Most Likely Descendent
MM	mitigation measures
MMT	million metric tons
mpg	miles per gallon
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plans
NCPD	Nevada County Planning Department
NCTC	Nevada County Transportation Commission
NDIR	non-dispersive infrared photometry
NF_3	nitrogen trifluoride
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NID	Nevada Irrigation District
NO	nitric oxide
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration

NOP	Notice of Preparation
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NSAQMD	Northern Sierra Air Quality Management District
NTU	Nephelometric Turbidity Unit
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OHWM	Ordinary High Water Mark
OPR	California Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PCAPCD	Placer County Air Pollution Control District
PCTPA	Placer County Transportation Planning Agency
PERP	Portable Equipment Registration Program
PFC	perfluorocarbon
PG&E	Pacific Gas and Electric Company
PM	particulate matter
PNF	Plumas National Forest
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
PRISM	Parameter-elevation Regression on Independent Slopes Model
Project Site	108-acre area encompassing all Project work, staging and stockpile areas, sediment barrier installation area, and project haul roads (refer to Map 2-2)
Proposed Project	Greenhorn Sediment Removal at Rollins Reservoir Project
PVC	polyvinyl chloride
PWC	personal water craft
QSD	Qualified SWPPP Developer
QSP	Qualified SWPPP Practitioner
RA	Residential Agricultural

RCNM	Roadway Construction Noise Model
ROG	reactive organic gases
RPW	relatively permanent waters
RTP	Regional Transportation Plan
RUR	Rural
RWQCB	Regional Water Quality Control Boards
S1	NatureServe Element Ranking of Critically Imperiled in the State
S1S2	NatureServe Element Ranking Between Critically Imperiled and Imperiled in the State
S2S3	NatureServe Element Ranking Between Imperiled and Vulnerable in the State
SA	Staging Areas
SAA	Streambed Alteration Agreement
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SCE	State Candidate species listed as endangered
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SCS	Sustainable Communities Strategy
SCT	State Candidate Threatened
SE	California Endangered
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIP	State Implementation Plans
SMARA	Surface Mining and Reclamation Act
SMUD	Sacramento Municipal Utility District
SO_2	sulfur dioxide
SO_4	sulfates
SO_x	sulfur oxide
SPCCP	Spill Prevention Control and Countermeasure Plan
SR	State Route
SRA	State Responsibility Area
ST	State Threatened

State Water Board	State Water Resources Control Board
SVAB	Sacramento Valley Air Basin
SWPPP	Stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCCR	Transportation Corridor Concept Report
TCP	Traditional Cultural Property
TDS	total dissolved solids
THPO	Tribal Historic Preservation Officer
TNF	Tahoe National Forest
TSS	total suspended solids
UAIC	United Auburn Indian Community
UCMP	University of California Museum of Paleontology
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VAOT	vehicles at one time
VES	Visual Encounter Surveys
VMT	vehicle miles traveled
VOC	volatile organic compound
VRM	visual resource management
WA	Water Area
WDR	Waste Discharge Requirements
WEAP	Worker Environmental Training Program
WL	California Watch List
Work Area	Sediment removal area from Hansen Bros. Enterprise Lease Boundary to the sediment barrier (refer to Map 2-2)
WOS	Waters of California
WOUS	Waters of the U.S.

WPLT	Western Pluvial Lakes Tradition
WPT	western pond turtle
WQMP	Water Quality Monitoring Plan
WSE	water surface elevation
WUI	wildland-urban interface

CHAPTER 1
INTRODUCTION

1.1 PROJECT BACKGROUND

Following construction of the Rollins Reservoir Dam in 1965, sediments have accumulated in Rollins Reservoir. An estimated 10,000 acre-feet of storage capacity (17%) has been lost in Rollins Reservoir, which had a capacity of 65,998 acre-feet upon its completion in 1965.

Sediment accumulation in the Greenhorn Arm of Rollins Reservoir can occur very quickly depending on water year type and flows from Greenhorn Creek. In July 2014 sediments extended in the Greenhorn Arm approximately 9,300 feet from the intersection of You Bet Bridge and the existing access/haul road. In late 2016, sediment build-up extended into the main body of the reservoir (extending an additional 980 feet).

In October 2013, Nevada Irrigation District (NID) entered into an agreement with Hansen Bros. Enterprises to remove sediment from Greenhorn Creek during record low water levels. During the work, it was discovered that foothill yellow-legged frogs (FYLF) were present along the haul route in the Greenhorn Arm of Rollins Reservoir. Accordingly, work was halted until NID and Hansen Bros. Enterprises could prepare a Corrective Action Plan (CAP) to protect the frogs. The CAP was completed at the end of November 2013; however, no additional sediment removal has occurred and sediment has continued to be deposited in the Greenhorn Arm and subsequently transported into the reservoir during high-flow events.

The Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project) includes the annual removal of sediment from the Greenhorn Arm of Rollins Reservoir. Due to the annual migration of aggregate from Greenhorn Creek into the Project Site, the Project will be ongoing with the ultimate goal of returning the Project Site to pre-1965 conditions (following construction of Rollins Reservoir), and then maintaining this condition in perpetuity. A detailed Project description is included in Chapter 2.

The Project Site is located within the Federal Energy Regulatory Commission (FERC) Project boundary for NID's Yuba-Bear Hydroelectric Project (FERC Project No. 2266). The Project is considered maintenance of an existing FERC facility that is authorized by FERC under the existing license.

EXECUTIVE SUMMARY

E.1 INTRODUCTION

The Nevada Irrigation District (NID) has prepared this Draft Environmental Impact Report (EIR) to inform the general public, the local community, responsible agencies, trustee agencies, other interested public agencies, and NID's decision-making body (Board of Directors) regarding the potential significant environmental effects resulting from implementation of the Greenhorn Creek Sediment Removal at Rollins Reservoir Project (Proposed Project), and to identify measures or alternatives that would reduce or avoid those significant effects. The purpose of the Proposed Project is to remove and dispose of sediments that have accumulated in the Greenhorn Arm of Rollins Reservoir to maintain and/or restore the reservoir's water storage capacity, prevent further migration of suspended sediment, and restore recreational opportunities. This EIR was prepared in compliance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.) and the CEQA Guidelines (14 CCR 15000 et seq.). This EIR is a "Project EIR," pursuant to CEQA Guidelines, Section 15161. A Notice of Preparation (NOP) was circulated for public and agency review from May 19 through June 19, 2017. The NOP and comments received during the scoping period are included as Appendix A of the EIR.

This Draft EIR is being circulated for public review and comment for a period of 30 days. During this period, the general public, organizations, and public agencies can submit comments to the lead agency on the accuracy and completeness of the Draft EIR. Release of this Draft EIR marks the beginning of a 30-day public review period pursuant to CEQA Guidelines, Section 15105. The 30-day public review period for the Draft EIR will begin on the day the Notice of Availability is published. The public can review the Draft EIR at the following address during normal business hours or on the NID website at http://www.nidwater.com.

Nevada Irrigation District
1036 West Main Street
Grass Valley, California 95945

Madelyn Helling Library
980 Helling Way
Nevada City, California 95959

The NID encourages all commenters to submit their comments on the Draft EIR in writing. All comments or questions regarding the Draft EIR should be addressed to:

Greenhorn Sediment Removal at Rollins Reservoir
c/o Kris Stepanian
Nevada Irrigation District
1036 West Main Street
Grass Valley, California 95945
Phone: 530.273.6185
E-mail: stepaniank@nidwater.com

E.2 BACKGROUND

Following construction of the Rollins Reservoir Dam in 1965, sediments have accumulated in Rollins Reservoir. An estimated 10,000 acre-feet (AF) of storage capacity (17%) has been lost in Rollins Reservoir, which had a capacity of 65,998 AF upon its completion in 1965.

Sediment accumulation in the Greenhorn Arm of Rollins Reservoir can occur very quickly depending on water year type and flows from Greenhorn Creek. In July 2014 sediments extended in the Greenhorn Arm approximately 9,300 feet from the intersection of You Bet Bridge and the existing access/haul road. In late 2016, sediment build-up extended into the main body of the reservoir (extending an additional 980 feet).

Between You Bet Road and the Hansen Bros. Enterprises Lease Boundary, Hansen Bros. Enterprises operates the Greenhorn Gravel Extraction Project. This project consists of harvesting aggregate material from the streambed of Greenhorn Creek and processing the material into marketable products. Aggregate mining on the deposit began in 1878 and has been continuously mined since that time. Aggregate mining of the site in its current capacity began in 1971 when the facility was owned by Terex Corporation. Hansen Bros. Enterprises acquired the property and the operation in 1973, has improved the facility throughout their time of ownership, and expanded the operation in 1994.

In October 2013, NID entered into an agreement with Hansen Bros. Enterprises to remove sediment from Greenhorn Creek during record low water levels. During the work, it was discovered that foothill yellow-legged frogs (FYLF) were present along the haul route in the Greenhorn Arm of Rollins Reservoir. Accordingly, work was halted until NID and Hansen Bros. Enterprises could prepare a Corrective Action Plan (CAP) to protect the frogs. The CAP was completed at the end of November 2013; however, no additional sediment removal has occurred and sediment has continued to be deposited in the Greenhorn Arm and subsequently transported into the reservoir during high-flow events.

E.3 PROJECT LOCATION

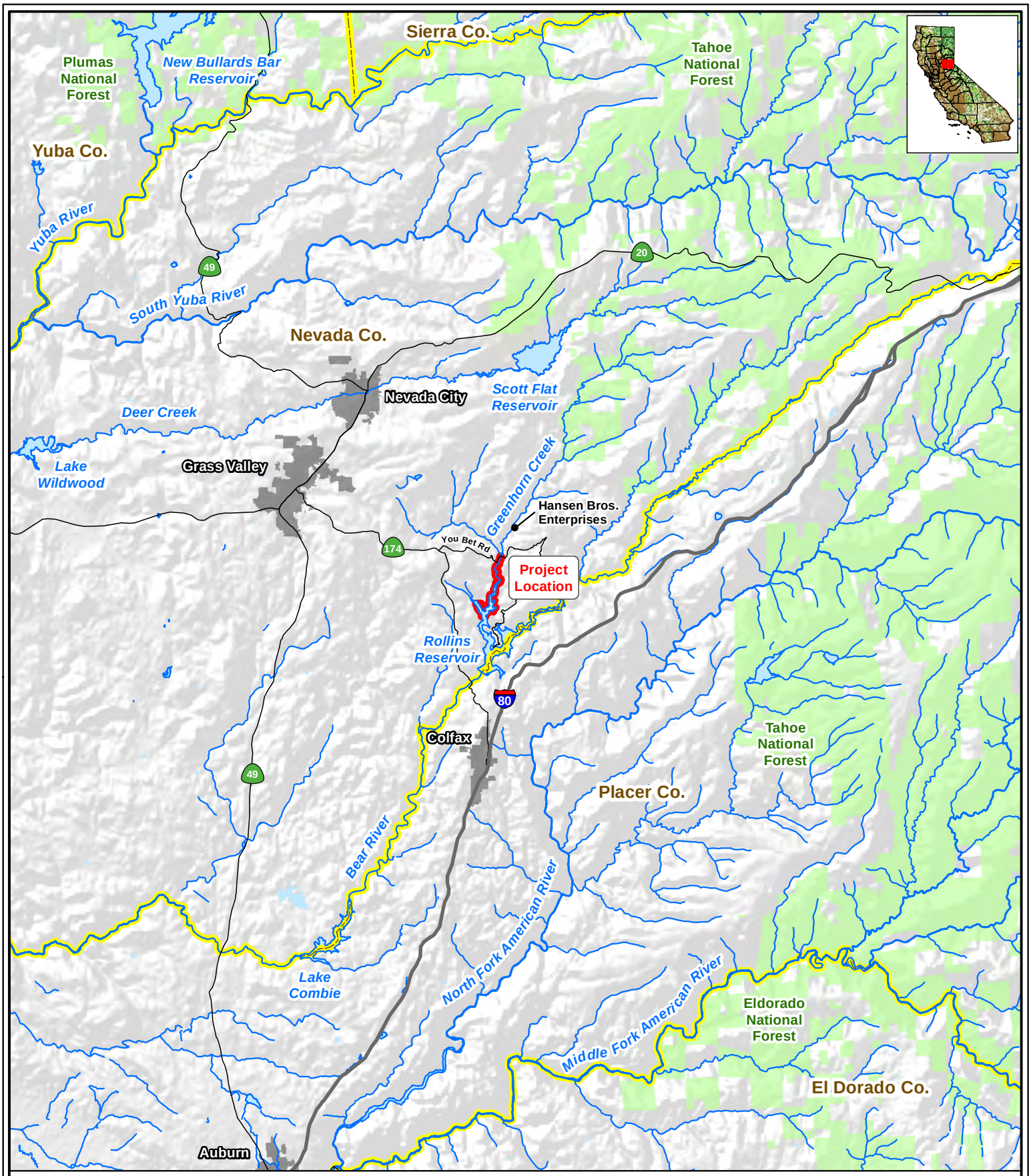
The 108-acre Project Site is located in unincorporated Nevada County, California, approximately 6 miles north of the City of Colfax on the Greenhorn Arm of Rollins Reservoir, approximately latitude 39°11’14.52” N and longitude 120°56’30.77” W. The Project is located within Sections 2, 3, 10, and 11 of Township 15N and Range 9E on the Chicago Park 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle.

The Project Site is located within the Federal Energy Regulatory Commission (FERC) Project boundary for Nevada Irrigation District’s (NID) Yuba-Bear Hydroelectric Project (FERC Project No. 2266) (Map ES-1).

E.4 PROJECT OVERVIEW

The Project includes the annual removal of sediment from the Greenhorn Arm of Rollins Reservoir. Due to the annual migration of aggregate from Greenhorn Creek into the Project Site, the Project will be ongoing with the ultimate goal of maintaining water storage capacity in Rollins Reservoir. Ultimately, NID would like to restore historic water storage capacity in Rollins Reservoir, returning the Project Site to pre-1965 conditions (following construction of Rollins Reservoir). However, with the extent of sediment build-up and the annual migration of aggregate to the Greenhorn Arm of Rollins Reservoir, it is unlikely that NID will be able to fully restore historic water storage capacity. Three primary Project components will be implemented annually: (1) notification/mobilization; (2) sediment removal; and (3) demobilization.

1. Notification/Mobilization
    a. Notify public of Proposed Project and Work Area restrictions.
    b. Transport equipment and material to staging areas.
    c. Establish Work Area boundary.
    d. Initiate the Water Quality Monitoring Plan (WQMP), which requires NID to document: (1) pre-Project conditions; (2) conditions during Project implementation, including upstream, within, and downstream of the Work Area; and (3) allow for management actions to rapidly respond to any water quality issues.
2. Sediment Removal
    a. Install a sediment barrier, consisting of interlocking steel sheet piles, from a barge to prevent further migration of sediment into Rollins Reservoir. The location of the sediment barrier may change as sediment is removed over time, and the barrier would eventually move from the main body of the reservoir into the Greenhorn Arm.



Projection: UTM Zone 10
Datum: NAD 83

0 2.5 5 Miles

USGS 7.5' Quads: Chicago Park, CA T 15N, R 09E, Sections 2-3, 10-11

Project Boundary
County Boundary
City

Cardno

Greenhorn Sediment Removal at Rollins Reservoir Project

Map ES-1

Project Vicinity

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b. Re-establish access/haul road to the Work Area, including installation of bridges/culverts to allow access across Greenhorn Creek (multiple crossing may be necessary because the creek meanders through the Work Area).

c. Channelize the creek within the inundation zone of Rollins Reservoir away from the designated sediment removal area by creating a long berm and channel on one side of the Greenhorn Arm to re-route the creek (placement of the berm and channelization of the stream may change annually depending on previous sediment removal activities completed and the extent of "new" sediment that has entered the reservoir arm during high flows).

d. A valve assembly and aeration system will be installed in the existing creek bed upstream of the excavation area and will connect to the dewatering pipes/channels to allow for controlled release of water saturated with oxygen to continually flush the dewatering pipes/channels and reduce the potential for methylation of mercury. This will also reduce the potential for development of an anaerobic environment.

e. Once the creek is re-routed, install a corrugated pipe or excavate a dewatering channel parallel to the original stream channel through the berm to collect and direct subsurface water into the channelized creek bed.

f. Install dewatering pipes or excavate dewatering channels in the designated sediment removal area, parallel to the berm and running the extent of the Work Area, to facilitate draining/drying of the sediments necessary for removal and to reduce the potential for methylation of mercury. A dewatering pipe may also be placed within the dry creek channel, or the channel may be backfilled.

g. Conduct sediment removal activities by skimming dry sediment, above the water table, using scrapers, excavators, and/or front end loaders.

h. Transport material to stockpile area, and conduct soil sampling and analysis every 2,000 CY. Process sediment through various sized mesh screens to remove debris and sort. The sorted material will be loaded into dump trucks and either transported to an approved off-site processing center for disposal (fine sediment), or temporarily stockpiled at the site (larger aggregate) for commercial sale and/or use in a local mine reclamation project.

3. Demobilization

a. Remove equipment and material from the Work Area at the end of each work season, typically in November.

E.4.1 Approvals Required

NID leases a large portion of the Greenhorn Arm of Rollins Reservoir to Hansen Bros. Enterprises, who currently have mining rights to the leased property under the Amended Surface Mining and Reclamation Plan for Greenhorn Creek Harvesting and Material Processing (California Mine ID No. 91-29-0006; Reclamation Plan No. RP93-001; Use Permit No. U82-20 and U93-063; Amended Reclamation Plan No. RP15-001; and Amended Use Permit No. U15-008). The activities of Hansen Bros. Enterprises are permitted activities that are not part of NID's Greenhorn Sediment Removal Project. The following identifies permits that need to be acquired by NID specific to the Greenhorn Sediment Removal Project.

The Greenhorn Sediment Removal at Rollins Reservoir Project is a reservoir maintenance project. The Project is located within the FERC Project boundary and is considered maintenance of an existing FERC facility that is authorized by FERC under the existing license. As such, NID will seek a Special Exemption under the Surface Mining and Reclamation Act (SMARA) through the Nevada County Planning Department. NID will specifically request that Nevada County approve an exemption under provisions provided by SMARA, to remove sediment from within the original 1965 limits of the Greenhorn Arm of Rollins Reservoir. NID will file the request for exemption pursuant to California Code of Regulations, Title 14, Division 2, Chapter 8, Article 1, Section 3505, Special Provisions, paragraph (a)(2).

It is anticipated that this EIR will be used by responsible agencies that may have jurisdiction over elements of the Project to process other associated permits necessary for implementation of the Project. State and local agencies that may have jurisdiction over the Proposed Project include the following:

- **U.S. Army Corps of Engineers (USACE)**. Section 404 Clean Water Act Permit for any activity within the waterway that would be considered "fill".
- **State Water Resources Control Board (State Water Board)/ RWQCB**. Section 401 Clean Water Act Water Quality Certification.
- **State Water Board/RWQCB**. Section 402 Clean Water Act National Pollutant Discharge Elimination System (NPDES) and Stormwater Pollution Prevention Plan.
- **CDFW**. Section 1600 Lake or Streambed Alteration Agreement.
- **Nevada County**. SMARA exemption, Hazardous Waste Business Plan, and/or Spill Prevention and Control Plan and encroachment permit for use of the County Right-of-Way at SA-1.

In addition, NID may also be required to notify or obtain authorizations from federal agencies with jurisdiction over facilities or who own lands within the Project Site.

- Notification to the FERC that sediment management would be implemented within the Greenhorn Arm of Rollins Reservoir (facility under FERC jurisdiction).
- Notification to BLM that sediment management would occur on BLM lands within the FERC Project Boundary of Rollins Reservoir.

E.5 PROJECT OBJECTIVES

The Greenhorn Sediment Removal Project objectives are as follows:

- Maintain the water storage capacity in the Greenhorn Arm of Rollins Reservoir in perpetuity by conducting annual sediment maintenance activities to remove accumulated sediments which could enter the main reservoir during high flows.
- To the extent possible, make progress in restoration of the historic water storage capacity in the Greenhorn Arm of Rollins Reservoir.
- Prevent further migration of suspended sediment from the Greenhorn Arm of Rollins Reservoir into the main body of the reservoir.
- Restore recreational opportunities in the Greenhorn Arm of Rollins Reservoir through the removal of accumulated sediment thereby increasing water depth and improving deep-water aquatic habitat and boating access.
- Economically remove and dispose of the sediment removed from the Greenhorn Arm of Rollins Reservoir.

E.6 SUMMARY OF IMPACTS

Table ES-1 presents a summary of the potentially significant environmental impacts that could result from the Proposed Project, proposed mitigation measures, and the level of significance of the impact after the implementation of the mitigation measures.

E.7 ANALYSIS OF ALTERNATIVES

E.7.1 Alternatives Considered

Two alternatives to the Proposed Project were considered, including the No Project Alternative. The No Project Alternative is a required element of an EIR pursuant to Section 15126.6(e) of the CEQA Guidelines that examines the environmental effects that would occur if the Project were not to proceed. The other alternative is discussed as part of the "range of reasonable alternatives" selected by NID. The alternatives addressed in Section 4.5.4 are summarized below:

- **No Project Alternative:** Under the No Project Alternative, no sediment removal activities would occur. Sediment would continue to build up in the Greenhorn Arm of Rollins Reservoir and recreational opportunities and aquatic habitat would be further degraded. In addition, lack of sediment removal would result in continued migration of suspended sediment from the Greenhorn Arm into the main body of the reservoir further reducing water storage capacity.
- **Reduced Project Alternative:** The Reduced Production Alternative would involve sediment removal operations similar to the Proposed Project, but limit the amount of material that could be exported from the site (by haul trucks) to 100,000 tons of material during the operating season (July through November). By contrast, under the Proposed Project it is estimated that up to 200,000 tons of material could be removed from the Work Area per year, depending on market demand; although a typical year (based on similar activities) would include removal of approximately 50,000 tons per year. It is assumed that 200,000 tons of material would be removed every 6th year, depending on storm events. All other components of the Proposed Project would be identical under the Reduced Production Alternative.

E.7.2 Environmentally Superior Alternative

The No Project Alternative would result in the least environmental impacts and would be the environmentally superior alternative. All impacts associated with the Proposed Project would be reduced under the No Project Alternative. However, the No Project Alternative fails to meet any of the Project objectives. Section 15126.6(e)(2) of the CEQA Guidelines states that if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. In this case, the environmentally superior alternative is the Reduced Production Alternative. This alternative would limit the amount of sediment removed annually to 100,000 tons, resulting in reduced impacts in terms of air quality, GHG emissions, and transportation (vehicle miles traveled). However, noise impacts under this alternative would still be significant and unavoidable. By reducing the maximum amount of sediment removed, this alternative would inhibit the timely realization of Project objectives.

Table ES-1.
Impacts Summary and Mitigation, Monitoring, and Reporting Plan

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
Impact 3.1-3. The Project Site is visible and would result in low to moderate visual effects on neighboring residences and recreationists.	**MM-AES-1**: At the end of each workday crews will conduct Project Site housekeeping, including moving equipment and work vehicles to one of the three staging areas and will maintain work and staging areas to ensure they are orderly and free of trash and debris.	During annual Project implementation	NID	NID	Less than Significant
	MM-AES-2: Following completion of annual sediment removal activities, the following will be removed from the Work Area: dewatering pipes/channels; valve box/pond; aeration system; construction equipment and mats; bridges and culverts; Work Area closure buoy line (depending on extent of sediment removal completed); and processing plant (grizzly). During annual demobilization, construction crews will restore staging areas disturbed by Project activities to pre-mobilization condition with the exception of the haul road and creek channelization berm which will remain in place until high spring flows redistribute the material.	Following completion of annual Project implementation	NID	NID	
Impact 3.1-4 Project lighting during fall and winter months could introduce a new light source and contribute to "sky glow"—the cumulative reduction in the quality of night-sky views.	**MM-AES-3:** Lighting fixtures shall be full or semi cutoff. Overall lighting levels shall be limited to that necessary to illuminate the Work Area during the later months of the year. Incandescent and mercury vapor light sources will not be used.	During annual Project implementation	NID	NID	Less than Significant
Impacts 3.2-2. Without mitigation, maximum daily operational emissions would exceed the Northern Sierra Air Quality Management District (NSAQMD) Level C thresholds for NOx.	**MM-AQ-1**: Per the requirements of the NSAQMD Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects the following mitigation will be required during project operations. • Temporary traffic control shall be provided during all phases of the construction to improve traffic flow as deemed appropriate by local transportation agencies and/or Caltrans. • Construction activities shall be scheduled to direct traffic flow to off-peak hours as much as practicable. • 200,000During initial grading, earth moving, or site preparation, larger projects may be required to construct a paved, coarse gravel or dust palliative treated apron, at least 100 feet in length, leading onto the paved road(s). • Wheels will be washed when project vehicles and/or equipment enter and/or exit onto paved streets from unpaved roads. Vehicles and/or equipment will be washed prior to each trip, if necessary. • During years when approximately 200,000 tons of sediment is removed, all self-propelled off-road diesel-powered equipment and vehicles greater than 25 horsepower shall be equipped with an engine meeting at least Tier 1 emission standards, and the overall fleet average shall meet Tier 2 emission standards.	During annual Project implementation	NID	NID	Less than Significant
	MM-AQ-2: As required by NSAQMD Rule 226, a Fugitive Dust Plan will be prepared for the Project that, in addition to the Standard Dust Control Plan conditions, includes site watering at least twice daily during sediment removal, sorting, and hauling activities.	Prior to initial implementation of the Project	NID	NID	
Impact 3.2-3 Project would not expose sensitive receptors to emissions from diesel particulate matter.	**MM-AQ-3** Owners or operators of portable equipment rated 50 bhp or greater will register the applicable equipment through the Statewide Portable Equipment Registration Program or at the local air district level, in compliance with NSAQMD, Rule 523. Proof of registration will be provided to NID prior to Project implementation.	Prior to initial implementation of the Project	NID	NID	Less than Significant

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
Impact 3.3-1 The Proposed Project could indirectly impact aquatic species (foothill yellow-legged frog [FYLF], Western pond turtle [WPT], fish) through increases in turbidity or release of pollutants into the stream.	**MM-HAZ-1:** Annually, prior to Project implementation, all contractor and subcontractor personnel shall receive training regarding the appropriate work practices necessary to effectively comply with the applicable environmental laws and regulations, including, without limitation, hazardous materials spill prevention and response measures.	Prior to annual Project implementation	NID	NID	Less than significant
	MM-HAZ-2: A Hazardous Materials Business Plan (HMBP) will be prepared and implemented. The HMBP will be consistent with Nevada County requirements and will incorporate industry standard best management practices (e.g., Department of Water Resources' best management practices). The plan will: • Identify all hazardous materials. • Identify spill response materials. • Specify procedures for notification and reporting, including internal management and local agencies (e.g., fire department, Department of Environmental Health), as needed. • Specify measures to protect worker and public health and safety. • Specify measures to manage and remediate waste, as needed.	Prior to initial implementation of the Project	NID	NID	
	MM-HAZ-3: A Spill Prevention Control and Countermeasure Plan (SPCCP) will be prepared and implemented. The SPCCP will be consistent with Nevada County requirements and will incorporate industry standard best management practices (e.g., Department of Water Resources' best management practices). The plan will: • Detail fuel storage areas. • Identify measures to limit and control fuel spills, including use of bermed storage areas, equipment inspections, fueling and refueling procedures. • Describe the use and placement of spill kits. • Specify reporting requirements in the event of a spill.	Prior to initial implementation of the Project	NID	NID	
	MM-HYD-1: Stormwater Pollution Prevention Plan. Operator shall develop and implement a stormwater pollution prevention plan (SWPPP) in accordance with State Water Resources Control Board (SWRCB) and Central Valley RWQCB (RWQCB) requirements. The SWPPP shall specify the location, type, and maintenance requirements for best management practices (BMPs) necessary to prevent stormwater runoff from carrying construction-related pollutants. BMPs shall be implemented to address potential release of fuels, oil, and/or lubricants from operational vehicles and equipment (e.g., drip pans, secondary containment, washing stations), as well as release of fine sediment from material stockpiles (e.g., sediment barriers, soil binders). The SWPPP shall be developed and implemented by a Construction General Permit Qualified SWPPP Practitioner (QSP) / Qualified SWPPP Developer (QSD) and submitted to the RWQCB as part of obtaining regulatory approval for the proposed activities (i.e., the Industrial General Permit).	Prior to initial implementation of the Project			

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
Impact 3.3-1 (continued) The Proposed Project could potentially result in direct impacts to *foothill yellow-legged frogs*	**MM-HYD-2:** Water Quality Monitoring Plan. NID will prepare and implement a Water Quality Monitoring Plan (WQMP) for the Project. The WQMP will include monitoring water quality (baseline and Project conditions) in the vicinity of the Project during implementation (setup through demobilization). The WQMP will include compliance thresholds and adaptive management to address potential water quality issues should any arise. The WQMP would be implemented in any year, which sediment removal activities occur. The WQMP will include water quality monitoring for the following constituents: • Water Temperature • Dissolved Oxygen (DO) • Turbidity • Total Dissolved Solids (TDS) • Total Suspended Solids (TSS) • Total Mercury • Methylmercury To fully document baseline and Project conditions, NID will monitor water quality in Greenhorn Creek, Greenhorn Arm of Rollins Reservoir, and the main body of Rollins Reservoir. Baseline condition monitoring will be conducted prior to the initial sediment removal. Water quality monitoring compliance thresholds will be established based on consultation with the Regional Water Quality Control Board and California Department of Fish and Wildlife. Monitoring reports will be developed and provided to agencies during Project implementation. Sediment removal will be suspended, and agencies will be immediately notified (within 24 hours) if any constituents exceed thresholds developed through agency consultation with consideration of pre-project background levels.	Prior to initial implementation of the Project	NID	NID	
	MM-BIO-1: Work Period and Timing: The following restrictions for work period and timing will be observed: • Ground-disturbing activities in the Work Area (including, but not limited to, construction of stream road crossings, modification/relocation of the stream channel, or sediment removal) will be restricted to the period between July and November, when stream flows are low and weather conditions are dry. • Work activities in the Project Site will be timed with awareness of precipitation forecasts and likely increases in streamflow. If the National Oceanic and Atmospheric Administration (NOAA) National Weather Service forecasts a storm event that will result in more than 1 inch of rain in a 24-hour period, sediment removal activities will cease until all reasonable erosion and stormwater pollution prevention measures (including, but not limited to, measures required in the Project SWPPP) have been implemented. • All work activities will be restricted to the hours between 7:00 am to 7:00 pm.	During annual Project implementation	NID	NID	Less than significant
	MM-BIO-2: Biological Monitor. NID will submit to CDFW for approval the resumes of a qualified biologist (or biologists) who will lead implementation of aquatic and/or terrestrial surveys and monitoring required for the Project. The biological monitor(s) must have the following qualifications: • Academic and professional experience in biological sciences or related resource management activities; • Experience with construction-level biological monitoring; • For biologists conducting aquatic surveys and monitoring, the ability to recognize resident and native aquatic species and familiarity with their behaviors and habitats (species include, but are not limited to FYLF, WPT, and resident fish species); • For biologists conducting terrestrial surveys and monitoring: • The ability to recognize bald eagle, osprey, and other migratory birds and their nests, and familiarity with their behaviors and habitats; and • Familiarity with special-status species that may inhabit burrows in the Project Site. • All biological monitors will obtain any necessary authorizations prior to handling or relocating special-status species.	Prior to annual Project implementation	NID	NID	

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
	MM-BIO-3: Foothill Yellow-Legged Frog Breeding Surveys and Breeding Area Avoidance. A survey for FYLF (including egg masses, tadpoles, sub-adult, and adults) will be conducted by an approved biologist during the spring breeding season (e.g., April/May) prior to initiation of the Project each year. The purpose of the survey will be to determine whether and where FYLF are breeding in the Work Area. If FYLF egg masses and/or amplexing adults are found during the breeding surveys, a Breeding Area Avoidance Plan (BAAP) will be developed prior to initiation of sediment removal in the vicinity of the breeding area. The BAAP will include a description and maps/diagrams showing how the Work Area will be modified to avoid negative impacts to the breeding area(s). Modifications may include, but are not limited to, the installation of exclusionary or high visibility fencing. The BAAP will be submitted to CDFW 30 days prior to initiation of sediment removal and implemented as part of the Project**.**	Prior to annual Project implementation	NID	NID	
	MM-BIO-4: Workers Environmental Awareness Program. Construction personnel will participate in worker environmental awareness program (WEAP) designed to minimize the potential for impacts to sensitive biological resources. Under this program, workers will be informed by a qualified biologist about the potential presence of sensitive biological resources, including special-status species and habitat, and applicable measures incorporated into the Project to avoid and protect these species and their habitats.	Prior to annual Project implementation	NID	NID	
	MM-BIO-5: Delineation of Project and Environmentally Sensitive Areas. Before starting work each season, NID will clearly fence, stake, and/or flag the boundaries of the existing and new haul road, staging areas, and the Work Area within which sediment removal activities will occur. Delineation of work areas will consider avoidance and protection measures established for aquatic and terrestrial resources, including, but not limited to, breeding areas for FYLF (MM-BIO-3); special-status plants (MM-BIO-8); active bird nests and animal burrows (MM-BIO-9); and riparian vegetation (MM-BIO-10). Vehicular traffic and use of ground-based construction equipment will be confined to fenced, staked, or flagged areas. All fencing, stakes, or flags will be maintained in good condition throughout sediment removal.	Prior to annual Project implementation	NID	NID	
Impact 3.3-1 (continued) The Proposed Project could potentially result in direct impacts to *resident fish in Greenhorn Creek*.	**MM-BIO-1:** See above				
	MM-BIO-6: Aquatic Species Pre-Construction Survey and Species Relocation. Immediately prior to initiation of ground-disturbing activities in the Work Area (including, but not limited to, construction of stream road crossings, modification/relocation of the stream channel, or sediment removal), a pre-construction survey will be conducted by an approved biologist. Native and resident aquatic species including resident fish, FYLF (all lifestages) and WPT, will be captured and immediately relocated from within the Work Area to the closest suitable aquatic habitat. Capture methods may include fish landing nets, dip nets, buckets, and by hand. A record will be maintained that will include the following data for each individual rescued and relocated (or as specified in CDFW permit conditions): • Date of Capture and Relocation • Method of Capture • Life Stage (for FYLF and WPT) • Life Stage, Fork Length, and Weight (for Fish) • Location of Relocation in Relation to the Project Site • A letter report of the results of the survey and capture/relocation data will be provided to CDFW for review within 14 days of completion of the survey.	Prior to initiation of annual ground-disturbing activities	NID	NID	
	MM-BIO-7: *Biological Monitor On-site with Stop Work Authorization.* An approved aquatic biologist will be responsible for monitoring activities that may result in impacts to native and resident aquatic species (i.e., relocating the stream and constructing road crossings of the stream). The biological monitor will have the authority to immediately stop any activity that may harm native or resident aquatic resources and to authorize the resumption of work once individuals have moved and/or are relocated out of harm's way. All reasonable efforts will be made to capture and move all stranded species or species otherwise in the way of harm. Capture will only be conducted by the biological monitor and may include fish landing nets, dip nets, buckets and by hand. Captured aquatic life will be released within the closest suitable habitat outside of the work site. Relocations of fish and aquatic species will be recorded as described under MM-BIO-6, and submitted in a letter report to CDFW at the conclusion of each work season**.**	During annual Project implementation	NID	NID	

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
Impact 3.3-2 Sediment removal activities within Greenhorn Creek within the Greenhorn Arm of Rollins Reservoir would result in effects to jurisdictional Waters of the U.S./State.	**MM-BIO-11:** Clean Water Act Permitting. Prior to implementation of the Project, NID will obtain the appropriate permits to authorize Project activities within waters of the U.S. and state. This includes the following: • All proposed discharges of dredge or fill material into waters of the U.S. will first be authorized by the USACE, pursuant to Section 404 of the Clean Water Act (CWA), and all avoidance, protection, and mitigation measures associated with Corps permits will be implemented. • Pursuant to Section 401 of the CWA, NID will obtain Water Quality Certification from the Regional Water Quality Control Board for the Proposed Project. Avoidance, protection, and mitigation measures identified in this certification will be implemented. • Pursuant to Section 1600 of the Fish and Game Code, NID will obtain a Streambed Alteration Agreement (SAA) for the Proposed Project. Avoidance, protection, and mitigation measures identified in this SAA will be implemented.	Prior to initial implementation of the Project	NID	NID	Less than significant.
	MM-HYD-1: See above **MM-HYD-2:** See above		NID	NID	
	MM-HYD-3: Hydrologic Management Plan. NID will prepare and implement a Hydrologic Management Plan (HMP) for the Project. The HMP will include the following elements: • Seasonal demobilization procedures shall include, at a minimum, removal of all operational equipment located within the limits of the 100-year flood, including temporary road crossings (bridges and culverts) and dewatering pipes. • Annual visual incision monitoring and photo documentation shall be conducted upstream of the Work Area to ensure excessive project-induced channel incision (deepening of the channel from erosion) and avulsion (abandonment of the channel and formation of a new channel) is not occurring. This monitoring will be done in context of non-Project gravel extraction activities within the Hansen Bros. Enterprises Lease. If excessive channel incision or avulsion is occurring as a result of Project activities, then grade control measures or modification of the sediment extraction in the Work Area will be implemented.	Prior to initial implementation of the Project	NID	NID	
Impact 3.3-3. Sediment removals have a low potential to affect movement of resident fish between Greenhorn Creek (upstream of the Project) and the reservoir.	**MM-BIO-1:** See above **MM-BIO-6:** See above **MM-BIO-7:** See above **MM-HYD-3:** See above		NID	NID	Less than significant
Impact 3.3-4. Implementation of the Project could impact special-status plants.	**MM-BIO-4:** See above **MM-BIO-5:** See above		NID	NID	Less than significant
	MM-BIO-8 Special-status Plant Surveys. Protocol-level surveys for special-status plants will be completed prior to initiation of the Project and during the appropriate blooming period for the 13 plants occurring or potentially occurring at the Project Site (refer to Table 3.3-1). This will include an early-season survey in April/May and a late-season survey in July/August. Surveys will be conducted consistent with the Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018). If special-status plant species are found in the Project Site and could be affected by Project implementation, a protective buffer of a minimum of 25 feet (or smaller, if approved by CDFW) will be designated around the population with stakes, fence or flagging prior to the start of each construction season. No vehicular traffic or use of ground-based equipment will be permitted within the buffer. A letter report providing the results of the special-status plant surveys will be provided to CDFW prior to initiation of construction.	Prior to initial implementation of the Project	NID	NID	

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
Impact 3.3-4 (continued). Implementation of the Project could disturb nesting raptors (i.e., bald eagles and osprey) or animals that use burrows (i.e., Blainville's horned lizard, Sierra Nevada mountain beaver, and American badger).	**MM-BIO-9:** Terrestrial Species Pre-Construction Surveys. A pre-construction survey will be conducted by a qualified biologist to determine if there are active bird nests or burrows of special-status species including Blainville's horned lizard, Sierra Nevada mountain beaver, and American badger present in the Project Site which could be affected by the Project. The survey will be conducted no more than 30 days prior to initiation of any Project activities. The survey would include an inspection of the following: • Trees and other suitable nesting structures within 660-feet around the Project Site for bald eagles and within 500 feet of the Project Site for other raptors; • Suitable nesting habitat within 100 feet around the Project Site for other migratory and non-raptorial birds; and • Suitable habitat within Project Site boundaries for burrows that may potentially be used by Blainville's horned lizard, Sierra Nevada mountain beaver, and American badger. • The location of active nests will be recorded and an appropriate protective buffer delineated around the nest of 660 feet for bald eagle nests; 500 feet for other raptor nests; and between 25 and 100 feet for other migratory and non-raptorial birds, as appropriate based on the species, site-specific features, and the nature and extent of construction activities proposed in the vicinity of the nest. No use of ground-disturbing equipment will be permitted within the protective buffer. If NID cannot comply with these recommended buffers, reduced buffers or other site-specific avoidance and protection measures will be developed in consultation with the appropriate resource agencies. This protective buffer does not apply to the existing osprey nest on the Drum-Bell transmission line tower (refer to Section 3.3.2.4) of the EIR. • Animal burrows will be flagged and avoided to the degree possible. Any burrows that cannot be avoided will be inspected to determine whether they are actively inhabited. Uninhabited burrows that cannot be avoided will be collapsed by or in the presence of the biologist to avoid future occupation. If a burrow is inhabited and cannot be avoided, NID will consult with CDFW to determine alternative avoidance, protection, and/or exclusion measures. Such measures would depend on the species involved, site-specific conditions and nature and extent of work activities to be implemented near the burrow. Measures could include, but are not limited to, implementation of a protective buffer around the burrow or exclusion/evacuation and collapse of the burrow by a CDFW-approved biologist. A letter report providing the results of the terrestrial pre-construction survey will be provided to CDFW prior to initiation of construction. The report will include (1) a map of the location of any active nests and all burrows identified, and (2) a description of buffers or other proposed avoidance and protection measures to be implemented to protect any nests or inhabited burrows that may be affected by the Project. Agreed upon buffers and/or avoidance and protection measures will be implemented as part of the Project.	Prior to annual Project implementation	NID	NID	Less than significant
Impact 3.3-4 (continued). Implementation of the Project could impact foraging bald eagles and osprey.	**MM-BIO-1**: See above **MM-BIO-6**: See above **MM-BIO-7:** See above **MM-HYD-1:** See above **MM-HYD-2:** See above **MM-HAZ-1:** See above **MM-HAZ-2:** See above **MM-HAZ-3:** See above		NID	NID	Less than significant
Impact 3.3-4 (continued). Increased human presence, use of heavy equipment, and construction vehicles could potentially disturb other nesting raptors or songbirds, if present in the Project Site.	**MM-BIO-4:** See above **MM-BIO-5:** See above **MM-BIO-9:** See above		NID	NID	Less than significant

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
Impact 3.3-4 (continued). Implementation of the Project could impact foraging or roosting special-status bats.	**MM-BIO-1:** See above **MM-HYD-1:** See above **MM-HYD-2:** See above **MM-HAZ-1:** See above **MM-HAZ-2:** See above **MM-HAZ-3:** See above		NID	NID	Less than significant
Impact 3.3-4 (continued). Ground disturbance associated with the Project could result in impacts to animals that use burrows including Blainville's horned lizard, Sierra Nevada mountain beaver, and American badger.	**MM-BIO-1:** See above **MM-BIO-4:** See above **MM-BIO-5:** See above **MM-BIO-9:** See above		NID	NID	Less than significant
Impact 3.3-5. The project has some potential to affect riparian habitat present along the margins of Greenhorn Creek and the Greenhorn Arm of Rollins Reservoir in the Project Site.	**MM-BIO-4:** See above **MM-BIO-5:** See above				Less than significant
	MM-BIO-10: Protection of Riparian Vegetation. No riparian vegetation will be removed as part of the Project. If riparian vegetation becomes established within the Project Site and may potentially be affected by Project activities, NID will establish a 25-foot-buffer around the riparian vegetation. The buffer will be flagged or fenced prior to implementation of the Project.	Prior to/during annual Project implementation	NID	NID	
Impact 3.4-1. The Project could result in damage to or destruction of significant documented cultural resources**.**	**MM-CUL-1:** Development and Implementation of a Worker Environmental Awareness Program. NID will design and implement a Worker Education Program that will be provided to all Project personnel who may encounter and/or alter historical resources or unique archaeological properties, including construction supervisors and field personnel. No construction worker will be involved in field operations without having participated in the Worker Education Program. The Worker Education Program will include, at a minimum: • A review of archaeology, history, prehistory and Native American cultures associated with historical resources in the Project vicinity; • A review of applicable local, state and federal ordinances, laws and regulations pertaining to historic preservation; • A discussion of procedures to be followed in the event that unanticipated cultural resources are discovered during implementation of the Project; • A discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and NID policies; and • A statement by the construction company or applicable employer agreeing to abide by the Worker Education Program, NID policies and other applicable laws and regulations. • The Worker Education Program may be conducted in concert with other environmental or safety awareness and education programs for the Project, provided that the program elements pertaining to cultural resources are provided by a qualified instructor meeting applicable professional qualifications standards.	Prior to initial/during annual Project implementation	NID	NID	Less than significant

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
Impact 3.4-2. The Project could result in damage to or destruction of significant undocumented cultural resources.	**MM-CUL-2:** Unanticipated Discovery of Potentially Significant Prehistoric and Historic Resources. If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, glass, ceramics, structure/building remains, etc.) is made during Project-related construction activities, the NID Cultural Resources Policy (No. 6085.1 Discovery of Cultural Resources) will be implemented. This policy includes a stop work order, communication with the NID project manager, avoidance of the discovery by 150 feet, and coordination with a qualified archaeologist. Refer to Appendix C of the EIR for the NID policy. As part of this policy, the archaeologist shall determine whether the resource is potentially significant per the CRHR and develop appropriate mitigation in consultation with the NID and State Historic Preservation Officer (SHPO) to protect the integrity of the resource and ensure that no additional resources are impacted. Mitigation could include, but not necessarily be limited to preservation in-place, archival research, subsurface testing, or data recovery. Implementation of the above mitigation measure would reduce potentially significant impacts resulting from inadvertent damage or destruction of unknown cultural resources during construction to a less-than-significant level.	During annual Project implementation	NID	NID	Less than significant
	MM-CUL-1: See above		NID	NID	
Impact 3.4-3. The Project could result in damage to or destruction of human remains.	**MM-CUL-3:** Unanticipated Discovery of Human Remains. In accordance with the California Health and Safety Code and NID Cultural Resources Policy (No. 6085.2 Discovery of Human Remains), if human remains are uncovered during ground-disturbing activities, all work within 150 feet of the area of the burial shall be halted. The NID project manager will be notified immediately, who in turn will notify the qualified archaeologist. The qualified archaeologist will contact the Nevada County Sheriff/Coroner to determine the nature and extent 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 Native American descent, the coroner must contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). The NAHC shall identify the most likely descendant (MLD). Once given the permission by NID and the land owner (if different from NID), the MLD shall be allowed on-site. The MLD shall complete their inspection and make their recommendation to NID for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code (PRC) Section 5097.98. MLD recommendations must be made within 48 hours of the NAHC notification to the MLD. No additional work shall take place within the immediate vicinity of the find until the qualified archaeologist gives approval to resume work in that area. Refer to Appendix C of the EIR for the NID policy. A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in-place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment, may be discussed. AB 2641 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. AB 2641(e) includes a list of site protection measures and states that the landowner shall comply with one or more of the following: • Record the site with the NAHC or the appropriate Information Center; • Utilize an open-space or conservation zoning designation or easement; and/or • Record a document with the county in which the property is located. The landowner or their authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify a MLD or the MLD fails to make a recommendation within 48 hours after being granted access to the site. The landowner or their authorized representative may also re-inter the remains in a location not subject to further disturbance if they reject the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to the landowner. Adherence to these procedures and other provisions of the California Health and Safety Code and AB 2641(e) will reduce potential impacts to human remains to a less-than-significant level.	During annual Project implementation	NID	NID	Less than significant

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
Impact 3.4-4. The Project could result in damage to or destruction of significant undocumented paleontological resources.	**MM-CUL-4:** Unanticipated Discovery of Paleontological Resources. If an unanticipated discovery of paleontological materials is made during Project-related construction activities, all work within 100 feet (30 meters) of the discovery will be halted and redirected to another location. A qualified paleontologist will be notified regarding the discovery. The paleontologist shall determine whether the resource is potentially significant per the CEQA and develop appropriate mitigation to protect the integrity of the resource and ensure that no additional paleontological resources are impacted. Mitigation could include, but not necessarily be limited to preservation in-place, archival research, and specimen excavation and recovery. Implementation of the above mitigation measure would reduce potentially significant impacts resulting from inadvertent damage or destruction of paleontological resources during construction to a less-than-significant level.	During annual Project implementation	NID	NID	Less than significant
Impacts 3.7-1 and 3.7-2. The project could potentially create a potential hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or upset and accident conditions involving the release of hazardous materials into the environment.	**MM-HAZ-1:** See above **MM-HAZ-2:** See above **MM-HAZ-3:** See above		NID	NID	Less than significant
	MM-HAZ-4: NID will implement the following to ensure appropriate disposal of excavated or dredged sediments: • In order to determine acceptable reuse and/or disposal procedures, sediment shall be sampled and analyzed to assess sediment quality and identify any potential hazards to the public or environment during excavation, transportation, and reuse and/or disposal of the sediment. ○ Based on the known historical environmental impacts of mining in the watershed, characterization of the sediment shall be limited to metals listed in the RWQCB General Order for Maintenance Dredging (R5-2009-0085) as the primary constituents of concern. ○ Approximately one sample will be taken per 2,000 cubic yards of sediment removed. ○ Results of the sediment sampling will be compared to applicable health screening levels issued by State and federal agencies that include: ▪ Hazardous Waste Thresholds (Title 22 Chapter 11 of California Code of Regulations), ▪ California Office of Environmental Health Hazard Assessment Human Health Screening Levels, and ▪ Federal Environmental Protection Agency (EPA) Regional Screening Levels. • Disposal/reuse of dredged sediment may be subject to waste discharge requirements (WDR), and/or a waiver of WDRs for disposal of dredge material to land. • If sediment is to be disposed of in a landfill, no further restrictions on disposal are required, since landfills operate under their own WDR and/or NPDES permits that are designed to protect water quality. • If sediment is to be reused: ○ If concentrations exceed Hazardous Waste Thresholds, the sediment will be disposed of in accordance with relevant hazardous waste regulations. ○ If concentrations of all metals are below Hazardous Waste Thresholds, no restrictions on reuse will be implemented. ○ If concentrations of individual metals exceed Human Health Screening Levels or Regional Screening Levels, but not Hazardous Waste Thresholds, the sediment will only be reused on a site where the native soil contains equivalent or higher concentrations of these metals. That is, soil will be sampled and tested for metals for which the sediment exceeds the above thresholds at the proposed disposal/reuse site and compared to the concentrations in the sediment. If the native soil metals concentrations are higher than the sediment concentrations, the sediment can be reused/disposed of without further characterization.	During annual Project implementation	NID	NID	

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
Impact 3.7-6 The Project involves an increase in truck trips along public roads which could potentially affect implementation of an emergency response or evacuation plan.	**MM-TRA-2**: Hazards Due to Truck Traffic. NID shall develop a Traffic Management Plan to minimize construction-related traffic safety hazards on the affected roadways. To the extent practicable, the Traffic Management Plan will conform to the latest edition of the California Manual on Uniform Traffic Control Devices for Temporary Traffic Control. NID shall coordinate development and implementation of this plan with the Nevada County Office of Emergency Services (OES), Caltrans and the Placer and Nevada County Public Works Departments, as appropriate. The Traffic Management Plan will include, but would not be limited to, the following elements: • Movement of large oversized equipment and hauling of materials of oversized vehicles related to sediment barrier installation and removal shall be done by convoy using applicable roadway standards. • Develop and implement a plan for notifications and a process for communication with affected Greenhorn Campground users and residents along affected roadways before the start of construction. Public notification will include posting of notices at NID website, Greenhorn Campground website, Placer and Nevada County Public Works Departments' websites, Nevada County OES, notices at the Project Site, and approved private signage of construction activities. The notifications will include the construction schedule, the location and duration of activities on each roadway (e.g., which roads/lanes, access points/driveways would be blocked on which days and for how long, and alternative vehicle routes), and contact information for questions and complaints. • Maintain access for vehicles in and/or adjacent to roadways affected by construction activities at all times. • Evaluate sighting distances along You Bet Road annually to determine if they meet the current County Policy; and, where deficiencies occur, install warning signs, convex high visibility mirrors, or other similar measures to improve sighting distances, as necessary.	Prior to initial implementation of the Project	NID	NID	Less than significant
Impact 3.7-7. Project activities, including the use of equipment and haul trucks, introduce a potential fire risk, given the high hazard rating of the surrounding area.	**MM-HAZ-5:** The District will develop a Project-specific Fire Plan in consultation with the fire department. The Fire Plan will include (but is not limited to) the following: • Appropriate contacts and procedures to be followed in case of a fire-related emergency. • Vehicles will not be parked and equipment will not be placed in areas where dry vegetation could be ignited. • Project work and staging areas, including the stockpiles, fuel and equipment storage, the office trailer, and accessory buildings, shall be cleared of dried vegetation or other materials that could serve as fire fuel. • Any vehicles or equipment that normally include a spark arrester shall be equipped with an arrester in good working order. • Vehicles will be required to carry small fire extinguishers and other equipment, as required by the fire department, while traveling throughout the site.	During annual Project implementation	NID	NID	Less than significant
Impact 3.8-1. 3.8-3, and 3.8-4 The Project potentially could result in impacts to water quality associated with release of fuels, increased erosion and turbidity, and increase in the bioavailability of mercury.	**MM-HYD-1:** See above **MM-HYD-2:** See above **MM-HYD-3:** See above		NID	NID	Less than significant
Impact 3.8-8. The Project could potentially affect water quality in a manner inconsistent with the Water Quality Control Plan for the Sacramento and San Joaquin River Basins.	**MM-HYD-1:** See above **MM-HYD-2:** See above **MM-HYD-3:** See above **MM-HAZ-1:** See above **MM-HAZ-2:** See above **MM-HAZ-3:** See above **MM-HAZ-4:** See above **MM-HAZ-5:** See above		NID	NID	Less than significant

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
Impact 3.10-1. The Proposed Project would exceed the Nevada County daytime average noise level standard of 55 dBA L_{eq} and the daytime maximum noise level standard of 75 dBA L_{max} at several residences adjacent to the Project Site.	**MM-NOI-1:** When purchasing or replacing equipment, NID will use backup warning devices available per current standards. To the extent feasible, the Project Site will be designed to minimize the need to operate mobile machinery in reverse causing backup warning alarms to activate. In addition, diesel generators would be equipped with silencers.	During annual Project implementation	NID	NID	Significant and unavoidable
	MM-NOI-2: The stockpile shall be designed to minimize the need for haul trucks to back up for loading and exiting.	During annual Project implementation	NID	NID	
	MM-NOI-3: Signs shall be posted to limit horn use unless required for employee and public safety.	During annual Project implementation	NID	NID	
	MM-NOI-4: Noise minimization shall be a standard topic at operations meetings.	During annual Project implementation	NID	NID	
	MM-NOI-5: Construction activities shall be limited to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday. On Sundays and Federal holidays, no noise-generating construction activities shall be permitted.	During annual Project implementation	NID	NID	
Impact 3.11-1. The project could potentially increase the use of other recreational facilities on the reservoir.	**MM-REC-1:** The transport of equipment and materials along the Greenhorn Access Road to SA-3 shall not occur on the July 4th holiday, or during the weekends immediately preceding or following the July 4th holiday, except in emergency situations.	During annual Project implementation	NID	NID	Less than significant
	MM-REC-2: A line of buoys and/or signage shall be placed at a distance of 200 feet around the barge during installation of the sediment barrier to prohibit boaters from entering the barrier installation work area. Under no circumstances shall boaters be allowed to enter the work area delineated by the buoy line.	During annual Project implementation	NID	NID	
Impact 3.12-1 The Project would contribute to the deterioration of road conditions on area roadways.	**MM-TRA-1:** County Road Maintenance. • NID shall pay to Nevada County all Traffic Impact Mitigation Fees required per Board Resolution 18-206. Payment of these fees would ensure that the Project contributes its fair share of the cost of necessary future improvements to the regional roadway network. • NID shall document road and shoulder conditions along You Bet Road prior to Project implementation to provide a baseline against future evaluations of road and shoulder conditions. Every five years, or a timeframe deemed appropriate by Nevada County Public Works, road and shoulder conditions will be evaluated. Based on the results of evaluation and in consultation with Nevada County Public Works, NID may be required to repair roads and/or shoulders that have been affected by increased truck traffic associated with the Project. • Gravel, sand, soil, and other debris from the Project Site and affected roadways is promptly removed from roads and shoulders.	• Prior to initial Project implementation (baseline establishment) • Every 5 years thereafter	NID	NID	Less than significant
Impact 3.12-4 The Project could result in hazardous conditions associated with truck traffic entering and existing You Bet Road, and conflicts between boat launch traffic and truck traffic since the campground roadway has limited two-way capacity.	**MM-TRA-2:** See above		NID	NID	Less than significant
Impact 3.12-5 The Project could impact emergency access as a result of increased truck use during the fire season and along You Bet Road, which does not provide adequate turnouts to allow trucks to yield to oncoming emergency vehicles.	**MM-TRA-3:** NID shall notify the Nevada OES annually at least 30 days prior to commencing work. The Nevada County OES is responsible for coordinating with local fire, police, and the Nevada County Public Works Department regarding maintaining safe conditions during project implementation.	• Prior to initial Project implementation (consultation with public agencies) • Prior to annual Project implementation (notification)	NID	NID	Less than significant

Impact	Mitigation Measure	Timing	Implementation Responsibility	Monitoring / Enforcement Responsibility	Level of Significance After Mitigation
Impact 3.13-5 and 3.13-6 Solid waste generated by the Project will be disposed of consistent with federal, state, and local standards	**MM-HAZ-2:** See above **MM-HAZ-6:** See above		NID	NID	Less than significant
Impact 3.14-1 The Project would not substantially impair an adopted emergency response plan or emergency evacuation plan.	**MM-WF-1:** In the event that the County, state, or other authorities declare a state of emergency that involves evacuation on I-80 or other routes that may be used during implementation of the Project, all non-essential operation of Project vehicles that could affect evacuation routes would cease until the evacuation is no longer in effect.	During annual Project implementation	NID	NID	Less than significant

E.8 AREAS OF CONTROVERSY

Section 15123 (b)(2) of the CEQA Guidelines requires the Executive Summary of an EIR to disclose areas of controversy known to the lead agency that have been raised by the agencies and the public. A public scoping meeting was held on June 1, 2017, and NID circulated an NOP to solicit agency and public comments on the scope and environmental analysis to be included in the EIR between May 19 and June 19, 2017. A total of seven comment letters were received during the NOP public review period. Copies of the NOP and the NOP comment letters received by NID are included in Appendix A of the EIR. The following issues were raised in the public meeting and in written responses to the NOP:

- Traffic, road conditions, and routes of sediment removal;
- Number of truck trips;
- Hours and days of sediment removal/operation;
- Vibration and noise during Project implementation; and
- Signage and notification.

Comments received during the public scoping meeting and NOP comment period are addressed in the Draft EIR.

E.9 ISSUES TO BE RESOLVED BY LEAD AGENCY

Section 15123(b)(3) of the CEQA Guidelines requires that an EIR contain a discussion of issues to be resolved. With respect to the Proposed Project, the key issues to be resolved include decisions by NID, as lead agency, as to:

- Selection of a feasible alternative;
- Feasibility of recommended mitigation measures; and
- Whether or not to proceed with the Proposed Project.

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1.2 PURPOSE AND INTENDED USE OF THIS EIR

The NID has prepared this Draft Environmental Impact Report (EIR) to inform the general public, the local community, responsible agencies, trustee agencies, other interested public agencies, and NID's decision-making body (Board of Directors) regarding the potential significant environmental effects resulting from implementation of the Proposed Project, and to identify measures or alternatives that would reduce or avoid those significant effects. This EIR was prepared in compliance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.) and the CEQA Guidelines (14 CCR 15000 et seq.). This EIR is a "Project EIR," pursuant to CEQA Guidelines, Section 15161.

As described in the CEQA Guidelines, Section 15121(a), an EIR is an informational document that assesses potential environmental impacts of a proposed project, as well as identifying mitigation measures and alternatives to a proposed project that could reduce or avoid adverse environmental impacts. As the CEQA lead agency for this Project, NID is required to consider the information in the EIR along with any other available information in deciding whether to approve or carry out the Proposed Project. The basic requirements for an EIR include providing information that establishes the environmental setting (or project baseline) and identifying environmental impacts, mitigation measures, project alternatives, growth-inducing impacts, and cumulative impacts. In a practical sense, an EIR functions as a method of fact-finding, allowing the public, other public agencies, and agency staff an opportunity to collectively review and evaluate baseline conditions and project impacts through a process of full disclosure. Additionally, this EIR provides the primary source of environmental information for the lead agency to consider when exercising any permitting authority or approval power directly related to implementation of this Project.

1.3 TYPE OF EIR

This Draft EIR provides a Project-level analysis for the Proposed Project "focusing primarily on the changes in the environment that would result from the development project" (14 CCR 15161). As further stated in Section 15161 of the CEQA Guidelines, a project-specific EIR "shall examine all phases of the project including planning, construction, and operation." The environmental impact analysis is located in Chapter 3 of the Draft EIR. Environmental issues found not to be potentially significant are discussed in Chapter 4.

1.4 LEAD, RESPONSIBLE, AND TRUSTEE AGENCIES

1.4.1 Lead Agency

In accordance with CEQA Guidelines, Sections 15050 and 15367, the NID is the "lead agency," which is defined as the "public agency which has the principal responsibility for carrying out or disapproving a project." The lead agency is responsible for determining the scope of the environmental analysis, preparing the EIR, and responding to comments received on the Draft EIR. Prior to making a decision to approve a project, the lead agency is required to certify that the EIR has been completed in compliance with CEQA, that the decision-making body has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the lead agency.

1.4.2 Responsible Agencies

Responsible agencies are state and local public agencies other than the lead agency that have some authority to carry out or approve a project or that are required to approve a portion of the project or approve a permit for which a lead agency is preparing or has prepared an EIR or IS/MND (14 CCR 15813). The following agencies would potentially act as responsible agencies for the purposes of this Project:

- California Department of Fish and Wildlife
- State Water Board/Regional Water Quality Control Board
- Nevada County

The potential permits and approvals required from these agencies are described in Section 2.8.

1.4.3 Trustee Agencies

Trustee agencies are designated public agencies with legal jurisdiction over natural resources that are held in trust for the people of California and that would be affected by a project, whether or not the agencies have authority to approve or implement the project (14 CCR 15386). In addition to their potential permit roles noted above, the California Department of Fish and Wildlife is also a trustee agencies under CEQA.

1.5 EIR PROCESS

1.5.1 Notice of Preparation

In accordance with the CEQA Guidelines, Section 15082, a Notice of Preparation (NOP) was circulated for review from May 19 through June 19, 2017 (included as Appendix A to this EIR). The purpose of the NOP was to provide notification that an EIR for the Proposed Project was being prepared and to solicit guidance on the scope and content of the document. Comment letters from agencies and the public in response to the NOP are also provided in Appendix A. General concerns and issues raised in response to the NOP are summarized in the Executive Summary and addressed in applicable sections of this EIR.

1.5.2 Public Scoping Meeting

In accordance with the CEQA Guidelines, Section 15082(c) and 15206, a public scoping meeting was conducted on June 1, 2017. The purpose of the meeting was to allow interested parties the opportunity to provide NID with comments on the proposed scope and content of the EIR. During the meeting, the NID described the Project, provided an overview of the environmental review process, and accepted oral and written comments. Oral and written comments received during the public scoping covered the following general categories:

- Traffic, road conditions, and routes of sediment removal;
- Number of truck trips;
- Hours and days of sediment removal/operation;
- Vibration and noise during Project implementation; and
- Signage and notification.

Comments received during the public scoping meeting are addressed in the Draft EIR.

1.5.3 Draft EIR

This Draft EIR is being circulated for public review and comment for a period of 30 days. During this period, the general public, organizations, and public agencies can submit comments to the lead agency on the accuracy and completeness of the Draft EIR. Release of this Draft EIR marks the beginning of a 30-day public review period pursuant to CEQA Guidelines, Section 15105. The 30-day public review period for the Draft EIR will begin on the day the Notice of Availability is published. The public can review the Draft EIR at the following addresses during normal business hours or on the NID website at http://www.nidwater.com.

Nevada Irrigation District
1036 West Main Street
Grass Valley, California 95945

Madelyn Helling Library
980 Helling Way
Nevada City, California 95959

The NID encourages all commenters to submit their comments on the Draft EIR in writing. All comments or questions regarding the Draft EIR should be addressed to:

Greenhorn Sediment Removal at Rollins Reservoir
c/o Kris Stepanian
Nevada Irrigation District
1036 West Main Street
Grass Valley, California 95945
Phone: 530.273.6185
E-mail: stepaniank@nidwater.com

1.5.4 Final EIR

Upon completion of the Draft EIR public review period a Final EIR will be prepared that will include written comments on the Draft EIR received during the public review period and the NID's responses to those comments. The comments/responses, combined with the Draft EIR and any minor revisions, shall compose the Final EIR.

Before NID can approve the Project, it must first certify that the EIR has been completed in compliance with CEQA, that the Board of Directors has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the NID. The Board of Directors would be required to adopt findings for each significant impact identified in the EIR. If the Project would result in significant and/or unavoidable impacts, despite implementation of feasible mitigation measures or alternatives, the Board of Directors must adopt a Statement of Overriding Considerations if it approves the Proposed Project (see also California Public Resources Code, Section 21081).

1.5.5 Mitigation Monitoring and Reporting Program

Section 21081.6 of the California Public Resources Code requires lead agencies to "adopt a reporting and mitigation monitoring program for the changes to the project which it has adopted or made conditions of project approval in order to mitigate or avoid significant effects on the environment." Any mitigation measures adopted by NID will be included in a Mitigation Monitoring and Reporting Program to verify implementation. The Mitigation Monitoring and

Reporting Program will be adopted by the Board of Directors should the Board approve the Proposed Project.

1.5.6 EIR Adequacy

The level of detail contained throughout this EIR is consistent with Section 15151 of the CEQA Guidelines, which states the following:

An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of the environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure (14 CCR 15151).

1.5.7 Environmental Baseline

The existing physical conditions, at the time the NOP is published, shall constitute the environmental baseline. The environmental baseline is used by the lead agency in determining the significance of an impact (an adverse change in the physical conditions of the area) associated with a project it proposes to undertake. The NOP for this EIR was published in May 2017.

1.6 ORGANIZATION OF THIS EIR

- **Executive Summary—**Summarizes the Proposed Project, the potential environmental effects, and the mitigation measures and Project alternatives that would reduce or avoid those effects. The summary includes areas of known controversy related to the Proposed Project, and issues to be resolved, including the choice among alternatives and whether or how to mitigate potentially significant effects.
- **Chapter 1, Introduction—**Provides an introduction and overview of the EIR process and describes the intended use of the EIR and the review process.
- **Chapter 2, Project Description—**Provides a detailed description of the Proposed Project, including its location, background information, Project history, Project objectives, and technical characteristics.
- **Chapter 3, Environmental Analysis—**Describes the baseline environmental setting and provides an assessment of potential Project impacts for each technical issue area presented. Each section is divided into seven subsections: Existing Conditions; Relevant Plans, Policies, and Ordinances; Thresholds of Significance; Impacts Analysis; Mitigation Measures; Level

of Significance After Mitigation; and References. The impacts discussion includes direct, indirect, short-term, long-term, and cumulative effects of the Proposed Project.

- **Chapter 4, Other CEQA Considerations—**Provides information required by CEQA regarding impacts that would result from the Proposed Project, including impacts found not to be significant, significant and unavoidable effects of the Project, potential impacts resulting from growth inducement, and cumulative impacts. In addition, this section describes and compares Project alternatives to the Proposed Project.
- **Chapter 5, List of Preparers and Organizations/Individuals Consulted—**Lists report authors who provided technical assistance in the preparation and review of the EIR.
- **Appendices—**Include various technical studies and data that support the analysis presented in the EIR.

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CHAPTER 2
PROJECT DESCRIPTION

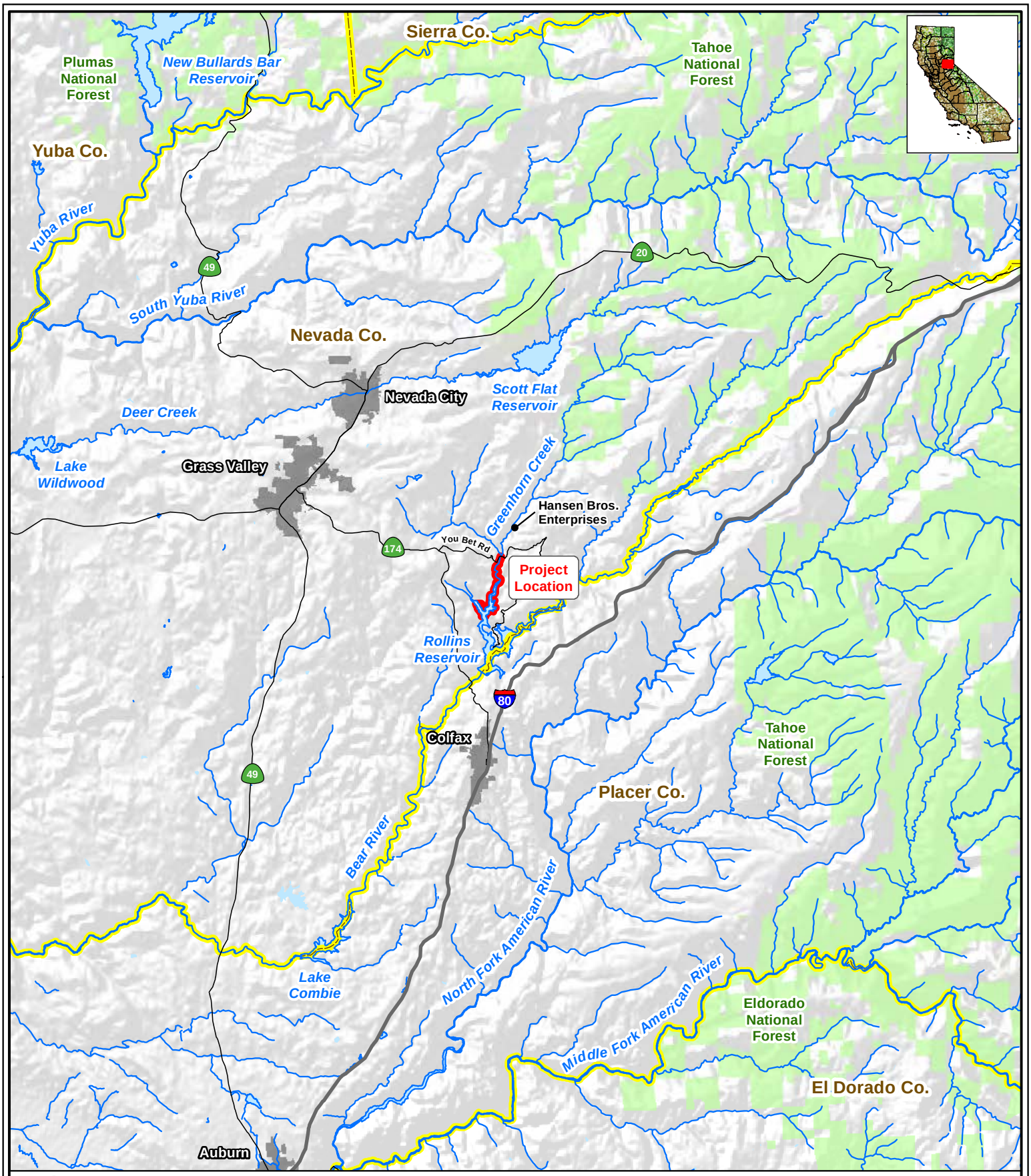
This section includes a detailed description of the Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project). This section identifies the Project location (Section 2.1); provides the Project background (Section 2.2); lists Project objectives (Section 2.3); describes Project components (Section 2.4); summarizes water quality monitoring (Section 2.5); describes work hours, personnel, and schedule (Section 2.6); and identifies other required approvals (Section 2.7).

2.1 PROJECT LOCATION

The Project is in unincorporated Nevada County, California, approximately 6 miles north of the City of Colfax on the Greenhorn Arm of Rollins Reservoir (Map 2-1). For the purposes of this document, the Greenhorn Arm begins at the south end of the sediment removal Work Area shown on Map 2-2. Hansen Bros. Enterprises Greenhorn Gravel Plant is located directly north of the Project Site. The Project is located within Sections 2, 3, 10, and 11 of Township 15N and Range 9E on the Chicago Park 7.5-minute U.S. Geological Survey (USGS) topographic quadrangle. The Project Site is located within the Federal Energy Regulatory Commission (FERC) Project boundary for Nevada Irrigation District's (NID) Yuba-Bear Hydroelectric Project (FERC Project No. 2266). Land within the Project Site boundary is primarily owned by NID with a small portion (3.2 acres) of Bureau of Land Management (BLM) land (Map 3.9-1).

To access the Project Site from Interstate 80, exit Highway 174 in Colfax and proceed 7.75 miles north toward Grass Valley. Turn right onto You Bet Road and proceed 2.5 miles to the You Bet Bridge (39°11'14.52" N, 120°56'30.77" W) which is at the northern end of the Project Site (Map 2-2).

The Project Site, shown in Map 2-2, is approximately 108 acres in size, and is composed of the 49.7-acre Work Area (downstream of the Hansen Bros. Enterprises Lease Boundary) where sediment removal activities will be implemented; three staging areas, the haul/access road; and that portion of Rollins Reservoir in which the sediment barrier will be transported and installed.



Projection: UTM Zone 10
Datum: NAD 83

0 2.5 5 Miles

USGS 7.5' Quads: Chicago Park, CA T 15N, R 09E, Sections 2-3, 10-11

Project Boundary
County Boundary
City

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Greenhorn Sediment Removal at Rollins Reservoir Project

Map 2-1

Project Vicinity

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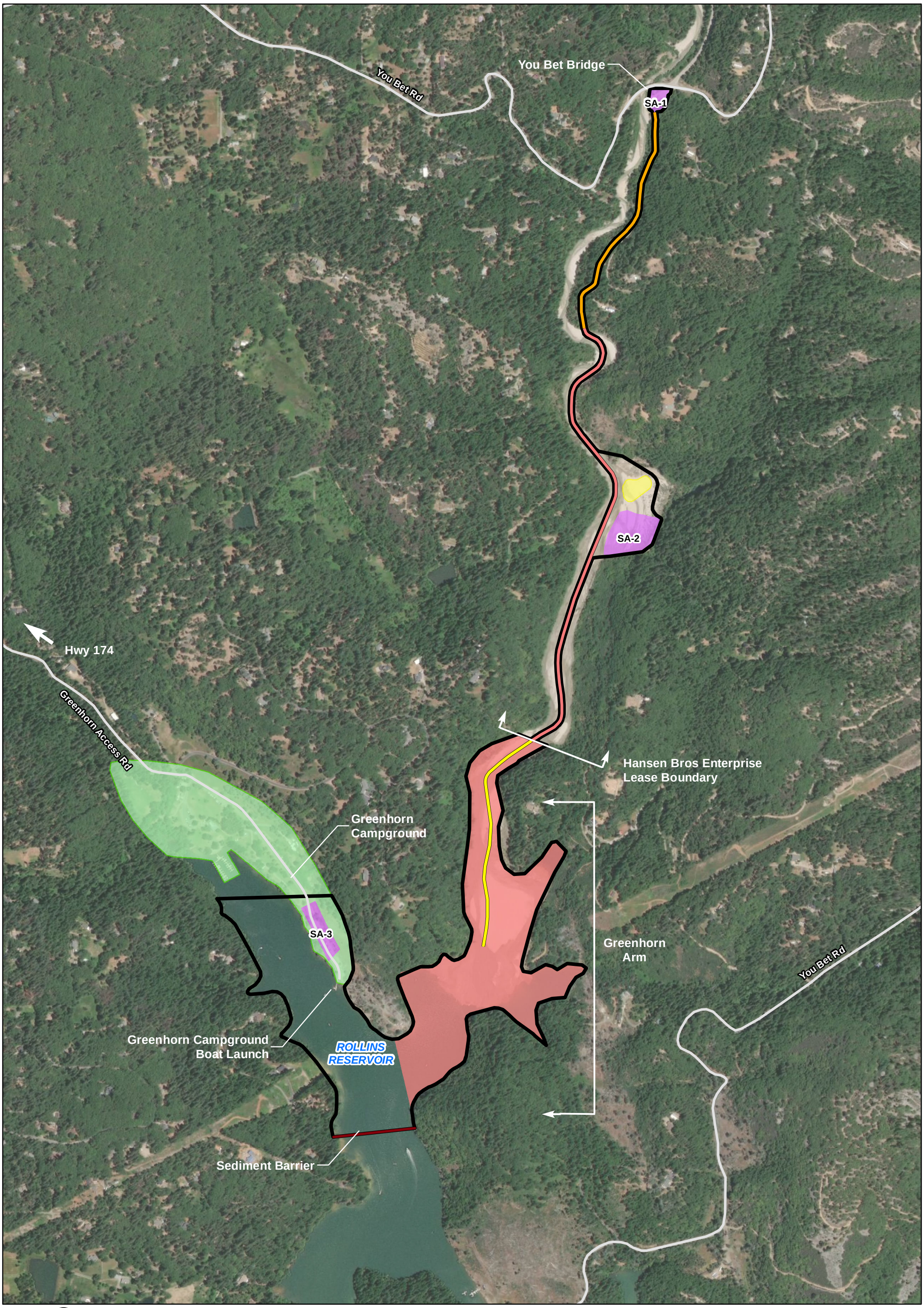

Projection: UTM Zone 10
Datum: NAD 83

0 500 1,000 2,000 Feet

USGS 7.5' Quad: Chicago Park, CA

T 15N, R 09E, Sections 2-3, 10-11

- Project Site Boundary
- Existing Haul Road (upland)
- Existing Haul Road (floodplain)
- New Haul Road
- Campground
- Sediment Removal Area (Work Area)
- Staging Area (SA)
- Stockpile Area

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Greenhorn Sediment Removal at Rollins Reservoir Project
Nevada County, CA

Map 2-2

Project Area

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2.2 PROJECT BACKGROUND

Following construction of the Rollins Reservoir Dam in 1965, sediments have accumulated in Rollins Reservoir. An estimated 10,000 acre-feet (AF) of storage capacity (17%) has been lost in Rollins Reservoir, which had a capacity of 65,998 AF upon its completion in 1965.

Sediment accumulation in the Greenhorn Arm of Rollins Reservoir can occur very quickly depending on water year type and flows from Greenhorn Creek. Figure 2-1 shows the build-up of sediment that has occurred from July 2014 to late 2016. In July 2014 sediments extended in the Greenhorn Arm approximately 9,300 feet from the intersection of You Bet Bridge and the existing access/haul road. In late 2016, sediment build-up extended into the main body of the reservoir (extending an additional 980 feet).

Between You Bet Road and the Hansen Bros. Enterprises Lease Boundary, Hansen Bros. Enterprises operates the Greenhorn Gravel Extraction Project. This project consists of harvesting aggregate material from the streambed of Greenhorn Creek and processing the material into marketable products. Aggregate mining on the deposit began in 1878 and has been continuously mined since that time. Aggregate mining of the site in its current capacity began in 1971 when the facility was owned by Terex Corporation. Hansen Bros. Enterprises acquired the property and the operation in 1973, has improved the facility throughout their time of ownership, and expanded the operation in 1994.

In October 2013, NID entered into an agreement with Hansen Bros. Enterprises to remove sediment from Greenhorn Creek during record low water levels. During the work, it was discovered that foothill yellow-legged frogs (FYLF) were present along the haul route in the Greenhorn Arm of Rollins Reservoir. Accordingly, work was halted until NID and Hansen Bros. Enterprises could prepare a Corrective Action Plan (CAP) to protect the frogs. The CAP was completed at the end of November 2013; however, no additional sediment removal has occurred and sediment has continued to be deposited in the Greenhorn Arm and subsequently transported into the reservoir during high-flow events.

2.3 PROJECT OBJECTIVES

The Greenhorn Sediment Removal Project objectives are as follows:

- Maintain the water storage capacity in the Greenhorn Arm of Rollins Reservoir in perpetuity by conducting annual sediment maintenance activities to remove accumulated sediments which could enter the main reservoir during high flows.
- To the extent possible, make progress in restoration of the historic water storage capacity in the Greenhorn Arm of Rollins Reservoir.

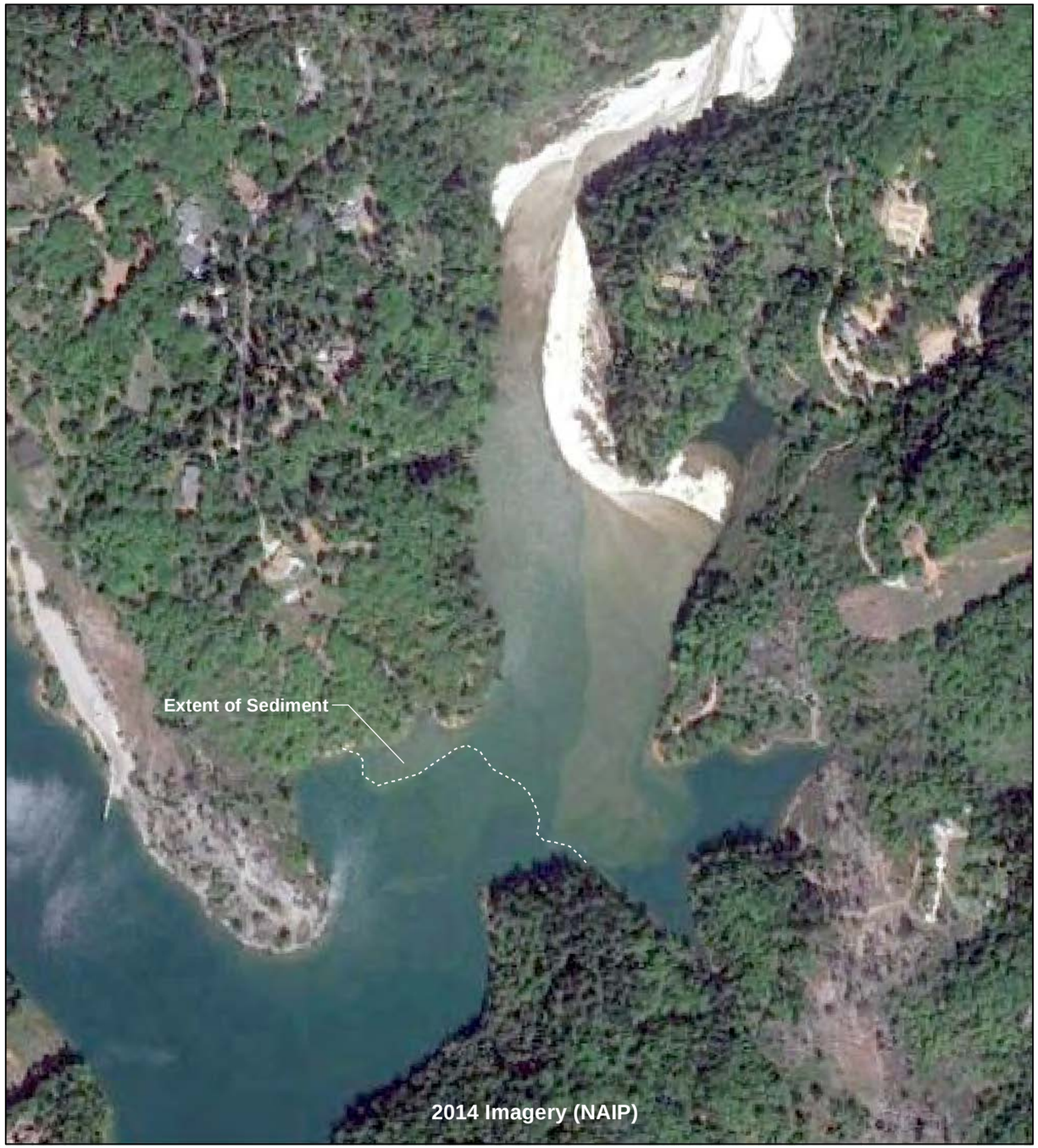
- Prevent further migration of suspended sediment from the Greenhorn Arm of Rollins Reservoir into the main body of the reservoir.
- Restore recreational opportunities in the Greenhorn Arm of Rollins Reservoir through the removal of accumulated sediment thereby increasing water depth and improving deep-water aquatic habitat and boating access.
- Economically remove and dispose of the sediment removed from the Greenhorn Arm of Rollins Reservoir.

2.4 PROJECT COMPONENTS

The Project includes the annual removal of sediment from the Greenhorn Arm of Rollins Reservoir. Due to the annual migration of aggregate from Greenhorn Creek into the Project Site, the Project will be ongoing with the ultimate goal of maintaining water storage capacity in Rollins Reservoir. Ultimately, NID would like to restore historic water storage capacity in Rollins Reservoir, returning the Project Site to pre-1965 conditions (following construction of Rollins Reservoir). However, with the extent of sediment build-up and the annual migration of aggregate to the Greenhorn Arm of Rollins Reservoir, it is unlikely that NID will be able to fully restore historic water storage capacity. Three primary Project components will be implemented annually: (1) notification/mobilization; (2) sediment removal; and (3) demobilization. Section 2.4.1 provides the sequence and overview of activities within each of the three Project components, and each activity is described more fully in Section 2.4.2. Section 2.4.3 described the water quality monitoring to be implemented as part of the Project. Refer to Figure 2-2 and Figure 2-3 for a plan and profile view of sediment removal activities.

2.4.1 Sequencing and Overview of Activities within Project Components

- Notification/Mobilization
  - Notify public of Proposed Project and Work Area restrictions.
  - Transport equipment and material to staging areas.
  - Establish Work Area boundary.
  - Initiate the Water Quality Monitoring Plan (WQMP), which requires NID to document: (1) pre-Project conditions; (2) conditions during Project implementation, including upstream, within, and downstream of the Work Area; and (3) allow for management actions to rapidly respond to any water quality issues.



Projection: UTM Zone 10
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USGS 7.5' Quad: Chicago Park, CA T 15N, R 09E, Sections 2-3, 10-11

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Greenhorn Sediment Removal at Rollins Reservoir Project
Nevada County, CA

Figure 2-1

Extent of Sediment in the Greenhorn Arm of Rollins Reservoir

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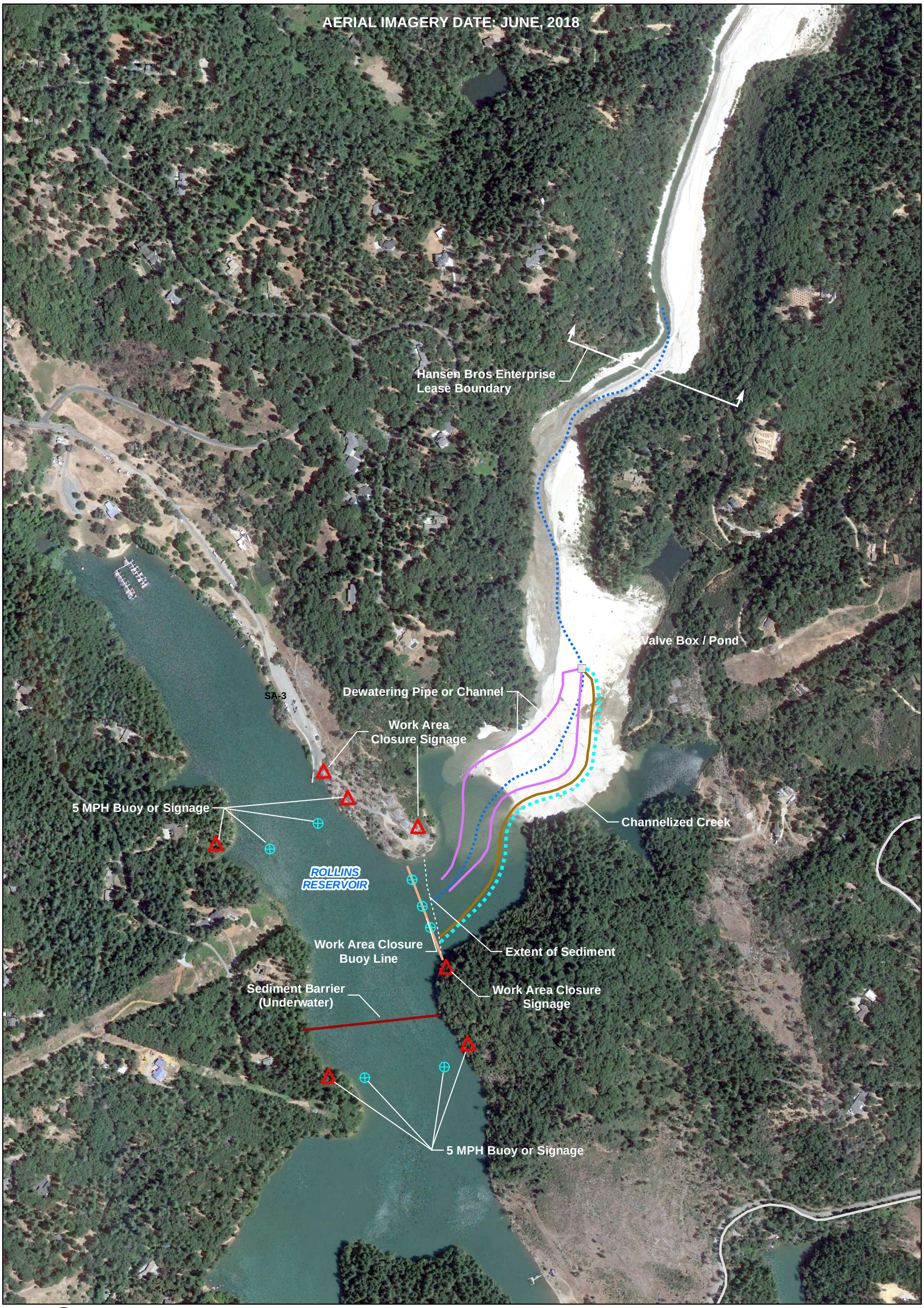

Projection: UTM Zone 10
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USGS 7.5' Quad: Chicago Park, CA

T 15N, R 09E, Sections 2-3, 10-11

- Buoy
- Signage
- Existing Channel
- Channelized Creek
- Dewatering Pipe or Channel
- Berm
- Sediment Barrier
- Work Area Closure Buoy Line

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Greenhorn Sediment Removal at Rollins Reservoir Project
Nevada County, CA

Figure 2-2

Concept Plan

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- Sediment Removal
  - Install a sediment barrier, consisting of interlocking steel sheet piles, from a barge to prevent further migration of sediment into Rollins Reservoir. The location of the sediment barrier may change as sediment is removed over time, and the barrier would eventually move from the main body of the reservoir into the Greenhorn Arm.
  - Re-establish access/haul road to the Work Area, including installation of bridges/culverts to allow access across Greenhorn Creek (multiple crossing may be necessary because the creek meanders through the Work Area).
  - Channelize the creek within the inundation zone of Rollins Reservoir away from the designated sediment removal area by creating a long berm and channel on one side of the Greenhorn Arm to re-route the creek (placement of the berm and channelization of the stream may change annually depending on previous sediment removal activities completed and the extent of "new" sediment that has entered the reservoir arm during high flows).
  - A valve assembly and aeration system will be installed in the existing creek bed upstream of the excavation area and will connect to the dewatering pipes/channels to allow for controlled release of water saturated with oxygen to continually flush the dewatering pipes/channels and reduce the potential for methylation of mercury. This will also reduce the potential for development of an anaerobic environment.
  - Once the creek is re-routed, install a corrugated pipe or excavate a dewatering channel parallel to the original stream channel through the berm to collect and direct subsurface water into the channelized creek bed.
  - Install dewatering pipes or excavate dewatering channels in the designated sediment removal area, parallel to the berm and running the extent of the Work Area, to facilitate draining/drying of the sediments necessary for removal and to reduce the potential for methylation of mercury. A dewatering pipe may also be placed within the dry creek channel, or the channel may be backfilled.
  - Conduct sediment removal activities by skimming dry sediment, above the water table, using scrapers, excavators, and/or front-end loaders.
  - Transport material to stockpile area, and conduct soil sampling and analysis every 2,000 CY. Process sediment through various sized mesh screens to remove debris and sort. The sorted material will be loaded into dump trucks and either transported to an approved off-site processing center for disposal (fine sediment), or temporarily stockpiled at the site (larger aggregate) for commercial sale and/or use in a local mine reclamation project.

- Demobilization
  - Remove equipment and material from the Work Area at the end of each work season, typically in November.

2.4.2 Detailed Description of Project Components

2.4.2.1 Notification/Mobilization

Public Notification

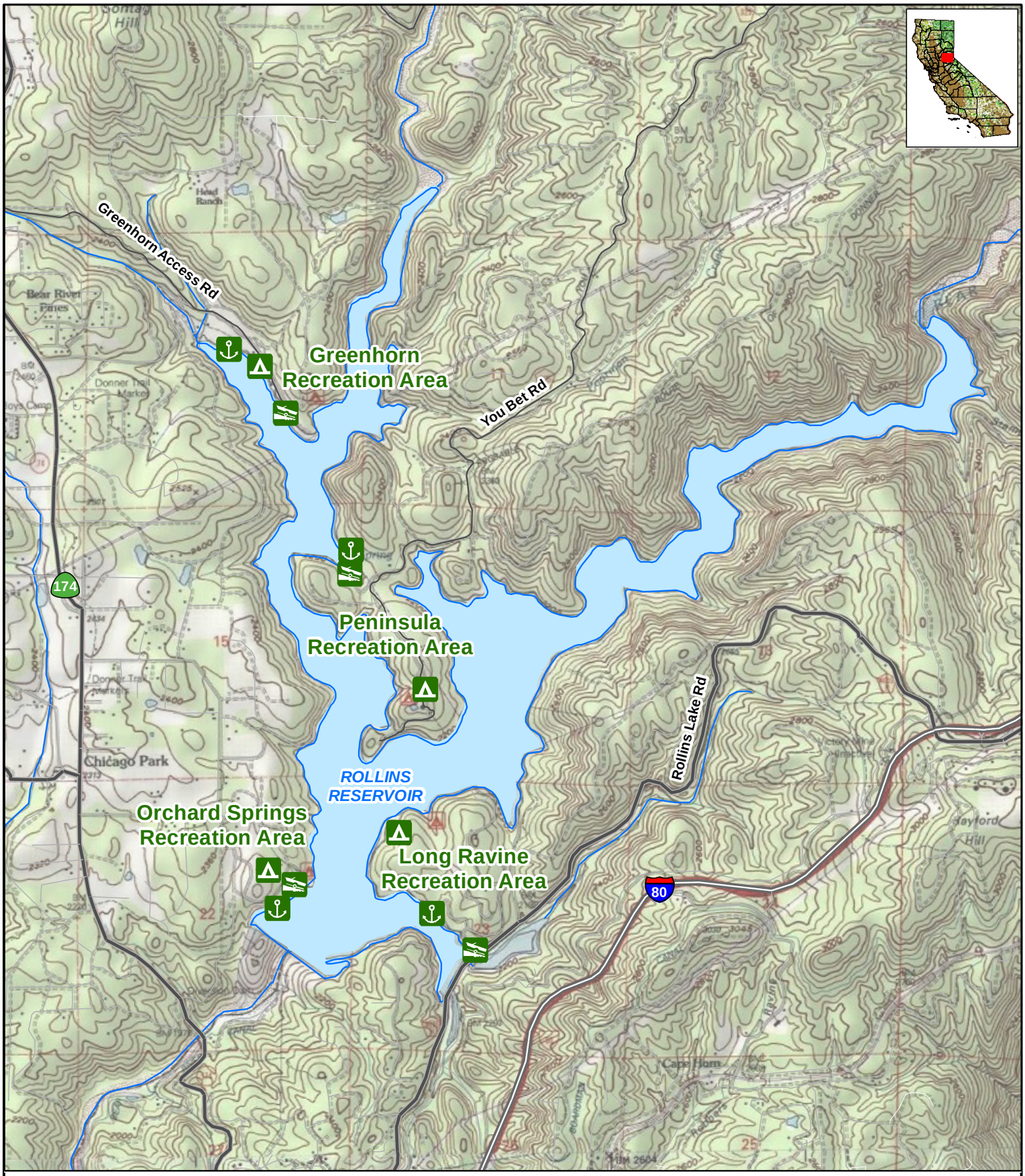
Rollins Reservoir supports four independently operated campgrounds: Long Ravine, Greenhorn, Orchard Springs, and Peninsula which combined, offer approximately 348 campsites and a complete range of services, including stores, restaurants, fuel sales, and rentals (Map 2-3). As part of the Project, NID will keep the campground concessionaires apprised of water surface elevation conditions and other construction-related activities in the Greenhorn Arm. In addition, NID will provide concessionaires annual notification of the Project schedule and activities in a format that can be posted onsite at the reservation window, at information boards within the campgrounds, and at boat docks. Information will also be posted on NID's website (www.nidwater.com) to ensure that prospective recreation visitors are informed of Project activities.

Transport Equipment and Material to Staging Areas

Sediment removal activities will involve the use of heavy equipment, vehicles, and machinery. Table 2-1 includes a list of anticipated heavy equipment that will be used during Project implementation. A barge and pile driver will be used to install the sediment barrier to reduce future creep of sediment into the reservoir. A track hoe, front-end loaders, excavators, dump trucks/ articulated dump trucks, and scrapers will be used during sediment removal activities. In addition, a small backhoe, front-loader, excavator, bulldozer, and flat-bed trucks will be used to transport materials to and within the Work Area and for removal of sediment. Pick-up trucks will be used to transport personnel to and from the Work Area.

NID has designated three staging areas, as shown in Map 2-2, including:

- **Staging Area (SA)-1:** an existing parking area at the intersection of You Bet Bridge and the existing access road maintained by Hansen Bros. Enterprises to access their lease at the upper end of the Work Area;
- **SA-2:** located adjacent to the existing stockpile area that is currently maintained by Hansen Bros. Enterprises; and
- **SA-3:** located within a portion of the Greenhorn Campground Boat Launch parking area.



Projection: UTM Zone 10
Datum: NAD 83

0 0.5 1 Miles

USGS 7.5' Quads: Chicago Park, CA T 15N, R 09E, Sections 2-3, 10-11

Boat Launch

Campground

Marina

Cardno

Greenhorn Sediment Removal at Rollins Reservoir Project

Map 2-3

Location of Recreation Facilities at Rollins Reservoir

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Table 2-1
Anticipated Equipment List

Equipment	Quantity
Construction Vehicles	
• Large Loader	2
• Skid Steer Loader	1
• Large Excavator	1
• Medium Excavator	1
• Small Excavator	2
• Backhoe	2
• Trackhoe	2
• Scraper	3
• Bulldozer	2
Compaction Equipment	
• Large Vibratory Roller	1
• Small Vibratory Roller	1
• Hand Vibratory Compactor	1
Trucks	
• Flat-bed Trucks	1
• Pick-up Trucks	4
• Delivery Trucks	2
• Dump Truck/Articulated Dump Trucks	4
• Sweeper Truck	1
• Water Truck	1
Other Construction Equipment	
• Grizzly	1
• Barge	1
• Pile Driver	1
• Chainsaw	3
• Aeration Equipment	1-3
• Oxygen Sensors	3-6
• Diesel Generator (10 horsepower [HP])	1
• Diesel Generator (40 HP)	1

All staging areas are located in previously-disturbed locations. SA-1 and SA-2 will be used each year during Project implementation. SA-3 will only be used in years when the barge is launched for installation or moving of the sediment barrier (approximately 2-week period in July). No grading, vegetation removal, or other site preparation will be necessary prior to use. NID will designate vehicle fueling areas at SA-1 and SA-3 (in years when the sediment barrier is being installed or moved). Fuel will be stored in a mobile tanker truck. Any pumps or other stationary equipment that must be fueled on the dewatered reservoir bed will be placed on secondary containment structures to avoid soil/water contamination. All fueling activities will be completed consistent with state and federal Best Management Practices.

Personnel parking and portable restrooms will be located at SA-1 and SA-3 (in years when the sediment barrier is being installed or moved) and a Project office trailer will be located at SA-1. Portable restrooms will be placed onsite by a licensed vendor and operated in accordance with Nevada County Environmental Health requirements.

Establish Work Area Boundary

Prior to initiation of work activities each year, NID will install a buoy line with hazard markers and closure signage to restrict access to the Greenhorn Arm at Rollins Reservoir. The buoy line will remain in place until the reservoir levels drop precluding entrance into the Greenhorn Arm.

Hazard markers and signage will also be placed in the Greenhorn Campground and along the shoreline near the entrance to the Greenhorn Arm to notify the public of the Work Area closure. As discussed above, NID will also notify and provide a Project schedule and activity information to campground concessionaires on Rollins Reservoir for posting on their reservation website, and at the reservation window and information boards.

Hazard markers and additional buoys or signage with a 5-mile-per-hour (mph) speed restriction will be placed near the location of the sediment barrier, in the main body of the reservoir. The buoys or signage will remain in place when the sediment barrier is present within the reservoir.

The Work Area boundaries will be delineated, including the upstream and downstream ends, with fencing, stakes, or flagging.

Initiate the Water Quality Monitoring Plan

Baseline water quality monitoring must be initiated prior to conducting the sediment removal activities described below. Refer to Section 2.4.3 for additional information on the requirements of the WQMP.

2.4.2.2 Sediment Removal

Install Sediment Barrier

Interlocking steel sheet piles (approximately 36-foot-long steel sheets) will also be driven into the reservoir bottom, with a pile driver off of a barge, to form a sediment barrier perpendicular to the main body of the reservoir. Installation or moving of the sediment barrier would take approximately 2 weeks to complete (mobilization, installation, and demobilization). The purpose of the sediment barrier is to prevent further migration of sediment into the reservoir. Initially, the sediment barrier will be installed in Rollins Reservoir proper, however, the location will eventually move into the Greenhorn Arm as sediment removal activities proceed. When located in the main body of the reservoir, the barrier will be maintained below the water surface and 5-mph buoys or signage will be installed over the top of the barrier. It is assumed that the sediment barrier will be moved two times during the term of the Project.

Establish Access/Haul Road

An access/haul road consisting of: (1) the existing road from You Bet Bridge into the Hansen Bros. Enterprises lease area (6,717 feet); and (2) a new haul road from the existing access road to the inundation zone of the Greenhorn Arm of Rollins Reservoir for Project-specific sediment removal activities will support Project activities (Map 2-2). The new haul road will be established annually, as high spring flows from the creek into the reservoir will likely redistribute material used to establish the road.

The existing haul road from You Bet Road to the Hansen Bros. Enterprises Lease Boundary consists of two segments. One segment located within the upland areas (2,252 feet), and the other is located within the floodplain of Greenhorn Creek (4,465 feet). Hansen Bros. Enterprises maintains both sections of the existing haul road to support their Greenhorn Gravel Extraction Project. If Hansen Bros. Enterprises does not conduct aggregate mining in the Project Site in a given year, NID will re-establish the haul road as part of the Project. This will include re-establishment of the berm and grading of the haul road.

A new haul road (24 feet wide and approximately 2,161 feet long) will also be constructed using native material from the Project Site. One or two construction vehicle turnarounds will be developed as part of the new road. Bridges and culverts, as appropriate, will be installed along the new haul road to provide access over Greenhorn Creek (multiple crossings may be necessary because the creek meanders through the Work Area).

The bridge or pipe crossings will be sized and positioned to maintain passage of aquatic species (fish or amphibians) and the appropriate velocity of water flows. Exclusionary, high visibility fencing will be installed, where appropriate, to protect aquatic species.

Channelize Creek Bed

Following installation of the sediment barrier, and once water levels recede in the Greenhorn Arm, construction mats, bridges, and culverts will be installed, where necessary, to allow access within the inundation zone. A track hoe will then be used to construct a berm to form the channelized creek bed. The approximate location of the berm is shown in Figure 2-2. Once the berm is complete, a narrow pilot channel will be excavated extending the entire length of the berm. The pilot channel will then be connected to the active stream allowing relocation of Greenhorn Creek into the pilot channel, which will channelize over time with the flow of water. If necessary, the berm will be reestablished annually, as high spring flows will likely redistribute material used to establish the berm.

Install Valve Box/Pond

A valve box/pond will be installed in the active channel at the upper end of the dewatering pipes/channels to allow for controlled release of water from the active channel, through the dewatering pipes/channels. An aeration system will be placed in the valve box.

Flows will be released from the valve box/pond into the dewatering pipes/channels to maintain a reasonable velocity of water, if available, from the active channel. As described above, continuous oxygen monitors will be installed in the stream channel upstream of the valve box/pond, and at the end of the dewatering pipes/channels. The aeration system will be turned on, when necessary, to maintain oxygen concentration to reduce the potential for methylation of mercury. The aeration system will be powered by a 10 horsepower (HP) generator.

Install Dewatering Pipes/Channels

Once the creek is re-routed, and if needed, a corrugated pipe will be installed in the active channel at the valve box/pond perpendicular to the original stream channel and through the berm to collect and direct subsurface water from the active channel into the channelized creek bed.

In addition, dewatering pipes will be installed (or, alternately, channels will be excavated) in the sediment removal area to direct subsurface flow to the reservoir, allowing for drainage and faster drying of the sediment removal area. The dewatering pipes, where used, will be perforated polyvinyl chloride (PVC) or polyethylene pipes, 24 inches in diameter (or larger) in diameter.

Sediment Removal

Removal of sediment would begin once the sediment in the Work Area is dry enough to allow heavy excavating and earthmoving equipment to travel and maneuver over the sediment. Sediment will be excavated in the Work Area using scrapers, track hoes, backhoes, excavators, and/or front-end loaders. Excavation will continue until the level of creek bed surface is lowered to the top of

the dewatering pipes/channels. An additional dewatering pipe/channel will then be connected to the valve box/pond and sediment removal will continue.

No dredging of sediment would occur as part of the Project. Excavated material will be transported to the stockpile area via the access/haul road.

Transport Sediment to Stockpile Area

It is estimated that up to 200,000 tons of material could be removed from the Work Area per year, depending on market demand; although a typical year (based on similar activities) would include removal of approximately 50,000 tons per year. It is assumed that 200,000 tons of material would be removed approximately every 6th year, depending on storm events. Refer to Table 2-2 below for estimated sediment removal over a 6 year period.

Table 2-2
Estimated Sediment Removal Over a 6-year Period

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
50,000 tons	50,000 tons	50,000 tons	50,000 tons	50,000 tons	200,000 tons

Sediment removed from the Work Area will be transported by dump trucks or other loading equipment via the access/haul road to the stockpile area. The stockpile area encompasses an existing stockpile that is currently used as part of the Hansen Bros. Enterprises operations and is located on the east side of the Greenhorn Arm of Rollins Reservoir approximately 0.76 mile from intersection of You Bet Road and the access road maintained by Hansen Bros. Enterprises (see Map 2-2). Power at the site will be supplied by a 40 HP generator. The stockpile area will be approximately 1 acre with a storage capacity of approximately 15,440 cubic yards (CY). The stockpile area will be used to temporarily store sediment until the material can be tested, sorted, and transported to an approved off-site location. Barrier walls would be placed along the stockpile area adjacent to the reservoir shoreline to minimize erosion during high flows and/or reservoir levels.

Conduct Sediment Sampling and Analysis

Sediment will be sorted, sampled and analyzed every 2,000 CY to identify any potential hazards to the public or environment. If sediments exceed hazardous waste thresholds, the sediment will be disposed of in accordance with relevant hazardous waste regulations at an approved hazardous materials disposal site.

Process Sediment and Transport Off-Site

At the stockpile area, sediment that meets hazardous waste standards will be passed through a processing plant (i.e., grizzly) that consists of various sized mesh screens for removal of debris and large rocks, and to sort the material into various sizes. Typical screening sizes include: less than 1 inch, 1 to 2 inches, and greater than 2 inches. A containment system, such as a flat-bed trailer or other container, will be placed under the grizzly to collect fine material. Material collected in the containment system may be returned to the grizzly for re-screening to separate "usable" aggregate material, or if the containment is dominated by silt-sized aggregates (fine sediment), it will be transported via dump truck to an approved off-site processing center for disposal.

The screened material (larger aggregate) will be temporarily stockpiled and distributed as follows

- Distribution of approximately 30% of aggregate to Hansen Bros. Enterprises for processing at the local plant located across You Bet Road approximately 1.25 miles north of the Project (see Map 2-2);
- Distribution of approximately 30% of aggregate for local sales in Nevada County via Highway 174;
- Distribution of approximately 10% of aggregate for use in reclamation of one or more mining sites within 10 miles of the Project; or
- Distribution of approximately 30% of aggregate via Highway 80 for sales outside of Nevada County.

The only onsite processing will be screening of sediment and removal of debris. There will be no onsite washing of excavated materials. Water will be applied to material being stockpiled and loaded as required to reduce fugitive dust. Watering will be limited to dust suppression and will be applied in a manner to prevent direct run-off into the Greenhorn Arm. The water will be supplied onsite using NID's surface water in the Project Site.

2.4.2.3 Demobilization

Following completion of annual sediment removal activities (typically in mid- to late-November), the following will be removed from the Work Area:

- Dewatering Pipes/Channels
- Valve Box/Pond
- Aeration System
- Construction Equipment And Mats

- Bridges and Culverts
- Work Area Closure Buoy Line
- Processing Plant (grizzly)

The sediment barrier may remain in place depending on the extent of sediment removal completed. Buoys or signage with 5-mph speed restriction will be maintained adjacent to these features if they remain in place. The berm and new access/haul road will be left in place, but high spring flows will likely redistribute the material into the Work Area. In addition, the stockpile area barrier wall will remain in place throughout the duration of the Project.

2.4.3 Water Quality Monitoring Plan

NID will prepare a WQMP for the Project. The WQMP will describe the approach for monitoring water quality (baseline and Project conditions) in the vicinity of the Project during implementation (setup through demobilization). The WQMP will include compliance thresholds and adaptive management to address potential water quality issues should any arise. The WQMP would be implemented in any year which sediment removal activities occur. The WQMP will include water quality monitoring for the following constituents:

- Water Temperature
- Dissolved Oxygen (DO)
- Turbidity
- Total Dissolved Solids (TDS)
- Total Suspended Solids (TSS)
- Total Mercury
- Methylmercury

To fully document baseline and Project conditions, NID will monitor water quality in Greenhorn Creek, Greenhorn Arm of Rollins Reservoir, and the main body of Rollins Reservoir. Baseline condition monitoring will be conducted prior to the initial sediment removal. Water quality monitoring compliance thresholds will be established based on consultation with the Regional Water Quality Control Board (RWQCB) and California Department of Fish and Wildlife (CDFW). Monitoring reports will be developed and provided to agencies during Project implementation. Sediment removal will be suspended and agencies will be immediately notified (within 24 hours) if any constituents exceed thresholds developed through agency consultation with consideration of pre-project background levels.

2.5 WORK HOURS, PERSONNEL, AND SCHEDULE

Project working hours would be 7:00 a.m. to 7:00 p.m., Monday through Saturday. No work would occur on Sunday or federal holidays, except during emergencies.

Up to six employees would be onsite, depending on the level of activity. If needed, a night watchman would be on duty to provide security during non-work hours (after 7:00 p.m. and on Sundays and federal holidays).

The schedule for implementation of each Project activity is provided below. This schedule may be modified based on reservoir elevations and flows within Greenhorn Creek.

Activity	Timing
Phase I – Mobilization	
• Public Notification of Sediment Removal Activities	March
• Transport of Equipment and Material to Staging Areas • Establish Work Area • Implement Water Quality Monitoring • Install Sediment Barrier • Establish New Haul Road • Channelize Creek Bed • Install Dewatering Pipes/Excavate Dewatering Channel	Initiate in July, actual timing dependent on reservoir elevation and flows within Greenhorn Creek
Phase II – Sediment Removal	
• Conduct Sediment Removal and Sorting • Transport Material to Stockpile Area	August 1 to late November, unless dry conditions allow for a longer work period (but no later than December 31)
• Sorting and Off-site Transport	July to late-November, depending on water levels and flows in Greenhorn Creek
Phase III – Demobilization	
• Demobilization – Remove Equipment and Material	Mid- to late-November, unless dry conditions allow for a longer work period (but no later than December 31)

2.6 APPROVALS REQUIRED

NID leases a large portion of the Greenhorn Arm of Rollins Reservoir to Hansen Bros. Enterprises, who currently have mining rights to the leased property under the Amended Surface Mining and Reclamation Plan for Greenhorn Creek Harvesting and Material Processing (California Mine ID No. 91-29-0006; Reclamation Plan No. RP93-001; Use Permit No. U82-20 and U93-063; Amended Reclamation Plan No. RP15-001; and Amended Use Permit No. U15-008). The activities of Hansen Bros. Enterprises are permitted activities that are not part of NID's Greenhorn Sediment Removal Project. The following identifies permits that need to be acquired by NID specific to the Greenhorn Sediment Removal Project.

The Greenhorn Sediment Removal at Rollins Reservoir Project is a reservoir maintenance project. The Project is located within the FERC Project boundary and is considered maintenance of an existing FERC facility that is authorized by FERC under the existing license. As such, NID will seek a Special Exemption under the Surface Mining and Reclamation Act (SMARA) through the Nevada County Planning Department. NID will specifically request that Nevada County approve an exemption under provisions provided by SMARA, to remove sediment from within the original 1965 limits of the Greenhorn Arm of Rollins Reservoir. NID will file the request for exemption pursuant to California Code of Regulations, Title 14, Division 2, Chapter 8, Article 1, Section 3505, Special Provisions, paragraph (a)(2).

It is anticipated that this Environmental Impact Report (EIR) will be used by responsible agencies that may have jurisdiction over elements of the Project to process other associated permits necessary for implementation of the Project. State and local agencies that may have jurisdiction over the Proposed Project include the following:

- **U.S. Army Corps of Engineers (USACE).** Section 404 Clean Water Act Permit for any activity within the waterway that would be considered "fill".
- **State Water Resources Control Board (State Water Board)/ RWQCB.** Section 401 Clean Water Act Water Quality Certification.
- **State Water Board/RWQCB**. Section 402 Clean Water Act National Pollutant Discharge Elimination System (NPDES) and Stormwater Pollution Prevention Plan.
- **CDFW.** Section 1600 Lake or Streambed Alteration Agreement.
- **Nevada County.** SMARA exemption, Hazardous Waste Business Plan, and/or Spill Prevention and Control Plan and encroachment permit for use of the County Right-of-Way at SA-1.

In addition, NID may also be required to notify or obtain authorizations from federal agencies with jurisdiction over facilities or who own lands within the Project Site.

- Notification to the FERC that sediment management would be implemented within the Greenhorn Arm of Rollins Reservoir (facility under FERC jurisdiction).
- Notification to BLM that sediment management would occur on BLM lands within the FERC Project Boundary of Rollins Reservoir.

CHAPTER 3
ENVIRONMENTAL ANALYSIS

The following sections evaluate the potential environmental impacts of the Proposed Project. In accordance with Appendix G of the CEQA Guidelines and other applicable thresholds of significance as determined appropriate by NID, in its discretion, the Project's potential environmental effects are analyzed for the following environmental topic areas:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Recreation
- Transportation
- Public Utilities and Services
- Wildfire

Format of the Environmental Evaluation

Each section below is organized in the same format and consists of the following subsections:

- The **Existing Conditions** subsection describes the environmental setting with regard to the environmental topic area at issue.
- The **Relevant Plans, Policies, and Ordinances** subsection contains an overview of the federal, State, and local laws and regulations applicable to each environmental topic area.

- The **Thresholds of Significance** subsection tells how an impact is judged to be significant in this Draft EIR. These standards are based on the CEQA Guidelines and other regulatory criteria where noted.
- The **Impact Analysis** subsection provides an analysis of the Project's potential environmental impacts and provides conclusions as to the level of significance with respect to each impact.
- The **Mitigation Measures** subsection numbers and lists identified impacts and feasible measures that would mitigate each impact.
- The **Level of Significance after Mitigation** subsection provides the resulting significance after mitigation has be considered.
- The **References** subsection identifies any materials consulted in preparation of each section.

Characterization of Impact Significance

CEQA defines significance as a "substantial or potentially substantial adverse change to the environment" (CEQA Guidelines Section 15382). The determination of significance by the lead agency is based on threshold criteria specific to each resource category. Under CEQA, a significance threshold identifies the point at which the severity of an impact changes from less than significant to significant, with or without mitigation. The following terms are used in this EIR to characterize impacts.

- **No Impact:** No adverse environmental impacts would occur.
- **Less than Significant:** Environmental impacts would not exceed the significance criteria.
- **Less than Significant with Mitigation:** Adverse environmental impacts could occur (impacts would exceed the significance criteria or threshold defined for each environmental issue), but mitigation measures would be implemented to reduce adverse impacts to less-than-significant levels.
- **Significant:** Adverse environmental impacts could occur, and no mitigation measures are identified to reduce impacts to levels below the significance criteria.
- **Beneficial:** No adverse environmental effects would occur, and one or more environmental baseline conditions would improve as a result of the Project.

CEQA Guidelines Section 15126.4[a] states that, "an EIR shall describe feasible measures which could minimize significant adverse impacts…and [that are] fully enforceable through permit conditions, agreements, or other legally binding instruments." A mitigation measure is intended to do one or more of the following:

- Avoid the impacts altogether by not taking a certain action or parts of an action;
- Minimize impacts by limiting the degree or magnitude of the action and its implementation;
- Rectify the impact by repairing, rehabilitating, or restoring the affected environment;
- Reduce or eliminate the impact over time through preservation and maintenance operations during the life of the action; or
- Compensate for the impact by replacing or providing substitute resources or environments.

Significant impacts that cannot be mitigated to less-than-significant levels may be unavoidable.

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3.1 AESTHETICS

This section describes the existing visual setting of the Project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project). A site visit to collect photographs of the Project site was conducted on August 8, 2017. Photos 3.1-1 through 3.1-12 at the end of this section depict views from the existing Project vicinity.

3.1.1 Existing Conditions

3.1.1.1 Regional Setting

The Project site is located in the Sierra foothills, within the watershed of Greenhorn Creek, upstream from Rollins Reservoir, a man-made water body. The Project vicinity is characterized by mountains and valleys covered in coniferous forest. Elevations in the Project vicinity vary from approximately 2,100 feet above mean sea level (msl), the approximate level of Rollins Reservoir, to approximately 2,400 feet msl. Scattered single-family rural residences are located in the Project vicinity, directly adjacent to the Project site. Access to the Project site is via Interstate 80 (I-80). To reach the main Work Area, exit Highway 174, turn right onto You Bet Road, Project access is off You Bet Road directly after you cross You Bet Bridge. To reach the staging area at Greenhorn Campground Boat Launch parking area (Staging Area [SA-3]), exit Highway 174, turn right onto Greenhorn Access Road, SA-3 is at the end of this road (Map 2-1).

3.1.1.2 Project Site

The Project site is approximately 108-acres in size, including the sediment removal area, three staging areas, and the haul/access road. The Work Area is located on the Greenhorn Creek Arm of Rollins Reservoir (Map 2-2). The three staging areas include, SA-1: an existing parking area at the intersection of You Bet Bridge and Hansen Bros. Enterprise's access road; SA-2: located adjacent to the existing stockpile area that is maintained by Hansen Bros. Enterprises; and SA-3: the existing Greenhorn Campground Boat Launch parking area. Sediment removal operations would occur in a 49.7-acre area (Work Area).

The viewshed of the Project is defined as the area surrounding a project from which the project is, or potentially could be, visible to viewers. Given that this stretch of Greenhorn Creek is characterized by a steep river valley with a channel measuring 50 to 750 feet, the viewshed would be limited primarily to the river valley itself and portions of the reservoir from which the river valley is visible. The vegetation adjacent to the creek consists of coniferous forest and scattered chaparral. At low flow, Greenhorn Creek has one or more narrow meandering channels. There are several

disturbed areas, including roadways and existing staging/stockpile areas and the existing haul road (Map 2-2).

Views of the Project site have a moderate to high level of vividness (see Definitions below), due to the densely vegetated landforms and the strong lines of Greenhorn Creek. The strong visual effect of the vegetation and natural topography is somewhat diminished by the existing haul road, SA-2, and the stockpile area adjacent to SA-2 reducing the visual intactness of the Project site from high to moderate. Visual unity of the Project site is moderate to high, with the scale of man-made structures generally in keeping with the natural landscape.

Definitions

- ***Vividness:*** The visual power or memorability of landscape components as they combine in distinctive visual patterns.
- ***Intactness:*** The visual integrity of the natural and man-built landscape and its freedom from encroaching elements. It can be present in well-kept urban and rural landscapes, as well as natural settings.
- ***Unity:*** The visual coherence and compositional harmony of the landscape considered as a whole. It frequently attests to the careful design of individual components in the landscape (FHWA 1981).

3.1.1.3 Viewer Groups

Potential viewers of the Project site include NID personnel, Bureau of Land Management (BLM) employees, year-round residents, and users of the local recreational facilities, including Rollins Reservoir, Greenhorn Creek, and the adjacent Greenhorn Campground and boat launch.

The nearest residential uses are generally between 400 to 1,000 feet from the Project site (see Section 3.10, Noise, Map 3.10-1). Residential viewers are normally considered to have a high level of sensitivity; however, direct views of the site from a residential unit are limited, or non-existent, resulting in low exposure.

3.1.2 Relevant Plans, Policies, and Ordinances

3.1.2.1 Federal

Bureau of Land Management

In order to meet its responsibility to maintain the scenic values of the public lands, BLM has developed a visual resource management (VRM) system (BLM 2012). The VRM system provides a way to identify and evaluate scenic values to determine the appropriate levels of management. It

also provides a way to analyze potential visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings. BLM's VRM system consists of two stages: inventory and analysis.

- **Inventory (Visual Resource Inventory).** The inventory stage involves identifying the visual resources of an area and assigning them to inventory classes using BLM's visual resource inventory process. The process involves rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from travel routes or observation points.
- **Analysis (Visual Resource Contrast Rating).** The analysis stage involves determining whether the potential visual impacts from proposed surface-disturbing activities or developments will meet the management objectives established for the area, or whether design adjustments will be required. A visual contrast rating process is used for this analysis, which involves comparing the project features with the major features in the existing landscape using the basic design elements of form, line, color, and texture.

3.1.2.2 State

California Scenic Highway Program

The state scenic highway system includes a list of highways that are either eligible for designation as scenic highways or have been so designated (Caltrans 2017). These highways are identified in Section 263 of the Streets and Highways Code.

Within Nevada County, portions of State Route (SR) 49, SR-174, SR-20, SR-89, and I-80 are designated as 'eligible state scenic highways', however, they are not officially designated at this time. A 6-mile segment of SR-20 from Skillman Flat Campground to 0.5 mile east of Lowell Hill Road is officially designated a state scenic highway. This section of SR-20 is not in the vicinity of the Project. None of the roadways identified above are visible from the Project site.

3.1.2.3 Local

Nevada County General Plan

The Nevada County General Plan includes an Aesthetics Element (Chapter 18), which gives an overview of the County's visual resources and identifies goals, objectives, and policies related to aesthetics. Many of the policies relate to development standards related to development and signage. However, the following overall goal is relevant to the Proposed Project:

- **Goal 18.2:** Protect and preserve important scenic resources.

3.1.3 Threshold of Significance

The significance criteria used to evaluate the Project impacts to aesthetics are based on Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.). According to Appendix G of the CEQA Guidelines, a significant impact related to aesthetics (except as provided in Public Resources Code 21099) would occur if the Project would:

1. Have a substantial adverse effect on a scenic vista.
2. Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway.
3. Substantially degrade the existing visual character or quality of the site and its surroundings.
4. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

3.1.4 Impacts Analysis

Impact 3.1-1. The project would not have a substantial adverse effect on a scenic vista.

The Project site does not include an identified state or local scenic vista. The Project would therefore have **no impact** on scenic vistas. The scenic value of the Project site is considered further below.

Impact 3.1-2. The project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

There are no officially designated scenic highways within the Project site. SR-174 from Grass Valley to I-80 is designated as an 'eligible state scenic highway'; however, it is not officially designated as such. SR-174 will be used for hauling material to/from the Project site. Use of SR-174 will not result in damage to scenic resources along the roadway, including trees, rock outcroppings, or historic buildings. Therefore, the Project would have **less-than-significant impacts** on scenic resources within a state scenic highway.

Impact 3.1-3. The project, located in a non-urbanized area, would not substantially degrade the existing visual character or quality of public views[1] of the site and its surroundings.

The visual quality of the Project site is currently moderate to high. The Greenhorn Arm of Rollins Reservoir is not in the same condition as it was following construction of Rollins Reservoir Dam in 1965 due to sediment accumulation which is now encroaching in the main body of the reservoir.

[1] Public views are those that are experienced from publicly accessible vantage points.

In addition, sections of the Project site have been disturbed by Hansen Bros Enterprise's gravel extraction operations and previous sediment removal efforts.

The Proposed Project would reintroduce sediment removal activities at the Project site. Sediment removal activities would occur in previously-disturbed areas and would be most intense during the late summer and fall. These activities would be visible to scattered residential units with a view of the Work Area and from publicly accessible vantage points at Rollins Reservoir, Greenhorn Campground, and the Greenhorn Campground Boat Launch. Seasonal mobilization of equipment, establishment of the Work Area, sediment removal and processing, and demobilization activities would impact visual character and quality of the site. In addition, some Project features may remain in place on a year-round basis (e.g., sediment barrier).

Seasonal mobilization and Project activities include transportation of equipment and material to the staging areas; establishment of the Work Area; installation/relocation of the sediment barrier; establishment of the access/haul road; channelization of the creek bed; installation of dewatering pipes/channels; and sediment removal, processing, and transport. Additionally, Project office trailers and portable restrooms will be annually mobilized at SA-1 and at SA-3 when the sediment barrier is installed or moved.

Initially, the sediment barrier will be installed in Rollins Reservoir proper, however, the location will eventually move into the Greenhorn Arm as sediment removal activities proceed. The sediment barrier may remain in place depending on the extent of sediment removal completed each year. When located in the main body of the reservoir, the barrier will be maintained below the water surface and 5-mph buoys or signage will be installed over the top of the barrier. Buoys or signage with 5-mph speed restrictions will be maintained adjacent to the barrier if it remains in place. The creek channelization berm and new access/haul road will be left in place, but it is anticipated that high spring flows will likely redistribute the material into the Work Area. In addition, the stockpile area barrier wall will remain in place throughout the duration of the Project. All other Project activities and equipment will be removed annually.

The viewshed of the Project is limited primarily to the river valley, and to portions of the reservoir from which the river valley is visible. The Project site is therefore visible to residential units in the vicinity of the Project, however, in general, direct views of the Project site are limited due to vegetation and topography. While not used on an annual basis, staging of equipment and materials at SA-3 would add a new visual element from publicly accessible vantage points at Rollins Reservoir, Greenhorn Campground and Greenhorn Campground Boat Launch. In addition, the Work Area would be visible from publicly accessible vantage points at Rollins Reservoir in the vicinity of the Greenhorn Arm. Impacts to these users would be most intense during sediment removal activities that coincide with the recreation season.

The visual effect of the Project on residences and recreationists would be low to moderate, depending on the season and when Project activities are initiated in any particular year (depending on reservoir elevation and flows within Greenhorn Creek). It is assumed that Project activities would occur from approximately July through December. During this timeframe visual impacts would be moderate. Impacts would be low all other times of the year (January through June). Overall, visual impacts to viewers in the Project vicinity would be potentially significant. Mitigation measures MM-AES-1 and MM-AES-2 will be implemented to reduce potential impacts to **less than significant**.

Impact 3.1-4. The Project could create a new source of substantial light or glare which would adversely affect day- or nighttime views in the area.

The majority of Project operations occur during daylight hours, Proposed Project hours are 7:00 a.m. to 7:00 p.m. The Project activities occurring during peak recreational use times, July-Labor Day weekend, should not need lighting. The Work Area would only be lit when necessary/required for work during the later months of the year (October-December). The area containing the stockpile and processing plant (SA-2) will have lighting. Project lighting during fall and winter months could introduce a new light source and contribute to "sky glow"—the cumulative reduction in the quality of night-sky views. This impact would be potentially significant. Mitigation measure MM-AES-3 will be implemented to reduce potential impacts to **less than significant**.

3.1.5 Mitigation Measures

The following mitigation measures will be implemented as part of the Project to reduce potentially significant impacts to a less-than-significant level.

MM-AES-1 At the end of each workday crews will conduct Project site housekeeping, including moving equipment and work vehicles to one of the three staging areas and will maintain work and staging areas to ensure they are orderly and free of trash and debris.

MM-AES-2 Following completion of annual sediment removal activities, the following will be removed from the Work Area: dewatering pipes/channels; valve box/pond; aeration system; construction equipment and mats; bridges and culverts; Work Area closure buoy line (depending on extent of sediment removal completed); and processing plant (grizzly). During annual demobilization, construction crews will restore staging areas disturbed by Project activities to pre-mobilization condition with the exception of the haul road and creek channelization berm which will remain in place until high spring flows redistribute the material.

MM-AES-3 Lighting fixtures shall be full or semi cutoff. Overall lighting levels shall be limited to that necessary to illuminate the Work Area during the later months of the year. Incandescent and mercury vapor light sources will not be used.

3.1.6 Level of Significance After Mitigation

With the implementation of MM-AES-1 and MM-AES-2, potential visual impacts would be reduced to **less than significant**.

With the implementation of MM-AES-3, the potential of the Project to either create light trespass on surrounding areas or contribute to "sky glow" would be substantially reduced, resulting in direct and cumulative impacts that would be **less than significant**.

3.1.7 References

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act, as amended.

BLM (Bureau of Land Management). June 2012. United States Department of the Interior, Bureau of Land Management. "VRM System." https://www.blm.gov/programs/recreation/recreation-programs/visual-resource-management. Accessed March 2017.

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County of Nevada. 1995. Nevada County General Plan, Chapter 18: Aesthetics. http://www.mynevadacounty.com/nc/cda/planning/Pages/Nevada-County - General-Plan.aspx.

FHWA (Federal Highway Administration). 1981. *Visual Impact Assessment for Highway Projects*. Washington, DC: U.S. Department of Transportation, FHWA. March 1981.

Photo 3.1-1 Staging Area 1 (SA-1) from You Bet Road.

Photo 3.1-2 Existing haul road and Greenhorn Creek from SA-1 (facing south).

Photo 3.1-3 Existing haul road within the Project site (facing south).

Photo 3.1-4 Staging Area 2 (SA-2) (facing south).

Photo 3.1-5 SA-2 and stockpile area, facing southeast.

Photo 3.1-6 Existing stockpile area, facing southeast.

Photo 3.1-7 Top of the Work Area (facing north).

Photo 3.1-8 Top of the Work Area (facing south).

Photo 3.1-9 Greenhorn Creek as it flows into Rollins Reservoir.

Photo 3.1-10 Staging Area 3 (SA-3) looking toward the Greenhorn Campground Boat Launch.

Photo 3.1-11 SA-3 looking toward Greenhorn Campground.

Photo 3.1-12 Greenhorn Campground Boat Launch.

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3.2 AIR QUALITY

This section describes the existing air quality setting and identifies associated regulatory requirements related to implementation of the Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project). Further, this section evaluates potential conflicts with applicable air quality plans; the potential for the Project to result in violations of any air quality standards and to therefore result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in nonattainment under an applicable federal or state ambient air quality standard; exposure of sensitive receptors to substantial pollutant concentrations; the potential for creation of objectionable odors affecting a substantial number of people. Finally, this section identifies mitigation measures related to implementation of the Proposed Project.

3.2.1 Existing Conditions

The Project Site is located in an unincorporated area of Nevada County which is located in the Mountain Counties Air Basin (MCAB). However, and as discussed in Section 3.12 Transportation and Traffic, some of the haul truck trips to distribute excavated sediment could be located outside of the MCAB and cross into the Sacramento Valley Air Basin (SVAB). The MCAB encompasses the central and northern parts of the Sierra Nevada and covers an area of roughly 11,000 square miles. The MCAB is made up of Nevada, Sierra, Plumas, El Dorado (western portion), Placer (middle portion), Amador, Calaveras, Tuolumne, and Mariposa counties.

Generally, the MCAB has a Mediterranean climate consisting of hot, dry summers and cool, rainy winters. However, the micro-climate differs with elevation and distance to the mountain ranges of the Sierra Nevada with the variability in terrain making it possible for different climates to exist in relatively close proximity. The patterns of mountains and hills creates a wide variation in rainfall, temperature and localized winds throughout the basin. The western portions of the basin slope relatively gradually, with deep river canyons running from southwest to northeast toward the crest of the Sierra Nevada. The slopes in the Sierra Nevada are steeper, but river canyons are relatively shallow in the eastern portion of the basin.

Precipitation is generally highest in the higher mountain ranges and decline toward the western portion of the basin. Winter temperatures in the mountains can be below freezing with substantial accumulation of snow, but in the western foothills, winter temperatures usually dip below freezing only at night with precipitation mixed as rain or light snow. In the summer, temperatures in the mountains are mild, with daytime peaks in the 70s to low 80s degrees Fahrenheit (°F), but the lower elevations can routinely exceed 100°F.

The prevailing wind direction is westerly, however, the variation in terrain has a great influence on local wind patterns creating wide variability in wind direction. Generally, winds in the

afternoon are channeled up the canyon while nighttime winds flow down the canyon. Spring and summer often bring stronger winds with, on average, calmer winds occurring in fall and winter. When these calmer fall and winter winds occur, they can result in the formation of inversion layers when cold air from the mountains sinks to the ground while the warm air rises. This inversion, along with the calm winds, restrict dispersal of pollutants and thereby, trap these pollutants near the ground creating local "hotspots". These "hotspots" typically occur along heavily traveled roads and at busy intersections.

During summer's longer daylight hours, stagnant air, high temperatures, and plentiful sunshine provide the conditions and energy for the photochemical reaction between reactive organic compounds (ROG) and oxides of nitrogen (NOx) that results in the formation of ozone (O_3). Because of its long formation time, ozone is a regional pollutant rather than a local hotspot problem. In the summer, the strong upwind valley air flowing into the basin from the Central Valley to the west is an effective transport medium for ozone precursors and ozone generated in the Bay Area and the Sacramento and San Joaquin valleys. These transported pollutants predominate as the cause of ozone in the MCAB and are largely responsible for the exceedances of the state and federal ozone Ambient Air Quality Standards (AAQS) in the MCAB. The California Air Resources Board (CARB) has officially designated the MCAB as "ozone impacted" by transport from those areas (13 CCR sec. 70500).

Overall, air quality in the MCAB is very good. Only two pollutants, O_3 and suspended particulate matter (PM_{10}) are known to be problems in the County. Air quality in the Proposed Project vicinity is affected by various emission sources (e.g., mobile vehicles along Interstate 80 and other distant roadways) and atmospheric conditions, such as wind speed, wind direction, temperature, and rainfall, as well as geography. As noted above, air quality in western Nevada County is also influenced by pollutants transported to the area from the Sacramento Metropolitan Area and the San Francisco Bay Area.

3.2.1.1 Sensitive Receptors

Sensitive receptors are areas where pollutant-sensitive members of the population may reside or where the presence of air pollutant emissions could adversely affect use of the land. Reduced visibility, eye irritation, and adverse health impacts, particularly for people termed "sensitive receptors," are the most serious hazards of existing air quality conditions in the area. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. Sensitive members of the population include those who may be more negatively affected by poor air quality than other members of the population, such as asthmatics, the elderly, young children, people with cardiovascular and chronic respiratory diseases, and persons engaged in strenuous work or exercise. In general, residential areas, hospitals, daycare

facilities, elder-care facilities, elementary schools, and parks typically contain a high concentration of sensitive receptors.

3.2.1.2 Pollutants and Effects

Criteria air pollutants are pollutants for which acceptable levels of exposure have been determined by the U.S. Environmental Protection Agency (EPA) and the CARB, with the adoption of outdoor AAQS. These standards have been established to protect the overall health and welfare of the public and have been set with a margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. The criteria air pollutants are ozone (O_3) which is formed through a reaction involving nitrogen oxides (NO_x) and volatile organic carbons (VOCs), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter less than or equal to 10 microns in size (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns in size ($PM_{2.5}$), and lead. These pollutants, as well as TACs and diesel particulate matter (DPM), are discussed below.[1] In California, sulfates (SO_4), vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

Ozone. O_3 is a strong-smelling, pale blue, highly reactive, and unstable gas. This pollutant forms in the presence of sunlight through complex reactions involving O_3 precursors, such as hydrocarbons (e.g. volatile organic compounds) and oxides of nitrogen (NO_x). The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 is found in the stratosphere and troposphere. The stratosphere is the upper atmosphere ozone layer and is where most O_3 exists. O_3 in the stratosphere is known as the "good ozone" as it protects us from the harmful ultraviolet effects of the Sun. The troposphere is the lower atmospheric ozone layer from the ground surface to about 7 miles up and a limited amount of O_3 is located in this layer. Nonetheless, O_3 in the troposphere causes numerous adverse health effects, including breathing difficulties, lung tissue damage, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

Nitrogen Dioxide. NO_2 is a reddish-brown, highly reactive, oxidizing gas. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO), which is a colorless, odorless gas. NO_x plays a major role, together with VOCs, in

[1] The descriptions of health effects for each of the criteria air pollutants are based on the U.S. Environmental Protection Agency's *Six Common Air Pollutants* (EPA 2012) and CARB's *Glossary of Air Pollution Terms* (CARB 2010).

the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. Sources of NO_2 include mobile sources such as trucks, cars, buses, and off-road construction equipment, and stationary fuel combustion sources such as power plants and industrial boilers. NO_2 can irritate the lungs and intensify respiratory diseases, especially asthma, and increase susceptibility to respiratory infections. Asthmatic people, and the elderly and children are at greater risk from the health effects of NO_2.

Volatile Organic Compounds. VOCs also known as reactive organic gases (ROGs) are organic hydrocarbon compounds that easily transform into a gas. Along with carbon, VOCs can also contain elements of hydrogen, oxygen, chlorine, fluorine, bromine, nitrogen, or sulfur. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as VOCs. Primary source of VOCs are from the combustion of fuel from on and off-road vehicles and equipment and power plants. Other sources of VOCs include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of VOCs result from the formation of O_3 and its related health effects. High levels of VOCs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs.

Particulate Matter. Particulate matter consists of small particles of liquids and solids floating in the atmosphere and can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Fine particulate matter ($PM_{2.5}$) is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and VOCs. Respirable particulate matter, or coarse particulate matter (PM_{10}), is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport absorbed gases such as chlorides or ammonium into

the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle, as well as producing haze and reducing regional visibility.

People with influenza, people with chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death as a result of breathing particulate matter. People with bronchitis can expect aggravated symptoms from breathing in particulate matter. Children may experience a decline in lung function due to breathing in PM_{10} and $PM_{2.5}$. Other groups considered sensitive are smokers, people who cannot breathe well through their noses, and exercising athletes (because many breathe through their mouths).

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phaseout of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phaseout of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emission sources of greaterconcern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead.

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic non-cancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the state of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics

emission sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and non-carcinogenic effects. Non-carcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter. Diesel particulate matter is a complex mixture of very small carbon particles covered with numerous organic compounds that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. The CARB classified "particulate emissions from diesel-fueled engines" (i.e., diesel particulate matter) as a TAC in August 1998. Diesel particulate matter is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars, and off- road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with diesel particulate matter (CARB 2000). To reduce the cancer risk associated with diesel particulate matter, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000).

3.2.2 Relevant Plans, Policies, and Ordinances

3.2.2.1 Federal

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the Clean Air Act, including setting National Ambient Air Quality Standards (NAAQS) for major air pollutants; setting hazardous air pollutant standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O_3 protection measures, and enforcement provisions. NAAQS are established for criteria pollutants under the Clean Air Act, which are O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public

health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames.

3.2.2.2 State

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to the CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. The CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

The CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 3.2-1, Ambient Air Quality Standards.

State Implementation Plan

Federal clean air laws require areas with unhealthy levels of air pollutants (i.e., nonattainment areas) to develop State Implementation Plans (SIPs). California's SIP are a set of comprehensive plans that describe the State's emission reduction strategy for sources of pollution under State and Federal authority, and, for every local region not meeting federal standards, a demonstration of how attainment of the 8-hour ozone standard would be achieved. The CARB has adopted a series of regulations over the years to implement measures in previous SIP versions, as well as additional new CARB measures in SIP updates.

New mobile source regulations, reformulated gasoline, and multiple consumer products regulations envisioned in these SIPs have been adopted and are being implemented today. In developing the proposed statewide emission reduction strategy, the CARB has worked closely with air districts on O_3 attainment demonstrations for each area and on a PM_{10} attainment demonstration. In that process, emissions inventories are developed and air quality models are used to establish a region's "carrying capacity" and to calculate the additional emission reductions needed to achieve attainment.

Table 3.2-1
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	--	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM_{10})[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		--		
Fine Particulate Matter ($PM_{2.5}$)[9]	24 Hour	--	--	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15.0 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	--	NDIR
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	--	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		--	--	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	--	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		53 ppb (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)		Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	--		--	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	--	
	Annual Arithmetic Mean	--		0.030 ppm (for certain areas)[11]	--	

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	--	--	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	--		0.15 µg/m^3		
Visibility-Reducing Particles[14]	8 Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No National Standard		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: CARB 2016

Notes:

µg/m^3 = micrograms per cubic meter; ppm = parts per million.

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility-reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the USEPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 Torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 Torr; parts per million (ppm) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the US EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the US EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012 the national annual $PM_{2.5}$ primary standard was lowered from to 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

Notes (continued):

[10.] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national standards are in units of ppb. California standards are in units of ppm. To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.

[11.] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in ppb. California standards are in units of ppm. To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[12.] The CARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[13.] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

[14.] In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

Air Toxic Control Program

California's air toxics control program began in 1983 with the passage of the Toxic Air Contaminant Identification and Control Act, AB 1807, better known as the Tanner Bill. The Tanner Bill established a regulatory process for the scientific and public review of individual toxic compounds. When a compound becomes listed as a TAC under the Tanner process, the CARB normally establishes minimum statewide emission-control measures to be adopted by air quality management districts and air pollution control districts. All of the 189 federal hazardous air pollutants have been listed by the CARB as state TACs.

The second major component of California's air toxics program, supplementing the Tanner process, was provided by the passage of AB 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987. The goal of Air Toxics "Hot Spots" Information and Assessment Act is to collect emissions data from stationary sources for certain toxic substance that are routinely emitted to identify and reduce the health risks to nearby residents.

Applicable CARB Regulations

The following CARB regulations will be applicable to sources at the Proposed Project Site.

Idling of Heavy-Duty Commercial Trucks. In July 2004, the CARB adopted an Airborne Toxic Control Measure (ATCM) (13 CCR 2485) to control emissions from idling trucks. The ATCM prohibits idling for more than 5 minutes for all commercial trucks with a gross vehicle weight rating over 10,000 pounds. The ATCM contains an exception that allows trucks to idle while queuing or involved in operational activities.

Off-Road Diesel Vehicle Regulation. In July 2007, the CARB adopted an ATCM for in-use off-road diesel vehicles (13 CCR 2449 et seq.). The purpose of the regulation is to reduce NO_x and particulate matter emissions from most off-road diesel vehicles by establishing specific fleet average requirements. Where average requirements cannot be met, best available control technology (BACT) requirements apply. The regulation also includes recordkeeping, reporting, and labeling requirements. In response to AB 8 2X, the regulation was revised in July 2009 (effective December 3, 2009) to allow a partial postponement of the compliance schedule for existing fleets. On December 17, 2010, the CARB adopted additional revisions to further delay the deadlines reflecting reductions in diesel emissions due to the poor economy and overestimates of diesel emissions in California. The revisions delayed the first compliance date until no earlier than January 1, 2014, for large fleets, with final compliance by January 1, 2023. The compliance dates for medium fleets would be delayed until an initial date of January 1, 2017, and final compliance date of January 1, 2023. The compliance dates for small fleets would be delayed until an initial date of January 1, 2019, and a final compliance date of January 1, 2028. Correspondingly, the fleet average targets were made more stringent in future compliance years. The revisions would also accelerate the phaseout of older equipment in existing large and medium fleets over time, requiring the addition of Tier 2 or higher engines starting

on March 1, 2011, with some exceptions: Tier 2 or higher engines on January 1, 2013, without exception; and Tier 3 or higher engines on January 1, 2018 (January 1, 2023, for small fleets).

On December 14, 2011, the Office of Administrative Law approved amendments to the regulation. The amendments included revisions to the applicability section and additions and revisions to the definition. The initial date for requiring the addition of Tier 2 or higher engines for large and medium fleets, with some exceptions, was revised to January 1, 2012. New provisions would allow removal of emission-control devices for safety or visibility purposes. The regulation was amended to combine the particulate matter and NO_x fleet average targets under one, instead of two, sections. The amended fleet average targets are based on the fleet's NO_x fleet average, and the previous section regarding particulate matter performance requirements was deleted completely. The BACT requirements, which apply if a fleet cannot comply with the fleet average requirements, were restructured and clarified. Other amendments to the regulations included minor administrative changes to the regulatory text.

On-Road Heavy-Duty Diesel Vehicles Regulation. On December 12, 2008, the CARB adopted an ATCM to reduce NO_x and PM emissions from most in-use on-road diesel trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds (CARB 2014). The original ATCM regulation required fleets of on-road trucks to limit their NO_x and particulate matter emissions through a combination of exhaust retrofit equipment and new vehicles. The regulation limited emissions of PM for most fleets by 2011, and limited NO_x emissions for most fleets by 2013. The regulation did not require any vehicle to be replaced before 2012, and never required all vehicles in a fleet be replaced. In December 2009, the CARB governing board directed staff to evaluate amendments that would provide additional flexibility for fleets adversely affected by the poor California economy. On December 17, 2010, the CARB revised this ATCM to delay its implementation along with limited relaxation of its requirements. Starting on January 1, 2015, lighter trucks with a GVWR of 14,001 to 26,000 pounds with 20-year-old or older engines would need to be replaced with newer trucks (2010 model year emissions equivalent, as defined in the regulation). Trucks with a GVWR greater than 26,000 pounds with 1995 model year or older engines must be replaced as of January 1, 2015. Trucks with 1996–2006 model year engines must install a Level 3 (85% control) diesel particulate filter starting on January 1, 2012, to January 1, 2014, depending on the model year, and then must be replaced after 8 years. Trucks with 2007–2009 model year engines have no requirements until 2023, at which time they must be replaced with 2010 model year emissions equivalent engines as defined in the regulation. Trucks with 2010 model year engines would meet the final compliance requirements. The ATCM provides a phase-in option under which a fleet operator would equip a percentage of trucks in the fleet with diesel particulate filters, starting at 30% as of January 1, 2012, with 100% by January 1, 2016. Under each option, delayed compliance is granted to fleet operators who have complied or will comply with requirements before the required deadlines.

On September 19, 2011 (effective December 14, 2011), the Executive Officer approved amendments to the regulations, including revisions to the compliance schedule for vehicles with a GVWR of 26,000 pounds or less to clarify that all vehicles must be equipped with 2010 model year emissions equivalent engines by 2023. The amendments included revised and additional credits for fleets that have downsized; implement early particulate matter retrofits; incorporate hybrid vehicles, alternative- fueled vehicles, and vehicles with heavy-duty pilot ignition engines; and implement early addition of newer vehicles. The amendments included provisions for additional flexibility, such as for low-usage construction trucks, and revisions to previous exemptions, delays, and extensions. Other amendments to the regulations included minor administrative changes to the regulatory text, including recordkeeping and reporting requirements related to other revisions.

Portable Equipment Registration Program. Effective November 30, 2018, owners or operators of portable engines, such as diesel generators and dredge engines, rated 50 brake horsepower (bhp) or greater and the engine-associated equipment (sand and gravel screening) that meet certification requirements can register under CARB's Statewide Portable Equipment Registration Program (PERP). Registering through the PERP program allows owners and operators to use the registered piece of equipment throughout California without obtaining a permit from each of the local air districts where that equipment is being used. The overall purpose of the program is to reduce DPM emissions with the phasing out of older, dirtier equipment.

3.2.2.3 Local

Northern Sierra Air Quality Management District

Air quality within Nevada County is regulated by the Northern Sierra Air Quality Management District (NSAQMD). The NSAQMD was created in 1986 with the merging of the Nevada, Plumas, and Sierra counties air districts. As it pertains to the project, the NSAQMD is the agency primarily responsible for ensuring that federal and state AAQS are not exceeded and that air quality conditions are maintained. This is achieved through the preparation of plans for the attainment of air quality standards, inspection, and issuance of permits to operate stationary sources, adoption, and enforcement of air pollution rules and regulations, air quality monitoring, and the implementation of programs and regulations required under the Federal and State Clean Air Acts.

The NSAQMD is in the process of preparing a federally enforceable SIP for western Nevada County. The SIP is an air quality attainment plan designed to address the County's nonattainment status for the State 1-hour ozone standard through the reduction of emissions of ozone precursors. This plan will include various pollution control strategies. However, most of these reductions are expected to come from motor vehicles becoming cleaner and from State regulations.

The NSAQMD rules applicable to the Project include:

- **Rule 205 – Nuisance.** Rule 205 prohibits the discharge of air contaminants or other material from any source which causes injury, detriment, nuisance, or annoyance to any considerable number of persons, or to the public, or which endangers the comfort, repose, health, or safety of any such persons, or the public or which cause to have a natural tendency to cause injury or damage to business or property.
- **Rule 226 – Fugitive Dust Control.** Rule 226 requires the submittal of a dust control plan to be approved by an Air Pollution Control Officer before topsoil is disturbed on any project where more than one (1) acre of natural surface area is to be altered or where the natural ground cover is removed. This applies to any clearing or grading.

  The intent of this rule is to reduce and control fugitive dust emissions. This rule applies to public and private construction activities, including dismantling/demolition of structures, processing/moving materials (sand, gravel, rock, dirt, etc.), and operation of machines/equipment. The dust control plan would need to identify the use of reasonable measures to prevent dust emissions and could include, cessation of operations during high winds, cleanup, sweeping, watering, compacting, and seeding disturbed areas.

  If a project is in an area mapped as having ultramafic rock or serpentine, or if these rock types are discovered on-site, the statewide Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations (Section 93105 of Title 17 of the California Code of Regulations) applies. Also, for large projects or in special circumstances (e.g., near schools or other sensitive receptors), additional measures (e.g., limits on active disturbance area or grading hours) may be required (NSAQMD 2015).

- **Rule 523 – Portable Equipment Registration.** Rule 523 requires a permit to operate for portable engines rated 50 bhp or greater that are not registered through the Statewide PERP. Portable equipment includes diesel pile-driving hammers, pumps, power generators, cranes, dredges on boats or barges, wood chippers, compressors, vacuum trucks, well drilling, and welding (NSAQMD 2019a) The NSAQMD "recommends obtaining a PERP registration in lieu of a district permit when possible; however, if an engine operates in one location for more than twelve continuous months an NSAQMD permit is required (NSAQMD 2019b)."

Local Air Quality

- **Nevada County Attainment Designation.** The attainment classifications for criteria pollutants are outlined in Table 3.2-2, Nevada County Attainment Classification.

Table 3.2-2
Nevada County Attainment Classification

Pollutant	Averaging Time	State Designation/ Classification	National Designation/Classification
O_3 (2008 Standard)	1-hour	Nonattainment	—
	8-hour	Nonattainment	Nonattainment/marginal (Western Nevada County); Unclassified/attainment (Eastern Nevada County)
NO_2	1-hour Annual arithmetic mean	Attainment	Unclassified/attainment
CO	1-hour 8-hour	Unclassified	Unclassified/attainment
SO_2	1-hour 24-hour Annual arithmetic mean	Attainment	Unclassified
PM_{10}	24-hour	Nonattainment	Unclassified
$PM_{2.5}$	24-hour	Unclassified	Unclassified/attainment
Lead (Pb)	30-day average	Attainment	Unclassified/attainment
Sulfates (SO_4)	24-hour	Attainment	—
Hydrogen sulfide (H_2S)	1-hour	Unclassified	—
Vinyl chloride[a]	24-hour	—	—
Visibility-reducing particles	8-hour (10:00 a.m. – 6:00 p.m.)	Unclassified	—

Sources: CARB 2016 (state designation/classification); EPA 2017 (national designation/classification).
Notes:
CO = carbon monoxide
NO_2 = nitrogen dioxide
O_3 = ozone
PM_{10} = coarse particulate matter
$PM_{2.5}$ = fine particulate matter.
SO_2 = sulfur dioxide
[a] CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined.

As shown in Table 3.2-2, Nevada County, within the MCAB, is a nonattainment area for both federal (western Nevada County only) and state O_3 standards and the state PM_{10} standards. Nevada County is also designated unclassified or unclassified/attainment (meaning there is not enough data to classify the region attainment or nonattainment) for the federal 24-hour standard for PM_{10}, NO_2, CO, SO_2, $PM_{2.5}$, and lead; and the state standard for CO, $PM_{2.5}$, hydrogen sulfide, and visibility-reducing particles. Nevada County has been designated as an attainment area for all other criteria air pollutants.

Air Quality Monitoring Data

Since the Project Site is located within MCAB, the Project vicinity's local ambient air quality is monitored by NSAQMD and the CARB. The CARB monitors ambient air quality at 40 air quality monitoring stations across the state. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations.

The primary criteria air pollutants of concern in the Project vicinity are O_3 and PM (PM_{10} and $PM_{2.5}$). The Grass Valley-Litton Building monitoring station (located at 200 Litton Drive, Suite 230, Grass Valley, CA, 95945) is the nearest air quality monitoring station to the Project Site (approximately 7 miles northwest of the Project Site). This station is located in a more urbanized area than the Project Site but given its relative close proximity is considered representative of the air quality experienced in the Project vicinity. This monitoring station monitors ambient concentrations of O_3 and $PM_{2.5}$

Air quality data from 2012 through 2017 for the Grass Valley – Litton Building monitoring station are provided in Table 3.2-3, Ambient Air Quality Data. The number of days exceeding the AAQS are shown in Table 3.2-4, Frequency of Air Quality Standard Violations.

Table 3.2-3
Grass Valley – Litton Building Ambient Air Quality Data

Air Pollutant	Averaging Time (State)	2012	2013	2014	2015	2016	2017	Most Stringent Ambient Air Quality Standard
O_3	1-hour (Maximum) (ppm)	0.087	0.089	0.089	0.101	0.101	0.108	0.09 ppm
	8-hour Average (Maximum)(ppm)	0.081	0.082	0.085	0.092	0.097	0.099	0.070 ppm
$PM_{2.5}$	24-hour Average (Maximum)(µg/m^3)	37.2	38.1	239.0	130.0	19.5	75.4	35 µg/m^3
	Annual Average	3.8 µg/m^3	5.7 µg/m^3	*	4.5	4.6	5.8	12 µg/m^3

Sources: CARB 2019
Notes:
* = no data because insufficient data available to determine the value.
O_3 = ozone
$PM_{2.5}$ = fine particulate matter
ppm = parts per million
µg/m^3 = micrograms per cubic meter
Data taken from CARB iADAM (2017) represent the highest concentrations experienced over a given year.

Table 3.2-4
Frequency of Air Quality Standard Violations

Year	Number of Days Exceeding Standard				
	State 1-Hour O_3	National 1-Hour O_3	State 8-Hour O_3	National 8-Hour O_3	National 24-Hour $PM_{2.5}$
2012	0	0	22	16	0
2013	0	0	24	19	0
2014	0	0	36	28	*
2015	4	0	30	26	0
2016	6	0	46	39	0
2017	13	0	85	78	3.0

Source: CARB 2019
Notes:
Exceedances information only shown for those pollutants monitored at the Grass Valley – Litton Building, which is the nearest monitoring location to the Project Site.
* = no data because insufficient data available to determine the value.
O_3 = ozone
$PM_{2.5}$ = fine particulate matter

Nevada County General Plan

Chapter 14, Air Quality, of the Nevada County General Plan provides citywide goals, objectives, and policies aimed at improving air quality. The air quality goals and policies applicable to the analysis of the Proposed Project's air quality impacts are as follows:

Goal 14.1: Attain, maintain, and ensure high air quality.

Objective 14.1: Establish land use patterns that minimize impacts on air quality.

Policy 14.1: Cooperate with the Air Quality Management District (currently the NSAQMD), during review of development proposals. As part of the site plan review process, require applicants of all subdivisions, multi-family, commercial, and industrial development projects to address cumulative and long-term air quality impacts, and request the District enforce appropriate land use regulations to reduce air pollution.

Objective 14.2: Implement standards that minimize impacts on and/or restore air quality.

Policy 14.3: Where it is determined necessary to reduce short-term and long-term cumulative impact, the County shall require all new discretionary projects to offset any pollutant increases. Wherever possible, such offsets shall benefit lower-income housing (Nevada County 1996).

3.2.3 Threshold of Significance

The significance criteria used to evaluate the project impacts to air quality are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.). According to Appendix G of the CEQA Guidelines, a significant impact related to air quality would occur if the Project would:

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.
3. Expose sensitive receptors to substantial pollutant concentrations.
4. Result in other emissions (such as those leading to odors adversely affecting a substantial number of people).

To assist in the evaluation of air quality impacts and identify appropriate mitigation, the NSAQMD prepared a guidance document titled "*Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects"* which was last updated in May 2016. This document assists in the preparation of air quality portions of environmental documents and includes thresholds of significance to be used in evaluating land use proposals. The NSAQMD has developed a three-tiered approach to significance as follows:

- Level A – A project meeting Level A thresholds would require the most basic mitigations;
- Level B – A project within the Level B threshold range would require more extensive mitigation;
- Level C – A project that exceeds the Level C thresholds would require the most extensive mitigations.

The tiered thresholds from Levels A, B, and C are provided in Table 3.2-5, NSAQMD-Recommended Thresholds of Significance.

Table 3.2-5
NSAQMD-Recommended Thresholds of Significance (pounds per day)

ROGs (VOCs)	NO_x	PM_{10}
Level A		
<24	<24	<79
Level B		
24–136	24–136	79–136
Level C		
>136	>136	>136

Source: NSAQMD 2016
Notes:
NO_x = oxides of nitrogen
PM_{10} = coarse particulate matter

If emissions for NO_x, ROGs (also known as VOCs), and PM_{10} exceed 136 pounds per day (Level C), then NSAQMD advises the CEQA lead agency that the project is likely to result in a significant impact to air quality. Impacts below Level C are considered potentially significant prior to implementation of mitigation.

3.2.4 Impacts Analysis

Impact 3.2-1. The Project would not conflict with or obstruct implementation of the applicable air quality plan.

As discussed in Section 3.2.2.3, the NSAQMD is in the process of preparing a federally enforceable SIP for western Nevada County to address O_3 levels and identify what pollution control strategies would be implemented to reduce current levels down to the AAQS. Most necessary reductions in the County are expected from statewide measures and from mobile sources becoming cleaner, including on-road vehicles and off-road equipment. Considering that the applicable air quality plan is currently being prepared and therefore has not been published for use, the Project is not in conflict with nor will it obstruct implementation of the plan.

Impact 3.2-2. The Project would not result in a cumulatively considerable net increase of a criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.

The Proposed Project would be implemented annually from approximately July through mid-to-late November (but no later than December 31). Mobilizing of equipment would begin in July and the removal of equipment and material would begin in mid-to-late November. It is estimated that up to 200,000 tons of material could be removed from the Work Area per year; although a typical year (based on similar activities) would include removal of approximately 50,000 tons per year. It is assumed that 200,000 tons of material would be removed every 6th year. To haul this material off-site and as also discussed in the traffic impacts section, it is assumed that a standard 10-wheeler

dump truck with a 15-ton capacity box would be used and would make an average 40-mile roundtrip from the site to one of the off-site distribution centers identified in Section 2.5 of the Project Description. This will require approximately 13,335 roundtrips for the removal of 200,000 tons of sediment and approximately 3,335 roundtrips for the removal of 50,000 tons of sediment. In addition to the sediment hauling activities, it is assumed that 20 roundtrips will be needed to haul equipment and materials both to and from the site during mobilization and demobilization. On-site construction activities will be completed by up to six construction workers that would travel to the site six days per week from nearby cities such as Grass Valley and Auburn with an assumed average roundtrip of 40 miles or 240 vehicle miles traveled per day.

The Proposed Project's criteria air pollutant emissions were estimated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2. This model uses widely accepted methodologies and data to quantify emissions estimate that include: (1) the EPA AP-42 Emissions Factors, (2) the CARB OFFROAD2011 emissions factors for off-road equipment and, (3) EMFAC2014 emissions factors for on-road vehicles.

For the purpose of this analysis, Project-specific information, including Project phasing and schedule, construction equipment types (see Project Description, Table 2-1), quantity and hours of use, construction worker vehicle and haul trips, and distances were used along with model defaults. For hauling activities, these emissions were modeled under two different scenarios to identify estimated emissions to haul 200,000 tons of material versus emissions estimates to haul 50,000 tons of material. See Appendix B for the emissions summary results.

Table 3.2-6 presents the maximum daily emissions associated with the operation of the Proposed Project to excavate and transport 50,000 tons of aggregate off-site.[2] Table 3.2-7 presents the maximum daily emissions associated with the operation of the Proposed Project to excavate and transport 200,000 tons of aggregate off-site.

[2] Implementation of fugitive dust control measures required under NSAQMD Rule 226 would further reduce impacts that were already less than significant.

Table 3.2-6
Estimated Daily Maximum Operational Emissions – 50,000 Tons of Removal (pounds per day)

Phase	VOCs	NO_x	CO	SO_x	PM_{10} (Total) [a]		$PM_{2.5}$ (Total) [a]	
Transport Equipment and Material to Staging Area (Mobilize)	0.03	1.12	0.19	0.003	0.08	0.08	0.03	0.03
Establish New Haul Road	4.32	49.62	33.79	0.06	15.76	10.19	3.47	2.90
Channelize Creek and Excavate Channel	1.49	15.47	16.88	0.03	11.65	7.55	1.84	1.43
Conduct Sediment Removal	3.29	37.49	28.35	0.05	14.61	9.33	2.83	2.30
Transport Material to Stockpile Area	1.19	14.14	9.54	0.02	1.17	0.88	0.64	0.61
Materials Sorting and Processing	1.83	14.85	15.33	0.03	0.88	0.88	0.87	0.87
Off-site Transport of Materials	0.49	15.95	2.67	0.05	38.55	24.06	4.11	2.66
Remove Equipment and Material (Demobilize)	0.008	0.25	0.04	0.0008	0.61	0.38	0.06	0.04
Maximum Daily Emissions (50k tons of removal and off-site disposal) [b]	**6.81**	**82.68**	**55.94**	**0.15**	**55.81**	**35.53** [c]	**8.53**	**6.49** [c]
Project Pollutant Threshold Category (NSAQMD)	*Level A (<24)*	*Level B (24–136)*	*N/A*	*N/A*	*Level A (<79)*		*N/A*	
Project Significant?[d]	No	No	No	No	No	No	No	No

Notes:
CO = carbon monoxide
NOx = oxides of nitrogen
PM_{10} = coarse particulate matter
$PM_{2.5}$ = fine particulate matter
SOx = sulfur oxide
VOC = volatile organic compound

[a] Totals includes emissions of PM from fugitive dust plus equipment exhaust.

[b] The maximum daily emissions represents the maximum estimated amount of daily emissions for the Project and includes the underlined emissions for phases that would simultaneously occur.

[c] PM_{10} and $PM_{2.5}$ emissions include the implementation of fugitive dust control measures as required under NSAQMD Rule 226. The implementation of these measures further reduces PM_{10} impacts that were already less than significant.

[d] Per NSAQMD, emissions of NOx, ROGs, and PM_{10} that are greater than 136 lbs/day are likely to result in a significant impact to air quality.

Table 3.2-7
Estimated Daily Maximum Operational Emissions – 200,000 Tons of Removal (pounds per day)

Phase	VOCs	NOx	CO	SOx	PM_{10} (Total)[a]		$PM_{2.5}$ (Total)[a]	
					w/out Mitigation	with Mitigation [c]	w/out Mitigation	with Mitigation [c]
Transport Equipment and Material to Staging Area (Mobilize)	0.03	1.12	0.19	0.003	0.08	0.08	0.03	0.03
Establish New Haul Road	4.32	49.54	33.73	0.06	15.76	10.19	3.47	2.90
Channelize Creek and Excavate Channel	1.50	15.47	16.88	0.03	11.65	7.55	1.84	1.43
Conduct Sediment Removal	3.29	37.49	28.35	0.05	14.61	9.33	2.84	2.30
Transport Material to	1.19	14.13	9.54	0.02	1.17	0.88	0.64	0.61
Materials Sorting and	1.83	14.85	15.33	0.03	0.88	0.88	0.87	0.87
Off-site Transport of	1.98	63.80	10.70	0.19	154.21	96.24	16.43	10.64
Remove Equipment and Material (Demobilize)	0.007	0.25	0.04	0.0007	0.61	0.38	0.06	0.04
Maximum Daily Emissions (250k tons of removal and off-site disposal) [b]	**8.29**	**130.52**	**63.96**	**0.29**	**171.47**	**107.70**	**20.85**	**14.46**
Project Pollutant Threshold Category (NSAQMD)	*Level A (<24)*	*Level B (24–136)*	*N/A*	*N/A*	*Level C >136*	*Level B (79–136)*	*N/A*	
Project Significant?[d]	No	No	No	No	Yes	No	No	No

Notes:
CO = carbon monoxide
NO_x = oxides of nitrogen
PM_{10} = coarse particulate matter
$PM_{2.5}$ = fine particulate matter
SO_x = sulfur oxide
VOC = volatile organic compound

[a] Totals includes emissions of PM from fugitive dust plus equipment exhaust.

[b] The maximum daily emissions represents the maximum estimated amount of emissions for the Project and includes the underlined emissions for phases that would simultaneously occur.

[c] PM_{10} and $PM_{2.5}$ emissions include the implementation of fugitive dust control measures as required under NSAQMD Rule 226. The implementation of these measures reduces PM_{10} impacts to less than significant.

[d] Per NSAQMD, emissions of NOx, ROGs, and PM_{10} that are greater than 136 lbs/day are likely to result in a significant impact to air quality.

The NSAQMD considers projects that emit greater than 136 lbs/day of ROG, NOx, and PM_{10} will likely result in significant impacts to air quality. As shown in the above tables, with the exception of PM_{10} emissions without mitigation for the removal of 200,000 tons of sediment, the maximum daily emissions of NOx, ROG, and PM_{10} would be under the significance thresholds. Maximum daily operational emissions of PM_{10} emissions without mitigation would be greater than 136 lbs/day and therefore, would result in a significant impact. However, and as recommended by the NSAQMD *Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects,* Nevada Irrigation District (NID) will implement mitigation measures (MM) MM-AQ-1 and MM-AQ-2. As shown in Table 3.2-7, the implementation of these measures will reduce PM_{10} emissions below a level of significance.

In analyzing cumulative impacts from the Proposed Project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the MCAB are designated as nonattainment for the CAAQS and NAAQS. If the Proposed Project does not exceed the thresholds and is determined to have less than significant project-specific impacts, it may still contribute to a significant cumulative impact on air quality if the emissions from the project, in combination with the emissions from other proposed or reasonably foreseeable future projects, would be in excess of established thresholds. However, the project would only be considered to have a significant cumulative impact if the project's contribution would account for a significant proportion of the cumulative total emissions (i.e., it would represent a "cumulatively considerable contribution" to the cumulative air quality impact).

The MCAB has been designated as a federal and state nonattainment area for O_3 and a state nonattainment area for PM_{10}. As demonstrated above, with the implementation of MM-AQ-1 and MM-AQ-2, the Proposed Project does not exceed the significance threshold and would not result in significant air quality impacts. Further, considering known reasonably foreseeable future projects (refer to Section 4.5.2), the Proposed Project's contribution would not constitute a significant portion of regional O_3 or PM_{10} concentrations. Impacts would be **less than significant with mitigation.**

Impact 3.2-3. The Project would not expose sensitive receptors to substantial pollutant concentrations.

Diesel Particulate Matter. DPM would be emitted from the off-road diesel-fueled equipment, including portable generators, and on-road heavy-duty trucks used for the hauling of materials and aggregate. DPM is considered a TAC by the CARB based on evidence that there is a direct relationship between diesel exhaust exposure and lung cancer and other adverse health effects. Concentrated DPM emissions would primarily occur within two specific areas of the Proposed Project Site, which are the Work Area and the Stockpile Area. These areas would have more than one piece of equipment and/or heavy-duty truck operating simultaneously. The nearest sensitive receptor consists of a single-family residence located approximately 200 feet east of the Work Area. This residence along with the other residences (<30 residences) scattered around the

Proposed Project Site are surrounded by a dense stand of conifers and shrubs that serve as a barrier and intercept airborne particles, including DPM.

PM_{10} and $PM_{2.5}$ emissions, which includes emissions of DPM from on-road and off-road diesel engines, including portable equipment, were quantified in CalEEMod Version 2013.2.2. As shown in Tables 3.2-6 and 3.2-7, emissions of PM_{10} would not exceed the Level A thresholds for 50,000 tons of sediment removal and would not exceed the Level B thresholds for 200,000 tons of sediment removal. While the NSAQMD does not currently have thresholds of significance for $PM_{2.5}$, the maximum emissions of $PM_{2.5}$ is a fraction of the overall emissions of pollutants. Additionally, any portable, diesel-powered equipment that is rated 50 bhp or greater, including generators and dredge engines on a barge, that are anticipated for use during Project implementation require registration through the Statewide PERP or NSAQMD Rule 523. No stationary sources are proposed as part of this Project; therefore, stationary source permitting would not be required.

Therefore, considering that the emissions of PM_{10} would not result in a significant impact to air quality and the sensitive receptors in the Project vicinity are surrounded by a dense vegetated buffer that serves as a barrier to reduce airborne pollutants, the exposure of sensitive receptors to Project-related TACs (DPM) emission impacts would not be significant. Nonetheless, MM-AQ-3 has been incorporated to ensure that the portable equipment registration requirements either at the state or local air district level for portable equipment rated at 50 bhp or greater have been performed prior to Project implementation, further ensuring sensitive receptors would not be exposed to a significant source of TACs. Impacts would be **less than significant**.

Naturally Occurring Asbestos. Chrysotile and amphibole asbestos occur naturally in certain geologic settings in California and is most commonly associated with ultramafic rocks and along associated faults. Asbestos is a known human carcinogen and is classified as a TAC by the CARB (CGS 2008). Naturally occurring asbestos is most commonly associated with serpentinite and/or ultramafic rock, which are known to be present in 44 of California's 58 counties, including Nevada County. A review of the *General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos prepared by the* California Division of Mines and Geology (2000) indicate that the Project Site is not located in an area of potential naturally occurring asbestos. This information coupled with the fact that the Project will not be conducting any on-site crushing of materials, indicates that there would be **no impacts** to health risks related to naturally occurring asbestos**.**

Impact 3.2-4. The Project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The Project would result in emissions that could lead to odors. Odors are generally regarded as a nuisance rather than a human health hazard, and the detection of odors varies from person to person and is quite subjective. Some people have a sensitive olfactory system and are able to smell minute quantities of substances while others may be less sensitive but have specific sensitivities to certain odors. Furthermore, people can have a different reaction to the same odor, and an odor that is seen as pleasant or acceptable to one person can be offensive or objectionable to another.

Land uses and operations that typically generate significant odors are rendering plants, wastewater treatment plants, sanitary landfills, composting and green waste facilities, food processing plants, chemical plants, refineries, dairies, agricultural uses, and painting and coating operations. The Proposed Project is not a land use or operational activity that would generate significant objectionable odors. The Proposed Project would result in the emission of odorous diesel exhaust from the operation of diesel-fueled construction equipment and heavy-duty trucks used for hauling. However, these odorous emissions would vary depending on where the activities are occurring and the extent of operations on a given day and also for the purpose of off-site hauling the amount of sediment proposed for removal in that given year. It can be expected that most of the odorous emissions would occur during the overlap in construction phases for sediment removal, stockpiling, and sorting and off-site transport which would occur for four months out of every year from August to November. However, even during these phases, the odorous emissions would be limited at the site due to their being a maximum of six construction workers on-site which means that operations of diesel-fueled equipment are limited by the amount of workers.

Less than 30 residences surround the Proposed Project Site. However, these residences are scattered and there is a vegetated buffer consisting of tall stands of conifers and shrubs that separate these residences from the Proposed Project Site. This vegetated buffer acts as a filter and helps to reduce any odorous emissions coming from the site. Furthermore, odors are highest near the source and quickly dissipate. Given that the Project would not generate a substantial amount of odorous emissions from diesel-fueled equipment and heavy-duty haul truck trips, and that there are a limited number of residences that are protected by a vegetated buffer around the site, the Project would not generate objectionable odors that would affect a substantial number of people. Thus, impacts associated with odors would be **less than significant**.

3.2.5 Mitigation Measures

Implementation of the following mitigation measures would ensure that the Project's potential contributions to air quality standard violations and fugitive dust emissions remain below a level of significance.

MM-AQ-1 Per the requirements of the NSAQMD *Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects* the following mitigation will be required during project operations.

- Temporary traffic control shall be provided during all phases of the construction to improve traffic flow as deemed appropriate by local transportation agencies and/or Caltrans.
- Construction activities shall be scheduled to direct traffic flow to off-peak hours as much as practicable.

The following mitigation, as well as the mitigation identified above, shall be implemented during years when sediment removal quantities are 200,000 tons:

- During initial grading, earth moving, or site preparation, larger projects may be required to construct a paved, coarse gravel or dust palliative treated apron, at least 100 feet in length, leading onto the paved road(s).
- Wheels will be washed when project vehicles and/or equipment enter and/or exit onto paved streets from unpaved roads. Vehicles and/or equipment will be washed prior to each trip, if necessary.
- All self-propelled off-road diesel-powered equipment and vehicles greater than 25 horsepower shall be equipped with an engine meeting at least Tier 1 emission standards, and the overall fleet average shall meet Tier 2 emission standards.

MM-AQ-2 As required by NSAQMD Rule 226, a Fugitive Dust Plan will be prepared for the Project that, in addition to the Standard Dust Control Plan conditions, includes site watering at least twice daily during sediment removal, sorting, and hauling activities.

MM-AQ-3 Owners or operators of portable equipment rated 50 bhp or greater will register the applicable equipment through the Statewide Portable Equipment Registration Program or at the local air district level, in compliance with NSAQMD, Rule 523. Proof of registration will be provided to NID prior to Project implementation.

3.2.6 Level of Significance After Mitigation

Haul truck trips will result in NO_x-related emissions. However, these emissions are less than significant, and would be further minimized through implementation of MM-AQ-1, which is required by the NSAQMD. MM-AQ-2 would ensure fugitive dust (PM) emissions remain below a level of significance during sediment removal, sorting, and hauling activities. MM-AQ-3 would further ensure that sensitive receptors are not exposed to substantial DPM concentrations. The Proposed Project would result in a less than significant impact to air quality with incorporation of mitigation.

3.2.7 References

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NSAQMD. 2016. *Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects*. Revised May 31, 2016.

NSAQMD. 2019a. Portable Equipment Permits. Know Your Portable Equipment Permitting and Registration Requirements. Accessed March 11, 2019. http://myairdistrict.com/index.php/permits/portable-equipment-permitting/

NSAQMD. 2019b. Portable Equipment FAQ. Accessed March 11, 2019. http://myairdistrict.com/index.php/faq/#portequipfaq01

3.3 BIOLOGICAL RESOURCES

This section describes the existing biological resources of the Project, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project). The 108-acre Project Site for biological resources is shown on Map 2-2. The Project Site includes three staging areas; existing and new segments of haul/access road; and a 50-acre Work Area where sediment removal operations will be conducted. The Work Area extends from the southern end of the Hansen Bros. Enterprises Lease Boundary and south toward Rollins Reservoir.

3.3.1 Relevant Plans, Policies, and Ordinances

The following are relevant plans, policies, and ordinances that apply to aquatic and terrestrial biological resources. Terrestrial resources are discussed below under Section 3.3.2.

3.3.1.1 Federal

Federal Endangered Species Act

The U.S. Congress passed the federal ESA in 1973 (16 U.S.C. 1531 et seq.), as amended, and the implementing regulations (50 CFR 17.1 et seq.) are administered by the USFWS for most plant and animal species and by the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) for certain marine species, to provide a means for listing and protecting endangered and threatened species and their designated critical habitats, if applicable.

Section 9 of the ESA and federal regulations pursuant to Section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without an exemption permit. “Take” under the ESA is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. “Harm” is further defined by USFWS to include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. “Harass” is defined by USFWS as intentional or negligent actions or omissions that create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns that include, but are not limited to, breeding, feeding, or sheltering. “Incidental take” is defined as any take otherwise prohibited, if such take is incidental to, and not the purpose of, carrying out an otherwise lawful activity.

ESA Section 7 requires federal agencies to formally consult with USFWS and/or NOAA Fisheries and obtain a biological opinion prior to carrying out any federal program or agency action that may adversely affect threatened or endangered species or may adversely modify designated critical

habitat. The formal Section 7 consultation and biological opinion process includes an evaluation of whether a project federal action is likely to jeopardize the continued existence of any endangered or threatened species or result in the "destruction or adverse modification" of critical habitat, and requires the inclusion of reasonable and prudent measures in the implementation of a project or agency action in order to minimize any impact (16 U.S.C. 1536).

Bald and Golden Eagle Protection Act (BAGEPA)

BAGEPA (16 U.S.C. 668–668(d)) is the primary law protecting bald and golden eagles. BAGEPA prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. "Take" under this statute is defined as to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb." "Disturb" is defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.3).

In addition to immediate impacts to individuals or occupied nests, the "take" definition also covers impacts from human alterations to an area around a previously used nest site during a time when eagles are not present, "if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment" (USFWS 2012).

In 2009, USFWS finalized a new rule that allows authorization of "take" of bald and golden eagles and eagle nests circumstances by issuing permits under BAGEPA. Authorizations of limited take must include mitigation that will result in net benefits to the affected eagle species (74 FR 46836-46879).

Violating BAGEPA can result in a fine of $100,000 ($200,000 for organizations) or imprisonment for 1 year, or both, for a first offense. Penalties increase substantially for additional offenses, and a second violation of this act is a felony.

Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703–712), protects migratory birds and their nests, eggs, young, and parts from possession, sale, purchase, barter, transport, import, export, and take. For purposes of the MBTA, take is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR 10.12). The MBTA applies to migratory birds identified in 50 CFR 10.13. In general, the MBTA protects all birds occurring in the United States except

for house (English) sparrow (*Passer domesticus*), European starlings (*Sturnus vulgaris*), rock doves (pigeons; *Columba livia*), any recently listed unprotected species in the Federal Register, and non-migratory upland game birds. The USFWS has regulatory authority over implementation and enforcement of the MBTA. For species listed under both the ESA and the MBTA, the USFWS has the authority to authorize incidental take with special terms and conditions under Section 10(a)(1)(B) of the ESA and have this permit also serve as a Special Purpose Permit under the MBTA (50 CFR 21.27). Special Purpose Permits are required in the event that an action would take, possess, or involve the sale or transport of birds protected by the MBTA.

3.3.1.2 State

California Endangered Species Act

The California Endangered Species Act (CESA) is similar in many ways to the federal ESA. The California Department of Fish and Wildlife (CDFW) administers CESA, which prohibits the take of plant and animal species designated by the California Fish and Game Commission as endangered or threatened in the State of California. CDFW regulations are set forth in the California Fish and Game Code. Under CESA, take is defined as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA Section 2053 stipulates that state agencies may not approve projects that will "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy." Animal species designated as endangered or threatened under CESA are listed in 14 CCR 670.5. Plant species designated as endangered or threatened under CESA, or designated as a rare plant species under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.), are listed in 14 CCR

CESA is administered by CDFW. Section 2081 of CESA authorizes the take of endangered, threatened, or candidate species if take is incidental to otherwise lawful activity and if specific criteria are met. These provisions also require CDFW to coordinate consultations with the USFWS for actions involving federally listed species that are also state-listed species. In certain circumstances, CESA allows CDFW to adopt a federal ESA incidental take authorization as satisfactory for California Environmental Quality Act (CEQA) purposes based on findings that the federal permit adequately protects the species and is consistent with state law. These criteria closely mirror the issuance criteria established for the federal Habitat Conservation Plan program under ESA Section 10. A CESA permit may not authorize the take of FP species that are protected in other provisions of the California Fish and Game Code.

California Fish and Game Code

California Fish and Game Code Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) designate certain species as FP and provide that those species may not be taken or possessed except pursuant to an approved Natural Communities Conservation Plan or a permit from CDFW for "necessary scientific research, including efforts to recover FP, threatened, or endangered species." CDFW cannot authorize take or possession of FP species for necessary scientific research if that research is conducted in connection with mitigation for a project (California Fish and Game Code, Sections 3511, 4700, 5050, and 5515).

In addition to CESA and Section 3511, the California Fish and Game Code includes other provisions for protection of birds, nests, and eggs. It is generally unlawful to take, possess, or needlessly destroy the nests or eggs of any bird and to take or possess any migratory nongame bird designated in the MBTA, except as allowed by the MBTA (California Fish and Game Code, Sections 3503 and 3513). It is unlawful to take, possess, or destroy any birds of prey, or to take, possess, or destroy nests or eggs of such birds (California Fish and Game Code, Section 3503.5). Birds of prey refer to species in the orders Falconiformes and Strigiformes.

California Environmental Quality Act

CEQA (California Public Resources Code, Section 21000 et seq.), as applied to biological resources, requires identification of a project's potentially significant impacts on biological resources and ways that such impacts can be avoided, minimized, or mitigated. CEQA also provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts.

CEQA Guideline 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15380(b)(1)). A rare animal or plant is defined in CEQA Guideline 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal ESA." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guideline 15380(c).

Section IV, Appendix G (Environmental Checklist Form) of the CEQA Guidelines (14 CCR 15000 et seq.) requires an evaluation of impacts to "any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service."

3.3.1.3 Local

Nevada County General Plan

The Nevada County General Plan (County of Nevada 1996) contains several policies and objectives related to protection of biological resources. Selected policies and objectives relevant to the Proposed Project are presented below.

Policy 13.2B. Development projects which have the potential to remove natural riparian or wetland habitat of 1 acre or more shall not be permitted unless:

a. No suitable alternative site or design exists for the land use;

b. There is no degradation of the habitat or reduction in the numbers of any rare, threatened, or endangered plant or animal species as a result of the project;

c. Habitat of superior quantity and superior or comparable quality will be created or restored to compensate for the loss; and

d. The Project conforms to regulations and guidelines of the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, California Department of Fish and Game, and other relevant agencies.

Policy 13.4A. No net loss of habitat functions or values shall be caused by development where rare and endangered species and wetlands of over 1 acre, in aggregate, are identified during the review of proposed projects. No net loss shall be achieved through avoidance of the resource, or through creation or restoration of habitat of superior or comparable quality, in accordance with guidelines of the U.S. Fish and Wildlife Service and the California Department of Fish and Game.

Policy 13.8. As part of the Comprehensive Site Development Standards, include measures applicable to all discretionary and ministerial projects to minimize disturbance of heritage and landmark trees and groves. These measures shall include, but are not limited to, requirements for on-site vegetation inventories and mandatory clustering of development in areas likely to support such vegetation or habitat.

Objective 13.2. Minimize impacts to corridors to ensure movement of wildlife.

Policy 17.15 Surface mining is conditionally permitted only in compatible General Plan designations as defined herein and on parcels zoned "ME." Said mining shall be allowed only after impacts on the environment and nearby land uses have been adequately reviewed and found to be in compliance with CEQA. Of particular importance shall be the impact of the operation on nearby land uses, water quantity and quality, noise and vibration impacts, and traffic associated with the operation. All other related impacts shall also be addressed.

Policy 17.22 Aggregate extraction may be allowed in rivers and floodplains provided environmental impacts associated therewith are addressed through the CEQA process.

3.3.2 Aquatic Resources

3.3.2.1 Existing Conditions

This section describes the aquatic resources potentially affected by the Project.

Information Sources

The following information sources were used to develop the Aquatics section.

- Reconnaissance surveys conducted by Cardno and JNA-Consulting biologists on August 8, 2017. The primary purpose of the visits was to identify and photograph habitat present within the Project Site and document resources observed.
- A biological evaluation of the Project Site conducted, including eight surveys in November and December 2013 and additional survey on November 24, 2014 by Stantec Consulting Services Inc. (Stantec) (Stantec 2015). The evaluation included: (1) Visual Encounter Surveys (VES) for foothill yellow-legged frog (FYLF), and (2) a reconnaissance survey to verify habitat present/assess the quality of habitat for California red-legged frog, and (3) documentation of other biological resources present.
- Hydroelectric project relicensing studies for the Yuba-Bear (FERC project No. 2266-096) and Drum-Spaulding (FERC Project No. 2310-173) projects:
  - Technical Memorandum 3-1: Stream Fish Populations. Yuba-Bear Hydroelectric Project (FERC Project No. 2266-096) and Drum-Spaulding Project (FERC Project No. 2310-173) (NID and PG&E 2010b).
  - Technical Memorandum 3-12: Reservoir Fish Populations. Yuba-Bear Hydroelectric Project (FERC Project No. 2266-096) and Drum-Spaulding Project (FERC Project No. 2310-173) (NID and PG&E 2010c).

  - Technical Memorandum 3-6: Special-Status Amphibians, Foothill Yellow-Legged Frog Surveys. Yuba-Bear Hydroelectric Project (FERC Project No. 2266-096) and Drum-Spaulding Project (FERC Project No. 2310-173) (NID and PG&E 2010d).
  - Technical Memorandum 3-9: Special-Status Aquatic Reptiles, Western Pond Turtle. Yuba-Bear Hydroelectric Project (FERC Project No. 2266-096) and Drum-Spaulding Project (FERC Project No. 2310-173) (NID and PG&E 2010d).
  - Technical Memorandum 4-1 ESA Listed Amphibians – California Red-legged Frog for the Yuba-Bear Hydroelectric Project (FERC Project No. 2266-096), Drum-Spaulding Project (FERC Project No. 2310-173), and the Rollins Transmission Line Project (FERC Project No. 2784-003) (NID and PG&E 2010e).
- Final Environmental Impact Statement for Hydropower License, Upper Drum-Spaulding Hydroelectric Project, Lower Drum Hydroelectric Project, Deer Creek Hydroelectric Project, Yuba-Bear Hydroelectric Project - Volume I Main Text (FERC 2014).
- Nevada County Mitigated Negative Declaration (EIS15-014) and Management Plan (MGT17-003) for the Hansen Brothers Greenhorn Creek Mining Expansion.
- CDFW Streambed Alteration Agreement 1600-2007-0142-R2 and Amendment for the Hansen Brothers Greenhorn Creek Gravel Mining Expansion in Greenhorn Creek (CDFW 2012; CDFW 2014).

Aquatic Habitats

Provided below is a description of riverine habitat (i.e., Greenhorn Creek, a perennial stream) and lacustrine habitat (i.e., Rollins Reservoir) present in the Project Site.

Perennial Stream

Perennial stream habitat in the Project Site includes Greenhorn Creek from You Bet Road through the Greenhorn Arm of Rollins Reservoir. The length of Greenhorn Creek in the Work Area where sediment removal would occur, from Hansen Bros. Enterprises Lease Boundary to Rollins Reservoir, is approximately 0.7 mile. During the spring/early summer each year, the creek is typically inundated by the Reservoir.

The valley bottom in the Project Site is very low-gradient and consists of a wide expanse of gravel/sand/silt sediments. The extensive gravel/sand/silt deposits are the result of natural sediment transport and numerous upstream hydraulic gold mining operations dating back to the 1860s. Hydraulic mining operations used high-pressure jets of water to dislodge and move the overburden and surface soils and rocks. The water-sediment slurry was directed through sluice boxes to capture gold, while natural and man-made processes moved the aggregate waste into the Greenhorn Creek,

where it covered the original streambed. These sand and gravel deposits still sit atop the natural streambed. During the winter runoff period, high flows in the creek mobilize the sand and gravel deposits, transporting them downstream, eventually into the Greenhorn Arm of Rollins Reservoir. During the summer and fall, the stream flow is low (e.g., approximately <1–2 cfs).

The creek upstream of the Hansen Bros. Enterprises Lease Boundary is channelized by large berms created by previous activities by the Hansen Bros. Enterprises Greenhorn Creek Aggregate Mine. At the time of the Cardno site visit in August 2017, the creek was channelized primarily along the river-right side of the valley floor (Figure 3.3-1). This segment of the creek is generally straight and has limited pool habitat and limited riparian vegetation. Shallow riffle areas, during the low-flow season, limit passage of fish, particularly larger fish, if present. When not seasonally inundated by Rollins Reservoir, the creek downstream of the Hansen Bros. Enterprises Lease Boundary is unconfined and meanders and/or is braided through barren gravel, silt, and sand deposits to the confluence with Rollins Reservoir. The water is shallow, and typically the creek is without pools of significant depth to provide cover/habitat for fish. There is no (or extremely limited) riparian vegetation along the creek channel to provide shade or cover for aquatic species. Overall, there is limited aquatic fish habitat in the Project Site due to the low summer/fall flows and excessive sediment in the valley bottom. The creek, however, does provide habitat for some species, (i.e., foothill yellow-legged frog [FYLF]), that can take advantage of barren habitat conditions along the creek.

Reservoir

Rollins Reservoir has a maximum surface area of 788 acres, with a maximum storage capacity of 58,682 acre-feet (usable storage is 54,453 acre-feet). The reservoir is an impoundment of the Bear River with additional input from several smaller streams including Greenhorn Creek. The drainage area into Rollins reservoir is 104 square miles, with the majority of inflows highly regulated by releases from Dutch Flat Afterbay and Chicago Park Forebay. The reservoir is operated as a storage reservoir for irrigation, recreation, and power demands. The Greenhorn Arm of Rollins Reservoir within the Work Area is relatively shallow with fine substrate and essentially no cover elements (underwater trees, topographic relief, and/or emergent aquatic vegetation). The arm provides limited deep water or complex shallow water lentic habitat for fishes. Basking sites for WPT are sparse. Figure 3.3-2 provides an aerial photograph of the Greenhorn Arm of Rollins Reservoir.

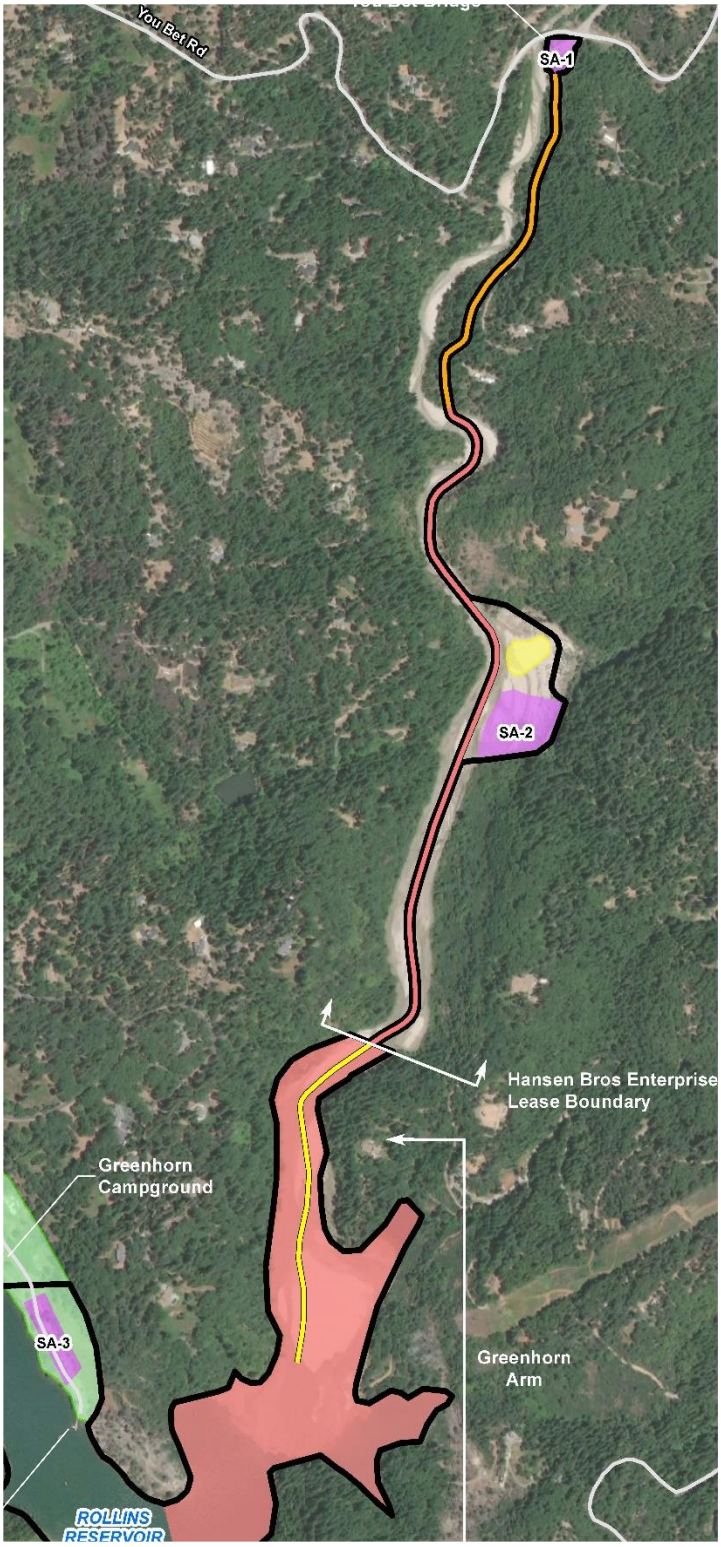


Figure 3.3-1 Photographs of Greenhorn Creek in the Project Site.

Figure 3.3-2 Photograph of the Greenhorn Arm of Rollins Reservoir in the Project Site.

Aquatic Species

Resident Fish

Provided below is information on fish assemblages within Rollins Reservoir. As described above, Greenhorn Creek in the Project Site, when not seasonally inundated, lacks habitat for most fish. Therefore, few fish are expected in the Work Area during the low-flow season when the Project will be implemented. Downstream of the Project Site, Rollins Reservoir supports a coldwater fishery. No anadromous fish species are present in the reservoir. Resident fish sampled on the adjacent Bear River just upstream of Rollins Reservoir and in Rollins Reservoir during the Yuba-Bear and Drum-Spaulding hydropower relicensing studies are shown in Table 3.3-1.

Table 3.3-1
Fish Species Sampled in the Bear River or Rollins Reservoir

Species	Sampled Stream (S) or Reservoir (R)	Assigned Guild	Native Species
Rainbow trout (*Oncorhynchus mykiss*)	S and R	Game fish	X
Brown trout (*Salmo trutta*)	S and R	Game fish	
Brook trout (*Salvelinus fontinalis*)	S	Game fish	
Sacramento pikeminnow (*Ptychocheilus grandis*)	S and R	Other	X
Sacramento sucker (*Catostomus occidentalis*)	S and R	Other	X
Speckled dace (*Rhinichthys osculus*)	S	Forage fish	X
Smallmouth bass (*M. dolomieu*)	S and R	Game fish	
Green sunfish (*L. cyanellus*)	S and R	Game fish	
Sculpin (*Cottus* spp.)	S	Forage Fish	X
Black crappie (*Pomoxis nigromaculatus*)	R	Game fish	
Bluegill (*Lepomis macrochirus*)	R	Game fish	
Brown bullhead catfish (*Ameiurus nebulosus*)	R	Game fish	
Channel catfish (*Ictalurus punctatus*)	R	Game fish	
Golden shiner (*Notemigonus crysoleucas*)	R	Forage fish	
Largemouth bass (*Micropterus salmoides*)	R	Game fish	
Pond smelt (*Hypomesus olidus*)	R	Forage fish	
Redear sunfish (*L. microlophus*)	R	Game fish	
White catfish (*A. catus*)	R	Game fish	

Source: NID and PG&E 2010b, NID and PG&E 2010c

Special-Status Species

For the purposes of this EIR, special-status species are those species that fall into one or more of the following categories:

- Listed as endangered or threatened (FE or FT) under the federal Endangered Species Act (ESA) (or candidate species, or formally proposed for listing)
- Listed as endangered or threatened (SE or ST) under the CESA or candidate species for listing as endangered (SCE) or threatened (SCT)
  - Designated as rare, protected, or fully protected pursuant to the California Fish and Game Code
  - Designated a Species of Special Concern (CSC) by the CDFW
  - Listed as a Sensitive Species by the Bureau of Land Management (BLM-S) (2010)

To determine aquatic special-status species potentially occurring within or near the Project Site, the California Natural Diversity Database (CNDDB) (CDFW 2017) was queried for reported occurrences of special-status fish, amphibians, and aquatic reptiles in the region. The nine-quadrangle search area included the Chicago Park, Nevada City, North Bloomfield, Washington, Grass Valley, Dutch Flat, Combie Reservoir, Colfax, and Foresthill quadrangles. The following special-status species lists for the project vicinity were also reviewed:

- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) of federal endangered and threatened species for the Chicago Park USGS quadrangle, Placer County, and Nevada County
- CDFW's Special Animals List (CDFW 2017)
- Range maps in California Herps: A Guide to the Amphibians and Reptiles of California (California Herps 2017a, 2017b)

The habitat requirements of the special-status species identified by this process were compared to the habitat types available in the Project Site. Six special-status species that occur or could occur in the Project Site are shown in Table 3.3-2.

Of the six special-status aquatic species listed in Table 3.3-2, two are known to occur in the Project Site, foothill yellow-legged frog (*Rana boylii*) (FYLF) (Stantec 2015); and western pond turtle (*Actinemys marmorata*) (WPT). Additional information on these species, and their occurrence within the Project Site, is provided below.

FOOTHILL YELLOW-LEGGED FROG (BLM-S, SC)

The foothill yellow-legged frog (*Rana boylii*) is a State Candidate and BLM-S species. In addition, on June 21, 2017, the California Fish and Game Commission voted to advance the foothill yellow-legged frog as a candidate species for threatened status under the California ESA, triggering a 12-month period during which CDFW will conduct a status review (CDFW 2017). On July 1, 2015, USFWS filed Endangered and Threatened Species: 90-Day Findings that stated that USFWS would evaluate the petition to list the foothill yellow-legged frog as an endangered or threatened species under the ESA (USFWS 2015; 80 FR 37568).

FYLFs are found in sunny or partially shaded, shallow rocky streams in a variety of habitats throughout the foothills of the Sierra Nevada, up to 6,700 feet above mean sea level (msl) (Kupferberg 1996; Van Wagner 1996; Yarnell 2005). This species is rarely found far from permanent water. The habitat requirements for FYLF are closely linked to seasonal variation in stream habitats and can be divided into three main categories: breeding and rearing habitat, non-breeding habitat, and overwintering habitat.

Table 3.3-2
Special-Status Aquatic Species Known or Potentially Occurring in the Vicinity of the Proposed Project

Common Name	Scientific Name	Federal/State Status	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Site
Invertebrates					
Spiny rhyacophilan caddisfly	*Rhyacophila spinata*	None / State S1S2	Known from New York Ravine (Yuba River tributary), Sierra County, California, and recollected nearby. Also Lady's Canyon, Placer County, and Granite Gulch near Tobin, Plumas County. This species has also been found in the North Fork Feather, Upper Yuba, North Fork American (Shirttail Creek), and South Fork American River watersheds.	Spiny rhyacophilan caddisfly prefer cool running water. Larvae are predaceous and do not build cases, except for crude pupal shelters. Little is known of this insect's life history, although the usual habitat for this genus is clear, cool creeks.	• **Unlikely to occur**. There are no known extant populations or suitable habitat in the Project Site. • **CNDDB query**: No occurrences within 5 miles of the Project Site.
Shirttail Creek stonefly	*Megaleuctra sierra*	None / State S1	USFWS files in 1987 indicated species known only from Shirttail Creek, Placer County, California.	Habitat probably is really spring/brook but possibly creeks. Presumably, habitat is similar to that of all other *Megaleuctra* sp., which inhabit springs.	• **Unlikely to occur**. There are no known extant populations or suitable habitat in the Project Site. • **CNDDB query**: No occurrences within Project Site; only known from Shirttail Creek.
Western pearlshell	*Margaritifera falcata*	None / State S2S3	The range of this species extends from Alaska and British Columbia south to California and east to Nevada, Wyoming, Utah, and Montana.	This species inhabits cold creeks and rivers with clean water and sea-run salmon or native trout. Prefers lower velocity waters. Documented host fishes for *M. falcata* include: cutthroat trout (*Oncorhynchus clarki*), steelhead rainbow trout, Chinook salmon (*O. tshawytscha*), and brown trout, and a number of other fish are considered potential hosts.	• **Unlikely to occur**. There are no known extant populations or suitable habitat in the Project Site. • **CNDDB query**: No occurrences within 5 miles of the Project Site.
Amphibians					
Foothill yellow-legged frog	*Rana boylii*	BLM-S / SC	This species occurs in the Coast Ranges from the Oregon border south to the Transverse Mountains in Los Angeles County, in most of northern California west of the Cascade Crest, and along the western flank of the Sierra Nevada south to Kern County. Isolated populations are also known from the mountains of Los Angeles County. This species generally occurs in rivers and streams up to approximately 5,000 feet above mean sea level (msl).	The foothill yellow-legged frog is found in or near perennial or seasonal streams with boulder and cobble substrates in a variety of habitats including valley–foothill hardwood, valley–foothill hardwood/conifer, valley–foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types. Breeding generally occurs from late March to June near the end of the spring runoff period. This aquatic species is rarely found far from water.	• **Known to occur**. Several juveniles were observed in Greenhorn Creek upstream of SA-2 during reconnaissance surveys conducted by Cardno and JNA-Consulting in August 2017. The 2013 and 2014 surveys by Stantec indicated that this species has a robust population along the length of Greenhorn Creek in the vicinity of the Project Site. During 2013 surveys (Stantec 2015), VES surveys identified 81 sub-adults in Greenhorn Creek. During follow-up surveys 70 sub-adults were identified (Stantec 2015) • **CNDDB query**: Numerous occurrence records are present within 5 miles of the Project Site.
California red-legged frog	*Rana draytonii*	FT / CSC	The historical range of this species extended through Pacific slope drainages from Shasta County, California, to Baja, Mexico, and included the Coast Ranges and the west slope of the Sierra Nevada at elevations below 5,000 feet msl (1,548 meters msl). The current range is greatly reduced, with most remaining populations occurring along the coast from Marin County to Ventura County and in several isolated locations in the foothill region of the west slopes of the Sierra Nevada.	California red-legged frogs occur in different habitats depending on their life stage, the season, and weather conditions. Breeding habitat includes coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, and ponded and backwater portions of streams. These frogs also breed in artificial impoundments, including stock ponds, irrigation ponds, and siltation ponds. Creeks and ponds with dense growths of woody riparian vegetation, especially willows (*Salix* spp.), are preferred (Hayes and Jennings 1988), although the absence of vegetation at an aquatic site does not rule out the possibility of occupancy. Adult frogs prefer dense, shrubby or emergent riparian vegetation near deep (≥2 to 3 feet (0.6 to 0.9 meter)), still or slow-moving water, especially where dense stands of overhanging willow and an intermixed fringe of cattail (*Typha* sp.) occur adjacent to open water.	• **Unlikely to occur.** Suitable aquatic habitat is not present for this species within the Project Site. A site assessment was conducted as a part of the relicensing for the Yuba-Bear Hydroelectric Project and it found that there are no essential components for California red-legged frog breeding present within the Project Site (NID and PG&E 2010d). • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.

Common Name	Scientific Name	Federal/State Status	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Site
Reptiles					
Western pond turtle	*Actinemys marmorata*	None / CSC	Occurs widely in the Sierra Nevada foothills.	Occurs in woodlands, grasslands, and open forests in a variety of wetland habitats, including ponds, rivers, lakes, marshes, reservoirs, stock ponds, and irrigation ditches that contain aquatic vegetation (Zeiner et al. 1990; Stebbins 2003). Spends its time in water or at basking sites along the banks of streams or ponds. A thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches, usually with aquatic vegetation, below 6,000 feet msl. Needs basking sites and suitable upland habitat (sandy banks or grassy open fields) up to 0.5 kilometer (0.3 mile) from water for egg-laying.	• **Could occur**. This species was not observed on-site during reconnaissance surveys conducted in August 2017. This species is known to occur in Rollins Reservoir at the mouth of the Greenhorn Arm of the reservoir (NID and PG&E 2010). Suitable riparian habitat is present within the Project Site, but basking sites are limited. Nesting and estivation (summer dormancy) habitat is present in upland areas adjacent to the river and reservoir. • **CNDDB query:** Known occurrences within 5-mile radius of Project Site.

Status Definitions
BLM-S = Considered a Sensitive Species by the BLM
CSC = Considered a Species of Special Concern by the CDFW
FE = Federally Endangered
FP = Fully Protected under the California Fish and Game Code
FPT = Federally Proposed Threatened
FT = Federally Threatened
S1 = NatureServe Element Ranking of Critically Imperiled in the State
S1S2 = NatureServe Element Ranking of Between Critically Imperiled and Imperiled in the State
S2S3 = NatureServe Element Ranking of Between Imperiled and Vulnerable in the State
SCT = State Candidate Threatened
SE = California Endangered
ST = California Threatened

Special-status Species Lists:
CDFW. 2017. Special Animals List. July 2017. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline
California Natural Diversity Database (CNDDB). Rare Find 5.0. CDFW, Habitat Planning and Conservation Branch. Accessed July 2017. Electronic Database.
United States Fish and Wildlife Service (USFWS). 2017a. Species List, IPaC. Electronic Database. Accessed July 2017.

Breeding commences between mid-March and May at locations that provide suitable velocities and depths over a relatively broad range of discharge volumes, including small tributaries and large rivers (Kupferberg 1996; Lind and Yarnell 2008). However, in wet years, initiation of breeding can be delayed, depending on outflow volume and associated water temperature (Seltenrich, pers. comm. 2014). Eggs are deposited in clusters and attached to the lee (i.e., flow protected) side of cobbles, boulders, or bedrock near river margins in shallow and relatively slow habitat ((Kupferberg 1996; Lind and Yarnell 2008). Eggs hatch in about 5 days. Tadpoles reach a size of about 2 inches and transform in approximately 3 to 4 months. Larvae are found in the same habitat as egg masses, and require protection from scouring flows, particularly immediately after hatching and as larvae near metamorphosis (Kupferberg et al. 2009a). For aquatic habitats to be considered suitable, surface water must be present in scattered locations for at least 15 weeks to allow for metamorphosis.

After metamorphosis, FYLFs remain in terrestrial riparian and riverine habitat adjacent to the wetted channel during the non-breeding season (Bourque 2008; Kupferberg 1996; Lind et al. 1996; Moyle 1973; Van Wagner 1996; Zweifel 1955). Adults often bask on exposed rocks near streams and dive into the water to take refuge beneath rocks when disturbed. The typical diet of FYLF consists of both aquatic and terrestrial invertebrates.

Overwintering habitat is not well known for the FYLF. Van Wagner (1996) observed FYLFs both in the water and along the stream-edge habitat beneath rocks, leaf litter, and sedge, and found frogs appeared to be active whenever ambient conditions were favorable. Habitat use in large rivers may vary compared to Van Wagner's observations, and FYLFs may move into smaller lateral tributaries to avoid risk of scouring (Kupferberg 1996) or move into adjacent terrestrial habitat to avoid winter flood events altogether.

Threats to FYLFs and their habitat include land use change, shifts in precipitation and climate (Lind 2005; Kupferberg et al. 2009b), parasites and disease (Kupferberg et al. 2009a), toxins/pesticides (Davidson et al. 2002, 2007; Hothem et al. 2009; Sparling and Fellers 2008), invasive species (Moyle 1973; Kupferberg 1997), and habitat alteration (including fire/fuel management, habitat fragmentation, and mining). Research demonstrates that FYLF is adversely affected by pulse flows, which create stressful or fatal velocity conditions for early life stages (e.g., Kupferberg et al. 2009a, 2009b). Changes in flow regime may also have long-term impacts, including vegetation encroachment, altered channel morphology, and reduced breeding habitat (Kupferberg et al. 2009b).

Project-Specific Information. FYLF are known to occur at the Project Site. Several juvenile FYLF were observed in Greenhorn Creek upstream of Staging Area-2 (SA-2) during reconnaissance surveys conducted in August 2017. FYLF were also incidentally observed in Greenhorn Creek by a private citizen during sediment removal activities conducted by

Hansen Bros. Enterprises, under contract with NID, in October 2013. In November 2013, Stantec Consulting Services (Stantec), also under contract with NID, conducted VES along the length of Greenhorn Creek and its side channels in the vicinity of the Project Site and identified a total of 81 sub-adult FYLFs (Stantec 2015). Seventy sub-adult FYLF were identified during a follow-up survey in November 2014 (Stantec 2015).

Based on extensive surveys conducted throughout the Sierra Nevada foothills as part of the relicensing studies for Federal Energy Regulatory Commission (FERC) hydroelectric projects, the FYLF population within the project region (i.e., upstream of Rollins Reservoir) is considered to be one of the most robust populations anywhere in the Sierra Nevada foothills (Seltenrich, pers. comm. 2014).

WESTERN POND TURTLE (CSC)

WPT is considered CSC by CDFW. The species occurs in association with streams, rivers, lakes, marshes, ponds, and irrigation ditches containing suitable cover and basking sites. This species can be found from sea level to approximately 6,700 feet msl. Preferred substrate for this species can consist of rocky or muddy bottoms within woodland, forests, grassland, or agricultural canals (California Herps 2017a). This species can be associated with both permanent and ephemeral water sources, including perennial and intermittent streams. Suitable basking sites along streams or ponds include partially submerged logs, rocks, mats of floating vegetation, or open stream banks. WPTs may overwinter and nest in uplands adjacent to the creek channel. Nests are typically located on unshaded upland slopes in dry substrates with clay or silt soils (Jennings and Hayes 1994). Eggs are laid from March to August, depending on local climate and water conditions, and incubation occurs for 73 to 80 days (Zeiner et al. 1988). Adult WPTs may access uplands at all times of the year, and overwinter under leaf litter in uplands. This species can travel up to 100 yards meters (330 feet) from the active streams (California Herps 2017a).

Threats to this species include loss of habitat, including massive wetland drainage; introduction of non-native turtle species include red eared sliders and painted turtles; predation by invasive bullfrog; and commercial harvesting (California Herps 2017a)

Project-Specific Information. Limited suitable riparian habitat and basking sites are present within the Project Site. Nesting and estivation (summer dormancy) habitat is present in upland areas adjacent to Greenhorn Creek and Rollins Reservoir.

This species was not observed during reconnaissance surveys conducted in August 2017. During surveys conducted for relicensing of the Chicago Park Powerhouse (NID and PG&E 2010a), western pond turtles were observed in the Bear River and at the mouth of the Greenhorn Arm of Rollins Reservoir.

3.3.2.1 Thresholds of Significance

The significance criteria used to evaluate the project impacts to aquatic resources are based on Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.). According to Appendix G, a significant impact related to aquatic resources would occur if the project would:

1. 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 CDFW or U.S. Fish and Wildlife Service.
2. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
3. 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.

Refer to Section 3.3.1.1 for analysis of potential conflicts with any local policies or ordinances protecting biological resources or conflicts with provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan.

3.3.2.2 Impacts Analysis

Impact 3.3-1. The Proposed Project will not 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 CDFW or USFWS with implementation of mitigation.

The Proposed Project could indirectly impact aquatic species (FYLF, WPT, fish) through increases in turbidity or release of pollutants into the stream.

The Proposed Project includes removal of sediment from the seasonal inundation zone of the Greenhorn Arm of Rollins Reservoir to maintain or make progress toward restoration of historic water storage capacity in the reservoir. Activities in the Project Site upstream of the Work Area include maintaining/enhancing the existing access road base, and maintaining road stream crossings, and maintaining the berms that typically constrains Greenhorn Creek on river-right side of the valley bottom. Project activities in the Work Area downstream of the Lease Boundary will include installation of a sediment barrier; placement of road base and maintenance/replacement of road crossings as needed; construction of a berm that generally confines the stream to one side of the valley floor; and removal of sediment.

Ground disturbance resulting from the above-listed activities could result in increases in turbidity within Greenhorn Creek or in Rollins Reservoir. In addition, accidental releases of pollutants from vehicles and construction machinery, such as oil or gasoline could potentially adversely impact resident fish and/or two special-status aquatic species (FYLFs or WPTs). Releases of sediments into the creek from channel disturbance could result in increased turbidity or releases of pollutants, such as oil from machinery or gasoline spills into the creek can adversely affect aquatic species. Significant releases could cause acute and chronic toxicity to aquatic organisms and adversely affect reproductive ability. Immediate mortality could result with the release of highly toxic chemicals or extensive release of chemicals with lower toxicities. Moderate effects such as decrease in essential body functions and reproductive failure can lead to population decreases. In order to minimize the potential for impacts to FYLFs, WPTs, and resident fish from excess turbidity or pollutant releases, NID will implement MM-HYD-1 and MM-HYD-2 (Section 3.8 Hydrology and Water Quality) and MM-HAZ-1 through MM-HAZ-3 (Section 3.7 Hazards and Hazardous Materials). These measures include implementation of BMPs for erosion control and prevention of sediment releases in accordance with the Stormwater Pollution Prevention Plan (SWPPP) and require proper management of water quality and hazardous materials. Potential water quality impacts associated with turbidity or pollutant releases FYLFs, WPTs, or resident fish would therefore be **less than significant with mitigation**.

The Proposed Project could potentially result in direct impacts to foothill yellow-legged frogs.

The Proposed Project requires work within and adjacent to Greenhorn Creek, which is known to support a breeding population of FYLF. Dewatering of the Work Area and use of vehicles or ground-based equipment within or adjacent to Greenhorn Creek could result in stranding, crushing, or burial of FYLF individuals. Implementation of MM-BIO-1 through MM-BIO-3 would minimize the potential for impacts to breeding FYLF. First, MM-BIO-1 restricts ground-disturbing activities in the Work Area (including, but not limited to, construction of stream road crossings, modification/relocation of the stream channel, or sediment removal) to the low-flow period between July and November. Thus, no ground-disturbing activities would be implemented during the spring breeding season when the Work Area is inundated (generally April and May). In addition, a qualified biologist (MM-BIO-2) would conduct a survey for FYLF (including egg masses, tadpoles, sub-adult, and adults) during the spring breeding season (e.g., April/May) prior to initiation of the Project each year (MM-BIO-3). If FYLF egg masses and/or amplexing adults are found during the breeding surveys, a Breeding Area Avoidance Plan (BAAP) would be developed prior to initiation of sediment removal in the vicinity of the breeding area. The BAAP would include a description and maps/diagrams showing how the Project would be modified to avoid negative impacts to the breeding area(s). Modifications may include, but are not limited to, the installation of exclusionary or high visibility fencing. The BAAP will be submitted to CDFW 30 days prior to initiation of sediment removal and implemented as part of the Project.

Impacts to FYLF during sediment removal activities (outside of the breeding season) would also be minimized through implementation of MM-BIO-4 through MM-BIO-7. These measures include:

- Implementation of a Worker Environmental Awareness Program (WEAP) designed to inform construction personnel of the presence of special-status species (including FYLF) and their habitats and associated avoidance and protection measures (MM-BIO-4).
- Delineation of Project features including the existing and new haul road, staging areas, and the sediment removal Work Area with exclusion fencing, staking, or flagging. A qualified biologist will ensure that the Project features are installed to avoid sensitive habitats (such as riparian areas) to the degree possible, while still allowing for completion of the Project. Vehicular traffic and use of ground-based construction equipment would be confined to fenced, staked, or flagged areas (MM-BIO-5).
- Implementation of pre-construction surveys and relocation of aquatic species immediately prior to initiation of ground-disturbing activities in the Work Area. The approved biologist would identify native aquatic species including resident fish, FYLF (all lifestages) and WPT. If required, individuals would be captured and immediately relocated from within the construction area or dewatering area to the closest suitable aquatic habitat outside of the Work Area. NID would notify CDFW by e-mail within 24 hours of the presence (and the capture and relocation, if applicable) of any special-status aquatic species. In addition, a memo report of the full results of the survey and capture/relocation data will be provided to CDFW for review within 14 days of completion of the survey (MM-BIO-6).
- An approved biologist with stop-work authority would be present during ground-disturbing activities that may result in impacts to FYLF (i.e., relocating the stream and constructing road crossings of the stream). The monitor would have the authority to stop work; require additional avoidance and protection measures; relocate individuals as required; and approve resumption of work once species are out of harm's way.

Considering implementation of mitigation measures MM-BIO-1 through MM-BIO-7, the potential for impacts to FYLF would be minimal. Therefore, this impact is **less than significant with implementation of mitigation**.

The Proposed Project could potentially result in impacts to western pond turtles.

The Project Site upstream of the Hansen Bros. Enterprises Lease Boundary provides limited habitat for WPT (small shallow stream in summer with limited pools and limited vegetation or basking sites). The Work Area has limited basking sites for WPT, particularly during the summer/fall dewatered period (i.e., when Rollins Reservoir is drawn down), and is therefore assumed to provide only temporary habitat WPT. However, WPT have been observed in

the project vicinity, and they may potentially move through the Work Area. Because WPT are slow-moving, if a WPT were present in the area of sediment removal, road or road crossing construction, or construction of the relocated channel, they could be killed or injured by heavy equipment, or could be smothered with sediment. NID will implement mitigation measures MM-BIO-1 and MM-BIO-4 through MM-BIO-7 to minimize the potential for impacts to WPT. These mitigation measures include restricting ground-disturbing activities in the Work Area to the dry season when flows are low (and WPT are less likely to be present) (MM-BIO-1); requiring WEAP training for all construction personnel (including information on WPT and applicable avoidance and protection measures) (MM-BIO-4); restricting of vehicular traffic and use of ground-based construction equipment to designated areas (MM-BIO-5); conducting pre-construction surveys and requiring presence of a biological monitor during establishment of stream crossings and relocation of the channel; and relocation of WPT out of harm's way, if required (MM-BIO-6 and MM-BIO-7). With implementation of mitigation measures, impacts to WPT would be reduced to **less-than-significant** levels.

The Proposed Project could potentially result in impacts to resident fish or their habitat in Greenhorn Creek.

Resident fish habitat in the Project Site upstream of the Hansen Bros. Enterprises Lease Boundary would generally be maintained in the existing condition. Project activities in the Work Area (downstream of the Lease Boundary) will include installation of a sediment barrier; placement of road base and maintenance/replacement of road crossings as needed; construction of a berm that generally confines the stream to the one side of the valley floor; and removal of sediment. These activities are unlikely to affect resident fish for several reasons. As required by MM-BIO-1, activities within the Work Area would be implemented during the dry season under low-flow conditions, when fish are unlikely to be present in this portion of Greenhorn Creek. In the case that individual fish become stranded in isolated pools or in the dewatered channels during implementation of the Project activities in the Work Area, NID will implement mitigation measures MM-BIO-6 and MM-BIO-7 which state that a qualified biologist will conduct pre-construction surveys and will monitor the Project Site during ground-disturbing activities that could potentially impact aquatic species, including resident fish. Stranded fish would be captured and relocated to the nearest suitable aquatic habitat outside of the Work Area. A record of fish rescue and relocation would be maintained and submitted to CDFW at the conclusion of each work season.

In addition, removal of sediment could also affect the quality of stream habitat for fishes. Stream habitat in Greenhorn Creek is currently limited by the existing conditions of low natural flows (summer and fall), shallow water, and excess sediment on the valley floor due to natural sediment transport and upstream historic hydraulic mining operations. Stream habitat is also seasonal and present in the Work Area only when the reservoir is seasonally low enough to expose the stream.

Project activities (e.g., relocation of the stream and sediment removal in the Work Area) are not expected to substantially change the quality of the stream habitat compared to the existing habitat. Overall, with implementation of mitigation measures MM-BIO-1, MM-BIO-6, and MM-BIO-7, the potential adverse impacts to resident stream fish and their habitat are **less than significant**.

Impact 3.3-2. The project would not have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

The Proposed Project is the removal of sediments from within the Greenhorn Arm of Rollins Reservoir (both a water of the U.S. [WOUS] under jurisdiction of USACE and a water of the state [WOS]) to maintain the water storage capacity and, to the extent possible, make progress in restoration of the original capacity of the reservoir.

During sediment removal, the Project would involve altering the course of Greenhorn Creek within the Greenhorn Arm of Rollins Reservoir from a dispersed multi-channel creek to a single-channel. This would be accomplished by forming a shallow channel and berm to direct flow into Rollins Reservoir. All areas within the ordinary high water mark of Greenhorn Creek and the Greenhorn Arm of Rollins Reservoir would be considered jurisdictional WOUS under the Clean Water Act and jurisdictional waters of the state under the California Department of Fish and Game Code.

Therefore, the proposed would result in effects on jurisdictional WOUS/WOS. To mitigate for impacts to WOUS/WOS, NID will implement MM-BIO-11 which requires obtaining authorization from USACE and RWQCB under Section 401 and 404 of the Clean Water Act and from CDFW under Section 1600 of the Fish and Game Code. NID will comply with all permit conditions, including avoidance and protection measures and any compensatory mitigation required by USACE, RWQCB, and CDFW as part of the permit conditions. Implementation of MM-HYD-1 through MM-HYD-3 would further minimize potential impacts to WOUS/WOS, including wetlands. With implementation of mitigation measures, impacts would be considered **less than significant.**

Impact 3.3-3. The Project would not interfere substantially with the movement of any native resident or migratory fish.

There are no anadromous fish species in the Project Site. Resident fish passage in the Project Site upstream of the Hansen Bros. Enterprises Lease Boundary would generally be maintained in the existing condition. As described previously, Project activities in the Work Area (downstream of the Lease Boundary) will include installation of a sediment barrier; placement of road base and maintenance/replacement of road crossings as needed; construction of a berm that generally confines the stream to one side of the valley floor; and removal of sediment. These activities would be implemented during the dry season and during low-flow conditions. Under existing conditions,

Greenhorn Creek in the Work Area is shallow during the dry season and supports no or little suitable habitat for resident fish. Nevertheless, connectivity between the upstream portions of Greenhorn Creek and Rollins Reservoir would be maintained in the Work Area through construction of a berm to maintain the creek to the one side of the Work Area. NID will implement mitigation measures MM-HYD-3, Hydrological Management Plan, which includes measures for the seasonal demobilization procedures within the 100-year floodplain (e.g., removal of equipment and temporary crossings) and annual visual incision monitoring and photo documentation to ensure that Project-induced incision (deepening of the channel from erosion) and avulsion (abandonment of the channel and formation of a new channel) is not occurring in the Work Area. Finally, as described in MM-BIO-6 and MM-BIO-7, a qualified biologist would conduct pre-construction surveys and would monitor the Project Site during ground-disturbing activities that could potentially impact aquatic species, including resident fish. Stranded fish would be captured and relocated to the nearest suitable aquatic habitat outside of the Work Area. A record of fish rescue and relocation would be maintained and submitted to CDFW at the conclusion of each work season.

Project activities are not expected to substantially change fish passage compared to the existing condition. Overall, with implementation of mitigation measures MM-BIO-1, MM-BIO-6, MM-BIO-7, and MM-HYD-3, the potential adverse impacts to passage are **less than significant**. Refer to Section 3.3.2.3 for analysis of potential effects to movement of terrestrial resources.

3.3.3 Terrestrial Resources

3.3.3.1 Existing Conditions

Information Sources

Existing documents pertinent to special-status plant and wildlife species in the vicinity of the Proposed Project were compiled, reviewed, and analyzed. This included a review of:

- Reconnaissance survey conducted by JNA-Consulting biologists on August 8, 2017. The primary purpose of the visits was to identify and photograph habitat present within the Project Site and document resources observed.
- Reconnaissance surveys conducted in November/December 2013 and November 2014 to verify habitat presence, assess the quality of habitat for California red-legged frog, and to document biological resources present (Stantec 2015).
- CDFW California Natural Diversity Database (CNDDB) (CDFW 2017).
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS 2014).

- Nevada County General Plan (County of Nevada 1996).
- USFWS Information for Planning and Conservation (IPaC) (USFWS 2017b).
- Hydroelectric project relicensing studies for the Yuba-Bear (FERC project No. 2266-096) and Drum-Spaulding (FERC Project No. 2310-173) projects:
  - Technical Memorandum 5-1 Special-Status Plants for the Yuba-Bear Hydroelectric Project (FERC Project No. 2266-096), Drum-Spaulding Project (FERC Project No. 2310-173), and the Rollins Transmission Line Project (FERC Project No. 2784-003) (NID and PG&E 2011a).
  - Technical Memorandum 4-3 Wildlife-Bats for the Yuba-Bear Hydroelectric Project (FERC project No. 2266-096), Drum-Spaulding Project (FERC Project No. 2310-173), and the Rollins Transmission Line Project (FERC Project No. 2784-003) (NID and PG&E 2010a).
  - Technical Memorandum 4-1 ESA Listed Amphibians – California Red-legged Frog for the Yuba-Bear Hydroelectric Project (FERC Project No. 2266-096), Drum-Spaulding Project (FERC Project No. 2310-173), and the Rollins Transmission Line Project (FERC Project No. 2784-003) (NID and PG&E 2010a).
  - Technical Memorandum 7-5 CESA-Listed Wildlife-Bald Eagle for the Yuba-Bear Hydroelectric Project (FERC project No. 2266-096), Drum-Spaulding Project (FERC Project No. 2310-173), and the Rollins Transmission Line Project (FERC Project No. 2784-003) (NID and PG&E 2010a).
  - Final Environmental Impact Statement for Hydropower License, Upper Drum-Spaulding Hydroelectric Project, Lower Drum Hydroelectric Project, Deer Creek Hydroelectric Project, Yuba-Bear Hydroelectric Project - Volume I Main Text (FERC 2014).

Relevant technical information from the reconnaissance survey and these documents are incorporated and referenced as appropriate.

Vegetation Communities/Wildlife Habitats

Five terrestrial vegetation communities were identified in the Project Site during reconnaissance surveys, including limited riparian habitat protected by CDFW under Fish and Game Code 1600–1603. Vegetation communities were classified based on A Manual for California Vegetation (MCV), 2nd Edition (Sawyer et al. 2009), which defines vegetation communities by dominant and/or co-dominant species present. Refer to Section 3.3.1.1 for a description of riverine and lacustrine habitats in the Project Site.

Mixed Coniferous Forest: Ponderosa Pine-Douglas Fir Alliance

Mixed coniferous forest is the primary vegetation type throughout the region. This community is located along the western and eastern slopes of the Project Site. Mixed coniferous forest consists primarily of tall, dense stands of trees, but thinner areas are present. Common trees include Douglas fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), canyon live oak (*Quercus chrysolepis*), incense cedar (*Calocedrus decurrens*), and California black oak (*Quercus kelloggii*).

Common shrub species in more open areas within this vegetation type include toyon (*Heteromeles arbutifolia*), whiteleaf manzanita (*Arctostaphylos manzanita*), and Pacific poison oak (*Toxicodendron diversilobum*). Herbaceous cover varies within forested areas and is dependent upon disturbance and the density of overstory and shrub layers within the Project Site.

Montane Riparian Forest: Freemont Cottonwood-Mixed Oak and Willow Provisional Alliance

Montane riparian forest, or a Freemont cotton-mixed oak and willow (*Populus fremontii-Quercus* spp.- *Salix* spp.) provisional alliance (Sawyer et al. 2009), comprises the vegetation community of Greenhorn Creek Canyon and Greenhorn Creek channel within the Proposed Project Site.

Montane riparian forest within the Project Site consists of alder (*Alnus* sp.), big leaf maple (*Acer macrophyllum*), black oak, canyon live oak, common sheep sorrel (*Rumex acetosella*), English plantain (*Plantago lanceolata*), Fremont cottonwood, Himalayan blackberry (*Rubus armeniacus*), horsetail (*Equisetum* sp.), mugwort (*Artemisia douglasiana*), seep willow (*Baccharis salicifolia*), Oregon ash (*Fraxinus latifolia*), rushes (*Juncus* spp.), sedges (*Carex* spp.), and willows (*Salix* spp.). Montane riparian forest appears as dominant willow bands along portions of Greenhorn Creek, yet others display Fremont cottonwood, mixed oak or other riparian overstory species as the dominant. The transition from mixed conifer forest to montane riparian forest is more abrupt where there is an increase in slope within the Proposed Project Site.

Montane Chaparral: White Leaf Manzanita Shrubland Alliance

Montane chaparral, or white leaf manzanita (*Arctostaphylos viscida*) shrubland alliance (Sawyer et al. 2009), comprises patches of the eastern bank of Rollins Reservoir between mixed coniferous forests and along Greenhorn Creek near SA-2. Montane chaparral is associated with mountainous terrain and established in disturbed areas. It can be found on shallow to deep soils, on all exposures, and from gentle to relatively steep slopes (Barbour and Major 1977). Montane chaparral often adjoins other vegetation communities, such as montane riparian (Stantec 2015). Chaparral species at this elevation typically include whiteleaf manzanita, greenleaf manzanita, mountain whitethorn, wedgeleaf ceanothus, deerbrush, and poison oak.

Annual Grassland

Annual grassland is present within the Project Site in Greenhorn Campground and the Greenhorn Campground Boat Launch (SA-3). Plants in this habitat tend to grow during the cool winters and spring, maturing and dying by late spring or early summer, with standing dead material remaining in the summer depending on the amount of grazing pressure. In the Project Site, this habitat is dominated by an assortment of California natives and non-natives, including brome grass (*Bromus* sp.), wild oats (*Avena* sp.), turkey mullein (*Eremocarpus setigerus*), and yellow star-thistle (*Centaurea solstitialis*).

Developed/Disturbed

Developed/disturbed habitats are generally associated with areas adjacent to roadways, buildings, and other structures. These areas are highly disturbed and support sparse and ruderal vegetation (vegetation types that quickly colonize disturbed areas), including annual grasses and weedy annual forbs such as yellow star-thistle (*Centaurea solstitialis*), mustard (*Brassica sp*.), and spiny sowthistle (*Sonchus asper*). Developed/disturbed areas are present adjacent to the Greenhorn Campground and the Boat Launch.

Special-Status Plants and Wildlife

For the purposes of this EIR, terrestrial special-status species are those that fall into one or more of the following categories:

- Listed as endangered or threatened (FE or FT) under the federal ESA (or candidate species (FCT), or formally proposed (FPT) for listing)
- Protected under the Bald and Golden Eagle Protection Act (BAGEPA)
- Listed as endangered, threatened, or Watchlist (SE, ST, WL) under the CESA (or proposed for listing)
- Designated as rare, protected, or fully protected pursuant to the California Fish and Game Code (CFP)
- Designated a Species of Special Concern (CSC) by the CDFW
- Designated as California Rare Plant Rank (CRPR) 1B, 2, or 3 by the CNPS
- Listed as a Sensitive Species (BLM-S) by the Bureau of Land Management (BLM) (2010)

Species on the list were then categorized as follows.

- **Known to occur in the Project Site:** Wildlife species with recorded occurrences in the Project vicinity.
- **Could occur in the Project Site:** Wildlife species that "could occur" in the Project vicinity based on the geographic location and elevation of the Project and wildlife habitats present; and
- **Unlikely to occur in the Project Site:** Wildlife species that are "unlikely to occur" because their range does not overlap the Project Site; or for which the Project Site does not support appropriate habitat. Those species that are unlikely to occur are not discussed further in this document.

A comprehensive list of 45 special-status plant and wildlife species that occur or may occur in the Project Site (Table 3.3-3) was developed based on a query of the USFWS IPaC database (USFWS 2017a), CNDDB (CDFW 2017), and the CNPS Inventory of Rare and Endangered Vascular Plants (CNPS 2017) for reported occurrences of special-status plant and wildlife species in the vicinity of the Project. The nine-quadrangle search area included the Chicago Park, Nevada City, North Bloomfield, Washington, Grass Valley, Dutch Flat, Lake Combie, Colfax, and Foresthill quadrangles.

Special-Status Plants

One special-status species, Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*) (BLM-S, CRPR 4.2), is known to occur within the Project Site. Two populations of this species were identified during surveys conducted as part of the relicensing of the Yuba-Bear Project relicensing in 2009–2011. One population is located on the east bank of the Greenhorn Arm of Rollins Reservoir and the second populations is located near You Bet Bridge approximately 97 feet east of SA-1. (NID and PG&E 2011a).

Twelve additional species may potentially occur in the Project Site based on their geographic and elevational range, and habitat present on-site. Refer to Table 3.3-3 for information on the status, blooming period, geographic range, and habitat requirements of these species. Refer to Map 3.3-1 for the location of special-status plants known to occur within 1 mile of the Project Site.

Table 3.3-3
Special-Status Terrestrial Species Known or Potentially Occurring in the Vicinity of the Project

Scientific Name	Common Name	Federal/State Status/CRPR	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Site
Plants – Known to Occur					
Clarkia biloba ssp. *brandegeeae*	Brandegee's clarkia	BLM-S/None/4.2	This species is endemic to California. It can be found within Butte, El Dorado, Nevada, Placer, Sacramento, Sierra, and Yuba Counties. (CNPS 2017).	Annual herb. Chaparral, cismontane woodland, lower montane coniferous forest; often roadcuts. Blooms May through July. Elevation (ft): 246--3,002	• **Known to occur**. Two populations are present in the Project Site. One population is located on the east bank of the Greenhorn Arm of Rollins Reservoir and a second population is located near You Bet Bridge approximately 97 feet below Staging Area-1 (SA-1) (CDFW 2017). A third population is located outside of the Project Site on south bank of Rollins Reservoir across from the Greenhorn Campground Boat Launch (NID and PG&E 2011a). • **CNDDB query**: There is one additional CNDDB record approximately 750 feet northwest of the Project Site on You Bet Road.
Plants – May Potentially Occur					
Calystegia stebbinsii	Stebbins' morning-glory	FE/CE/1B.1	Found within Nevada and El Dorado counties (CNPS 2017).	Perennial rhizomatous herb. Chaparral (openings), cismontane woodland; gabbroic or serpentinite soil. Blooms from April through July. Elevation (ft): 607–3,576	• **Could occur.** Limited suitable habitat for this species is present within the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.
Carex xerophila	Chaparral sedge	None/None/1B.2	This species is endemic to California. It can be found within Butte, El Dorado, Nevada, and Yuba Counties (CNPS 2017).	Perennial herb. Chaparral, cismontane woodland, lower montane coniferous forest; gabbroic or serpentinite soil. Blooms from March through June. Elevation (ft): 1,444-2,526	• **Could occur.** Suitable habitat for this species is present within the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Fritillaria eastwoodiae	Butte County fritillary	None/None/3.2	Found in Butte, El Dorado, Nevada, Placer, Plumas, Shasta, Tehama, and Yuba Counties (CNPS 2017).	Perennial bulbiferous herb. Chaparral, cismontane woodland, lower montane coniferous forest (openings). Blooms from March through June. Elevation (ft): 164–4,921	• **Could occur.** Suitable habitat for this species is present within the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: No documented occurrences within 5 miles of the Project Site.
Juncus digitatus	finger rush	None/None/1B.1	This species is endemic to California. It can be found in Shasta and Nevada Counties (CNPS 2017).	Perennial herb. Cismontane woodland (openings), lower montane coniferous forest (openings), vernal pools (xeric). Blooms from (Apr) May through –June. Elevation (ft): 2,165–2,592	• **Could occur.** Suitable habitat for this species is not abundant within the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site. A single occurrence is present 5.1 miles northwest of the Project at the intersection of Idaho Maryland Road and Brunswick Road in Grass Valley.

Scientific Name	Common Name	Federal/State Status/CRPR	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Site
Lathyrus sulphureus var. *argillaceous*	Dubious pea	None/None/3.0	This species is endemic to California. It can be found within Calaveras, El Dorado, Nevada, Placer, Shasta, and Tehama Counties (CNPS 2017).	Perennial herb. Found in Cismontane woodland, lower montane coniferous forest, and upper montane coniferous forest. Blooms from April to May. Elevation (ft): 492-3,051	• **Could occur.** Suitable habitat for this species is present within the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Lewisia cantelovii	Cantelow's lewisia	None/None/1B.2	This species is endemic to California. It can be found within Butte, Nevada, Plumas, Shasta, Sierra, and Yuba Counties (CNPS 2017).	Perennial herb. Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest; mesic, granitic, sometimes serpentinite seeps. Blooms from May–Oct. Elevation (ft): 1,083–4,495	• **Could occur.** Limited suitable habitat (including serpentine soils) is present in the Project Site for this species. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: No occurrences of this species have been documented within 5 miles of the Project Site.
Lycopodiella inundata	Inundated bog club-moss	None/None/2B.2	This species can be found in Nevada and Humboldt Counties (CNPS 2017).	Perennial rhizomatous herb. Bogs and fens, lower montane coniferous forest, marshes and swamps. Blooms from June through September. Elevation (ft): 16-3,281	• **Could occur.** Suitable habitat for this species is present in and directly adjacent to the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: No occurrences of this species have been documented within 5 miles of the Project Site.
Monardella follettii	Follett's monardella	None/None/1B.2	This species is endemic to California. Occurs in Nevada and Plumas Counties in California.	Perennial shrub. Lower montane coniferous forest (rocky, serpentinite). Blooms from June through September. Elevation (ft): 1,968-6,562	• **Could occur.** Suitable habitat for this species is present within the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query** No occurrences of this species have been documented within 5 miles of the Project Site.
Packera layneae	Layne's ragwort	FT/CR/1B.2	This species is endemic to California. It can be found within Butte, El Dorado, Placer, Tuolumne, and Yuba Counties (CNPS 2017).	Perennial herb. Chaparral, cismontane woodland; serpentinite or gabbroic, rocky soil. Blooms from April through August. Elevation (ft): 656–3,560	• **Could occur.** Limited suitable habitat for this species is present within the Project Site • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: No documented occurrences of this species have been documented within 5 miles of the Project Site.
Plagiobothrys glyptocarpus var. *modestus*	Cedar Crest popcorn flower	None/None/3.0	This species is endemic to California. It can be found in Nevada and Yuba Counties (CNPS 2017).	Annual herb. Cismontane woodland and valley and foothill grassland. Blooms Apr-Jun. Elevation (ft): Unknown	• **Could occur.** Suitable habitat for this species is present within the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.

Scientific Name	Common Name	Federal/State Status/CRPR	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Site
Poa sierrae	Sierra blue grass	None/None/1B.3	This species is endemic to California. It can be found within Butte, El Dorado, Madera, Nevada, Placer, Plumas, and Shasta Counties (CNPS 2017).	Perennial rhizomatous herb. Lower montane coniferous forest. Blooms from April through June. Elevation (ft): 1,198–4,921	• **Could occur.** Suitable habitat for this species is present within the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: There are two documented occurrences of this species within 5 miles of the Project Site. The nearest known location is 4.2 miles southeast of the Project Site.
Rhynchospora capitellata	Brownish beaked-rush	None/None/2B.2	This species can be found in Butte, El Dorado, Mariposa, Nevada, Plumas, Sonoma, Tehama, Trinity, and Yuba Counties. (CNPS 2017).	Perennial herb. Lower montane coniferous forest, meadows and seeps, marshes and swamps, upper montane coniferous forest. Blooms from July through August. Elevation (ft): 148-6,562	• **Could occur.** Suitable habitat for this species is present within the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Plants – Unlikely to Occur					
Balsamorhiza macrolepis	California balsam root	None/None/1B.2	This species is endemic to California. It can be found in the counties of Alameda, Amador, Butte, Colusa, El Dorado, Lake, Mariposa, Napa, Placer, Santa Clara, Shasta, Solano, Sonoma, Tehama, and Tuolumne (CNPS 2017).	Perennial herb. Found in chaparral, cismontane woodland, and valley and foothill grassland. Blooms from March through June. Elevation (ft): 295-5,102	• **Unlikely to occur.** The Project Site is outside of the geographic range for this species. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query:** There are no documented occurrences of this species 5 miles of the Project Site.
Calystegia vanzuukiae	Van Zuuk's morning-glory	None/None/1B.3	Found within El Dorado and Placer Counties (CNPS 2017).	Perennial rhizomatous herb. Chaparral, cismontane woodland; gabbro, serpentinite soil. Blooms from May through August. Elevation (ft): 1,640–3,871	• **Unlikely to occur.** The Project Site is not within the geographic range for this species. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.
Carex sheldonii	Sheldon's sedge	None/None/2B.2	Found in Lassen, Modoc, Placer, and Plumas Counties (CNPS 2017).	Perennial rhizomatous herb. Lower montane coniferous forest (mesic), marshes and swamps (freshwater), riparian scrub. Blooms May through August. Elevation (ft): 3,937–6,601	• **Unlikely to occur.** The Project Site is not within the elevational range for this species. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.
Chlorogalum grandiflorum	Red Hills soaproot	None/None/1B.2	This species is endemic to California. It can be found within Amador, Butte, Calaveras, El Dorado, Placer, Tuolumne Counties (CNPS 2017).	Perennial bulbiferous herb. Chaparral, cismontane woodland, lower montane coniferous forest; serpentinite, gabbroic, and other soils. Blooms from May through June. Elevation (ft): 804–4,068	• **Unlikely to occur.** The Project Site is not within the geographic range for this species. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.

Scientific Name	Common Name	Federal/State Status/CRPR	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Site
Eryngium jepsonii	Jepson's coyote thistle	None/None/1B.2	This species is endemic to California. It can be found in Alameda, Amador, Calaveras, Contra Costa, Fresno, Napa, San Mateo, Solano, Stanislaus, Tuolumne, and Yolo Counties (CNPS 2017).	Perennial herb. Found in clay soil, valley and foothill grassland, and vernal pools. Blooms in April through August. Elevation (ft): 10-984	• **Unlikely to occur.** The Project Site is outside of the geographic and elevational range for this species. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Fremontodendron decumbens	Pine Hill flannelbush	FE/CR/1B.2	This species is endemic to California. It can be found in El Dorado, Nevada, and Yuba Counties (CNPS 2017).	Perennial evergreen shrub. Chaparral, cismontane woodland; gabbroic or serpentinite, rocky soil. Blooms from Apr–July. Elevation (ft): 1,394–2,493	• **Unlikely to occur.** No suitable habitat/soils are present in the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: No documented occurrences within 5 miles of the Project Site.
Juncus luciensis	Santa Lucia dwarf rush	None/None/1B.2	This species is endemic to California. It can be found in Lassen, Monterey, Modoc, Napa, Nevada, Placer, Plumas, Riverside, Santa Barbara, San Benito, San Diego, Shasta, and San Luis Obispo Counties (CNPS 2017).	Annual herb. Found in chaparral, great basin shrub, lower montane coniferous forest, meadows and seeps, and vernal pools. Blooms April through July. Elevation (ft): 984-6,693	• **Unlikely to occur**. No suitable habitat for this species is present within the Project Site. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.
Lewisia kelloggii ssp. hutchisonii	Hutchison's lewisia	None/None/3.2	This species is endemic to California. It can be found in Alpine, Amador, Butte, El Dorado, Humboldt, Madera, Placer, Plumas, Shasta, Sierra, Siskiyou, and Tuolumne Counties (CNPS 2017).	Perennial herb. Found in openings in upper montane coniferous forest, often on slate soils and on soils that are sandy granitic to erosive volcanic. Blooms from May through August. Elevation (ft): 4,800-7,000 feet	• **Unlikely to occur.** The Project Site is outside of the elevational range for this species. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Packera indecora	Elegant groundsel	None/None/2B.2	This species can be found in Fresno, Lassen, Modoc, Shasta, Sierra, and Tulare counties (CNPS 2017).	Perennial herb. Usually occurs in wetlands but occasionally found in wetlands. Meadows and seeps. Blooms from July through August. Elevation (ft): 5,250-6,562	• **Unlikely to occur.** The Project Site is not within the elevational range for this species. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Phacelia stebbinsii	Stebbins' phacelia	None/None/1B.2	This species is endemic to California. It can be found within El Dorado Nevada, and Placer Counties (CNPS 2017).	Annual herb. Cismontane woodland, lower montane coniferous forest, meadows and seeps. Blooms from May through July. Elevation (ft): 2,001–6,594	• **Unlikely to occur.** Limited suitable habitat in the Project Site. The Project Site is on the low end of the species elevational range. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: No documented occurrences of this species have been documented within 5 miles of the Project Site.

Scientific Name	Common Name	Federal/State Status/CRPR	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Site
Senecio aphanactis	Chaparral ragwort	None/None/2B.2	This species can be found in the counties of Alameda, Contra Costa, Fresno, Los Angeles, Merced, Monterey, Orange, Riverside, Santa Barbara, San Benito, Santa Clara, Santa Cruz, San Diego, San Luis Obispo, Solano, Santa Rosa Island, and Ventura (CNPS 2017).	Annual herb. Found in chaparral, cismontane woodland, and coastal shrub. Bloom period: Jan-April. Elevation (ft): 49-2,624	• **Unlikely to occur.** The Project Site is not within the geographical range of this species. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Viburnum ellipticum	Common viburnum	None/None/2B.3	This species can be found in the counties of Alameda, Contra Costa, El Dorado, Fresno, Glenn, Humboldt, Lake, Mendocino, Mariposa, Napa, Place, Shasta, Solano, Sonoma, and Tehama (CNPS 2017).	Perennial deciduous shrub. Found in chaparral, cismontane woodland, lower montane coniferous forest. Blooms from May through June. Elevation (ft): 705-4,592	• **Unlikely to occur.** The Project Site is not within the geographical range of this species. • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Sidalcea stipularis	Scadden flat checkerbloom	None/CE/1B.1	This species is endemic to California. It can be found within Nevada County (CNPS 2017).	Perennial rhizomatous herb. Wetlands, riparian, marshes, and swamps (montane freshwater). Blooms from July through August. Elevation (ft): 2,297–2,395	• **Unlikely to occur.** Suitable habitat for this species is not present within the Project Site • This species was not observed during botanical surveys conducted for relicensing in 2009 and 2011, (NID and PG&E 2011a). • **CNDDB query**: There are a total of two non-specific occurrences of this species within 5 miles of the Project Site; however, neither are within the Project Site. The nearest documented occurrence of this species is 3.4 miles northeast of the Project Site.
Birds – Known to Occur					
Haliaeetus leucocephalus	Bald eagle	Delisted, BLM-S, BAGEPA / SE, FP	Nests in Nevada and Placer Counties and in Lake Tahoe Basin; reintroduced into central coast; winter range includes rest of California except southeastern deserts, very high elevations in the Sierra Nevada, and east of Sierra Nevada south of Mono County; statewide breeding range is expanding.	Lives near large bodies of open water such as lakes, marshes, estuaries, sea coasts, and rivers, where fish are abundant. Usually nests within 1 mile of water in tall trees with open branchwork bordering lakes or large rivers (Zeiner et al. 1988; Fix and Bezener 2000). In Central California, bald eagles prefer foothill pines for nesting. The population is expanding in California, and population size is expected to increase over the 30-year permit term (Beeler, pers. comm. 2013 as cited in Dudek 2015)	• **Known to occur.** Although bald eagles were not observed during reconnaissance surveys conducted in August 2017, they are known to nest and forage at Rollins Reservoir. The nearest known nest is located on the main body of Rollins Reservoir between the Greenhorn Arm and Bear River Arm, approximately 1 mile south of the Project Site (NID and PG&E 2010b). The nearest known winter roost is located on the Bear River Arm approximately 1.42 miles west of the Project Site (NID and PG&E 2010b). • **CNDDB query**: There are no additional CNDDB records of this species within 5 miles of the Project Site.
Pandion haliaetus	Osprey	None / WL	Breeds in northern California from Cascade Ranges south to Lake Tahoe, and along the coast south to Marin Co. Regular breeding sites include Shasta Lake, Eagle Lake, Lake Almanor, other inland lakes and reservoirs, and northwest river systems. Breeding population estimated in 1975 at 350-400 pairs in northern California (Henny et al. 1978 as cited in Zeiner et al. 1988); numbers apparently increasing in recent years. An uncommon breeder along southern Colorado River, and uncommon winter visitor along the coast of southern California (Garrett and Dunn 1981 as cited in Zeiner et al. 1988).	Uncommon migratory raptor that builds large perennial nests in dead trees or other prominent supports near open water. Foraging areas include regulated and unregulated rivers, reservoirs, lakes, estuaries, and coastal marine ecosystems	• **Known to occur**. Osprey are known to nest and forage on Rollins Reservoir. Osprey were observed foraging over Rollins Reservoir during reconnaissance surveys (August 2017). During surveys conducted in 2009 as part of relicensing of the Yuba-Bear Hydroelectric Project, there were two active osprey nests present on Rollins Reservoir. One of these nests is located on the Drum-Bell 115kV transmission line tower which is above and approximately 255 feet east of the Project Site. The second is located on the east bank of the Bear River Arm of Rollins Reservoir (NID and PG&E 2010b). • **CNDDB query:** There are no additional documented occurrences of this species in CNDDB.

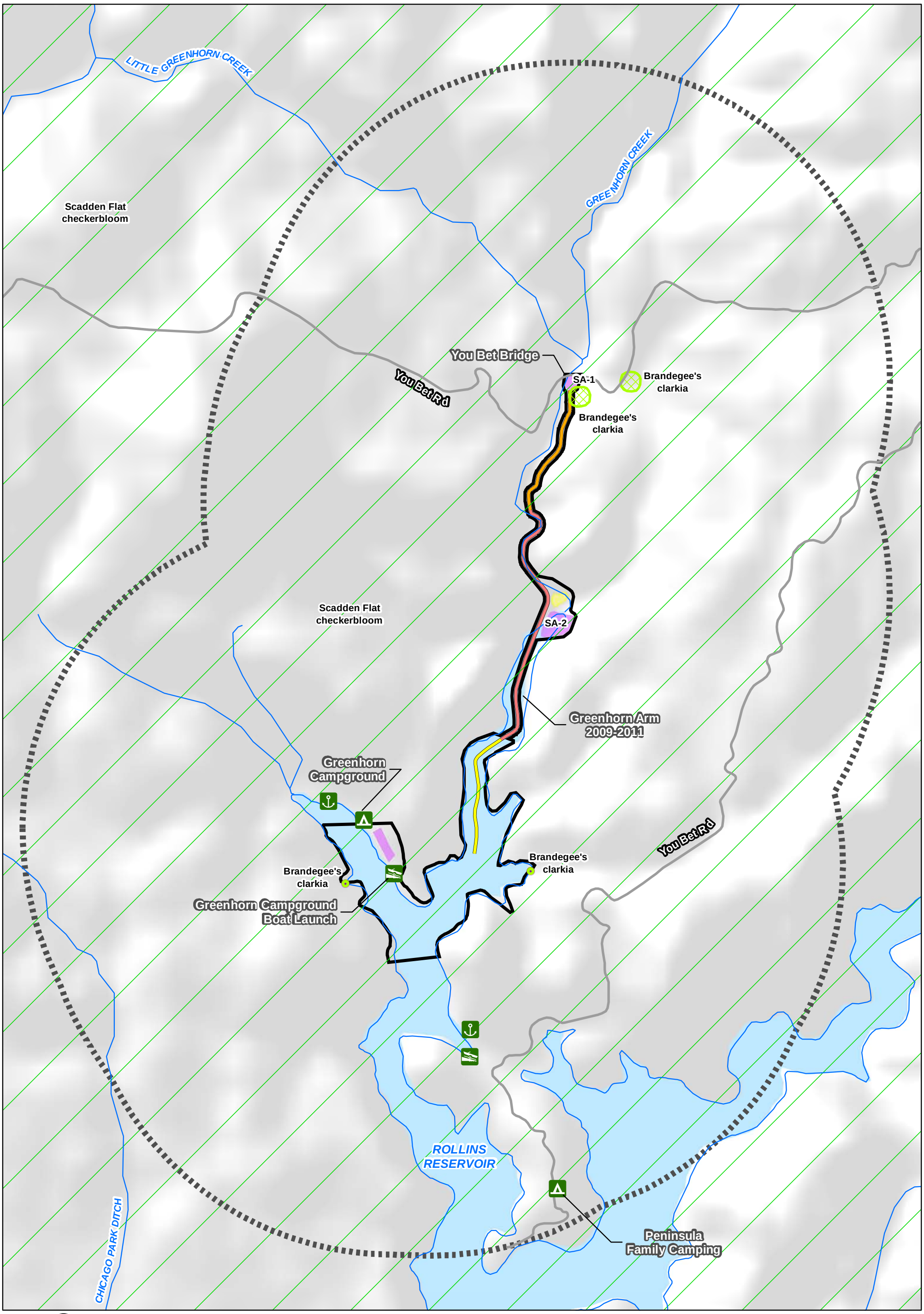
Scientific Name	Common Name	Federal/State Status/CRPR	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Site
Reptiles – May Potentially Occur					
Phrynosoma blainvillii	Blainville's (Coast) horned lizard	BLM-S / CSC	Sacramento Valley, including Sierra foothills, south to Southern California; Coast Ranges south from Sonoma County; below 4,000 feet msl in northern California.	Grasslands, brush lands, woodlands, and open coniferous forest with sandy or loose soil (prefers gabbro soils), including sandy washes with low shrubs. Requires open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	• **Could occur.** This species was not observed during reconnaissance surveys (August 2017). Suitable habitat for this species is present within the Project Site. A single incidental sighting was recorded approximately 3.5 miles northeast of the Project Site (NID and PG&E 2011b). • **CNDDB query:** Multiple occurrences within 5 miles of the Project Site. The nearest documented occurrence is approximately 2.4 miles south of the Project Site.
Birds – May Potentially Occur					
Accipiter cooperii	Cooper's hawk	BLM-S / WL	This species can be found throughout California.	Nests and forages in dense stands of live oak, riparian woodlands, or other woodland habitats often near water. This species can be found in forest and woodland habitats and suburban areas as well.	• **Could occur**. This species was not observed during reconnaissance surveys (August 2017). Suitable foraging habitat for this species is present in the Project Site. • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Accipiter gentilis	Northern goshawk	BLM-S / CSC	Permanent resident in Sierra Nevada south to Kern County, as well as the Klamath and Cascade Ranges, north Coast Ranges from Del Norte to Mendocino Counties; winters in Modoc, Lassen, Mono, and northern Inyo Counties; rare in Southern California.	Nests and roosts in older stands of mixed conifer, red fir, Jeffrey pine, lodgepole pine, and aspen forests; hunts in forests and in forest clearings and meadows. Nests are usually in large trees, often on north-facing slopes, and situated near a source of water (Beedy and Pandolfino 2013).	• **Could occur**. This species was not observed during reconnaissance surveys (August 2017). Suitable foraging habitat for this species in the Project Site. • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.
Setophaga petechia brewsteri	California yellow warbler	None / CSC	Uncommon nester over most of California except Central Valley, Mojave Desert, and high elevations of Sierra Nevada; winters along lower Colorado River and in parts of Imperial and Riverside Counties; two small resident populations in San Diego and Santa Barbara Counties (Shuford and Gardali 2008 as cited in Zeiner et al. 1988).	Summer breeding habitat includes lowland riparian woodlands, isolated willow stands, dry montane chaparral with scattered trees, and montane coniferous forests with a brushy understory (Beedy and Pandolfino 2013); usually nest in the upright fork of a deciduous tree or a small shrub branch or sapling. Feeds on insects and spiders (Zeiner et al. 1988; Fix and Bezener 2000).	• **Could occur**. This species was not observed during reconnaissance surveys (August 2017). Suitable nesting and foraging habitat is present in the Project Site. • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.
Icteria virens	Yellow-breasted chat	None / CSC	Nests in isolated locations on low-elevation streams throughout the Sierra Nevada foothills (Beedy and Pandolfino 2013).	Occurs in dense riparian thickets of willow and other brushy tangles bordering watercourses, small ponds and swampy ground dominated by tangled vines, and lush low shrubbery interspersed by taller trees; sometimes breeds in extensive hillside bramble patches. Bezener and Bishop (2005) found that this species requires a minimum width of 20 meters (66 feet) of riparian habitat for breeding.	• **Could occur**. This species was not observed during reconnaissance surveys (August 2017). Suitable nesting and foraging habitat for this species is present within the Project Site. • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Mammals – May Potentially Occur					
Antrozous pallidus	Pallid bat	BLM-S / CSC	The pallid bat is a locally common species of low elevations in California. It occurs throughout California except for the high Sierra Nevada from Shasta to Kern counties, and the northwestern corner of the state from Del Norte and western Siskiyou cos. to northern Mendocino Co.	Forages over wide range of habitats, including grasslands, scrub, woodlands, and forests; most common in open, dry habitat with rocky areas for roosting; also roosts in large oaks and buildings.	• **Could occur.** This species was not observed during reconnaissance surveys (August 2017). Suitable roosting and foraging habitat is present in the Project Site for this species. However, during acoustic surveys conducted for the Yuba-Bear Hydroelectric Project this species was not detected (NID and PG&E 2010c). Additionally, focused surveys did not find sign of bat species within the Project Site recreation facilities (NID and PG&E 2010c). • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.

Scientific Name	Common Name	Federal/State Status/CRPR	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Site
Aplodontia rufa californica	Sierra Nevada mountain beaver	None / CSC	Northern and central Sierra Nevada mountains and a small portion of west-central Nevada.	Wooded, moist habitats with herbaceous plants along slopes of ridges and gullies; brushy successional stages of most coniferous communities. Riparian woodland and scrub.	• **Could occur**. This species was not observed during reconnaissance surveys (August 2017). Suitable habitat for this species is present within the coniferous forest on the slopes adjacent to the Project Site. This species was also not observed during reconnaissance surveys conducted in 2014 (Stantec 2015). • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.
Corynorhinus townsendii	Townsend's big-eared bat	BLM-S / CSC	This species is found throughout California.	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, also man-made structures and tunnels	• **Could occur**. This species was not observed during reconnaissance surveys (August 2017). Suitable foraging habitat for this species is present throughout the Project Site. During acoustic surveys and long-term acoustic monitoring (LTAM) for relicensing of the Yuba-Bear Hydroelectric Project this species was detected at Rollins Dam and Powerhouse during June, and August through October; however, recreation facilities were surveyed at Greenhorn Campground for sign of bats (guano, urine stains) and no sign was observed (NID and PG&E 2010c). • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.
Lasiurus blossevillii	Western red bat	None / CSC	The red bat is locally common in some areas of California, occurring from Shasta County to the Mexican border, west of the Sierra Nevada/Cascade crest and deserts. The winter range includes western lowlands and coastal regions south of San Francisco Bay. There is migration between summer and winter ranges, and migrants may be found outside the normal range (Zeiner et al. 1988).	Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Not found in desert areas. During warm months, sexes occupy different portions of the range (Williams and Findley 1979 as cited in Zeiner et al. 1988).	• **Could occur.** This species was not observed during reconnaissance surveys (August 2017). Suitable foraging and roosting habitat for this species is present throughout the Project Site. During acoustic surveys and LTAM for the Yuba-Bear Hydroelectric Project this species was detected at Rollins Dam and Powerhouse (May, and July-September); however, no sign (guano, urine stains) of bats were observed at Greenhorn (NID and PG&E 2010c). • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.
Taxidea taxus	American badger	None / CSC	Found throughout California except in the northern North Coast (Zeiner et al. 1988).	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	• **Could occur.** Suitable habitat is present within the Project Site. This species was not observed during reconnaissance surveys conducted in August 2017 by JNA-Consulting or 2014 by Stantec (Stantec 2015). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Invertebrates – Unlikely to Occur					
Desmocerus californicus	Valley elderberry longhorn beetle	FT / None	Occurs only in the Central Valley of California, in association with red or blue elderberry (*Sambucus mexicana*).	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus mexicana*).	• **Unlikely to occur**. The Project Site is outside of the species known elevational and geographic range (USFWS 2017b). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Birds – Unlikely to Occur					
Cypseloides niger	Black swift	None / CSC	Breeds locally in Sierra Nevada and Cascade Ranges; San Gabriel, San Bernardino, and San Jacinto Mountains; and coastal bluffs from San Mateo County to near San Luis Obispo County.	Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above the surf; forages widely in interior steep mountain canyons, especially cliffs adjacent to waterfalls (Zeiner et al. 1988; Fix and Bezener 2000). Also forages above forests and woodlands, canyons, valleys, and savannas in the vicinity of nesting locations. Elevation (ft): 7,000-11,000	• **Unlikely to occur.** The Project Site is outside of the elevational range for this species. • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.

Scientific Name	Common Name	Federal/State Status/CRPR	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Site
Laterallus jamaicensis coturniculus	California black rail	BLM-S / ST, FP	A resident population exists among the foothills of the west slope of the Sierra Nevada mountain range, disjointed occurrences have been noted along the coast of California (USFWS 2017c).	Tidal marshes, shallow freshwater margins, wet meadows and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra foothill populations	• **Unlikely to occur**. No appropriate nesting habitat is present in the Project Site. • **CNDDB query**: The nearest documented occurrence of this species is approximately 1.5 miles west of the Project Site.
Mammals – Unlikely to Occur					
Martes pennanti	Fisher – West Coast DPS	FPT, BLM-S / SCT, CSC	Coastal mountains from Del Norte to Sonoma Counties, through Cascades to Lassen County; south in Sierra Nevada to Kern County.	North coast coniferous forest with intermediate to large- tree stages of coniferous forests and deciduous-riparian areas with high percent canopy closure. Uses cavities, snags, logs, and rocky areas for cover and denning. Needs large areas of mature, dense forest.	• **Unlikely to occur**. No appropriate habitat is present in the Project Site. • **CNDDB query**: The nearest documented occurrence of this species is approximately 4.1 miles southeast of the Project Site.
Myotis thysanodes	Fringed myotis	BLM-S / None	This species can be found throughout California from the coast to the Sierra Nevada. Records exist for the high desert and east of the Sierra Nevada; however, the majority of the known localities are on the west side of the Sierra Nevada.	This species can be found in a wide variety of habitats, optimal habitats are pinyon-juniper, valley foothill hardwood & hardwood-conifer. This species uses caves, mines, buildings, or crevices for maternity colonies and roosts. Elevation (ft): 4,000-7,000 (Zeiner et al. 1988)	• **Unlikely to occur.** The Project Site is outside of the elevational range of this species. During all surveys that took place including, focused surveys, mist netting, acoustic, and LTAM, this species was not detected (NID and PG&E 2010c). • **CNDDB query:** There are no documented occurrences of this species within 5 miles of the Project Site.
Vulpes necator	Sierra Nevada red fox	FC / ST	Cascade Range east to Sierra Nevada, south to Tulare County.	Occurs throughout the Sierra Nevada at elevations above 7,000 feet in forests interspersed with meadows or alpine forests. Open areas are used for hunting, and forested habitats are used for cover and reproduction. Known from the higher elevations of the Sierra National Forest.	• **Unlikely to occur**. Project Site is outside of species known elevation range. • **CNDDB query**: There are no documented occurrences of this species within 5 miles of the Project Site.

Status Definitions
BAGEPA = Protected under the federal Bald Eagle and Golden Eagle Protection Act
BLM-S = Considered a Sensitive Species by the BLM
CSC = Considered a Species of Special Concern by the CDFW
FE = Federally Endangered
FP = Fully Protected under the California Fish and Game Code
FPT = Federally Proposed Threatened
FT = Federally Threatened
S1 = NatureServe Element Ranking of Critically Imperiled in the State
S1S2 = NatureServe Element Ranking of Between Critically Imperiled and Imperiled in the State
S2S3 = NatureServe Element Ranking of Between Imperiled and Vulnerable in the State
SCT = State Candidate Threatened
SE = California Endangered
ST = California Threatened
WL = California Watch List

Special-status Species Lists:
CDFW. 2017. Special Animals List. July 2017. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline
California Natural Diversity Database (CNDDB). Rare Find 5.0. CDFW, Habitat Planning and Conservation Branch. Accessed July 2017. Electronic Database.
California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 30 July 2017].
United States Fish and Wildlife Service (USFWS). 2017a. Species List, Information for Planning and Conservation (IPaC). Electronic Database. Accessed July 2017.



Projection: UTM Zone 10
Datum: NAD 83

0 0.25 0.5 Miles

USGS 7.5' Quad: Chicago Park, CA

T 15N, R 09E, Sections 2-3, 10-11

Project Site Boundary
1-Mile Buffer Around Project Site
Boat Launch
Campground
Marina

Existing Haul Road (upland)
New Haul Road (floodplain)
New Haul Road
Staging Area
Stockpile Area

Special-status Plant Data

Brandegee's Clarkia (NID and PG&E 2011)
Brandegee's Clarkia (CNDDB 2017)
Scadden Flat Checkerbloom (Non-specific, CNDDB 2017)

Cardno

Greenhorn Sediment Removal at Rollins Reservoir Project
Nevada County, CA

Map 3.3-1

Occurrences of Special-Status Plant Species within 1 mile of the Project Site

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Special-Status Wildlife

Based on the elevation and the habitats present on-site, three special-status wildlife species are known to occur in the Project Site and ten may potentially occur in the Project Site. Information on the status, habitat requirements, geographic range, and potential for occurrence of these species is summarized in Table 3.3-3 and described below. Refer to Map 3.3-2 for the location of special-status wildlife species known to occur within 5 miles of the Project Site.

BLAINVILLE'S (COAST) HORNED LIZARD (BLM-S, CSC)*

Blainville's (Coast) horned lizard (Phrynosoma blainvillii) inhabits valleys, foothills, and semiarid mountains with sandy soil and low vegetation. This species elevation range extends from sea level up to 4,000 feet in the Sierra Nevada foothills (Morey 2000). It can be found in grasslands, coniferous forests woodlands, and chaparral with open areas and patches of loose soil with a high sand content (Jennings and Hayes 1994). This species is diurnal and active during warm weather. This species emerges from hibernation in March and become active from April through July, after which adults aestivate (Hagar 1992). Eggs typically hatch from August to September (California Herps 2017b).

Threats to this species include, development, agricultures, and loss of food sources. The increase in agriculture and development has caused fragmentation and loss of suitable habitat for this species. Disturbance of natural habitat has led to an increase in non-native ants, including argentine ants, which displace this species native ant food source (NPS 2017a), up to 90% of the diet of this species consists of native harvester ants (*Pogonomyrmex* spp.) (Pianka and Parker 1975).

Project-specific Information. This species was not observed during reconnaissance surveys conducted in August 2017. However**,** there are three documented occurrences of Blainville's (Coast) horned lizard within 5 miles of the Project Site, the nearest is located 2.4 miles south of the Project Site (south of Rollins Reservoir Dam). During relicensing surveys conducted for the Yuba-Bear Project a single incidental observation of this species was observed approximately 3.4 miles north east of the Project Site. Suitable habitat for this species is present within the grassland adjacent to the boat launch and Greenhorn Campground, and the coniferous forest that lines either side of Greenhorn Creek and the Greenhorn Arm of Rollins Reservoir.

BALD EAGLE (BAGEPA, BLM-S, ST, FP)

Bald eagles typically nest in large conifer or hardwood trees in forested areas, or on cliff faces (Anthony et al. 1982; USFWS 1986; CDFW 2017). They usually nest within 2 kilometers (approximately 1.24 miles) of water, often much closer, and are generally isolated from human activity and disturbance; they also often nest in one of the largest trees in a stand and in a prominent location providing vistas over the surrounding area (Buehler 2000; USFWS 1986). During winter,

bald eagles typically inhabit areas below 500 meters (1,625 feet) msl, but may be found up to 2,500 meters (8,125 feet) msl in some western states (Buehler 2000).

The quality of foraging habitat associated with large bodies of water depends on such factors as abundance of the fish that bald eagles prey upon; the presence of shallow water, which may increase the availability of prey; and the level of human disturbance (Buehler 2000; Stalmaster and Kaiser 1998; Watson et al. 1991; Garrett et al. 1993). The presence of suitable perch sites is also an important factor. In addition to being near water with ample prey, perch sites tend to be those that provide good views of the surrounding area and are often the highest site available (USFWS 1986). In arid climates, reservoirs provide important foraging habitat during both the breeding season and winter (CDFG 2012a; Lehman 1994; Roberson 2002; Unitt 2004).

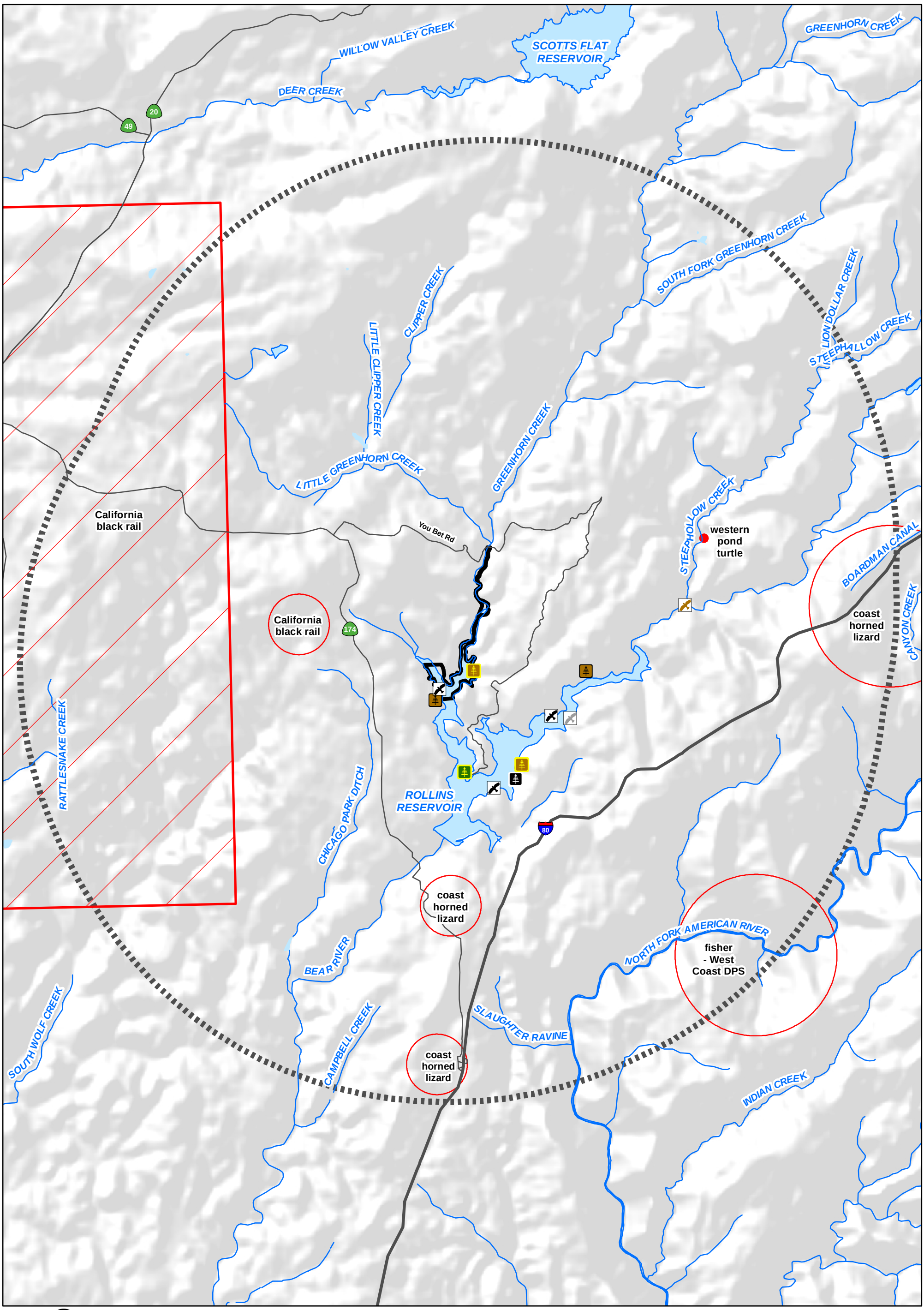
Degradation of breeding and wintering habitat is now considered the most important threat to the bald eagle, particularly through loss of nesting, roosting, and perching habitat near shorelines and of aquatic foraging habitat (Buehler 2000). Electrocution through contact with power lines has long been, and still remains, a threat to bald eagles (USFWS 1986; Buehler 2000).

Project-specific Information. This species was not observed during reconnaissance surveys conducted during August 2017. However, bald eagles are known to nest and forage at Rollins Reservoir and they have been observed in the Project Site. Focused bald eagle nesting and winter roost surveys were conducted the Project Site in 2009 and 2010 as part of relicensing of the Yuba-Bear Hydroelectric Project (NID and PG&E 2010a). The nearest known nest is located on the main body of Rollins Reservoir between the Greenhorn Arm and Bear River Arm, approximately 1 mile south of the Project Site (NID and PG&E 2010a). The nearest known winter roost is located on the Bear River Arm approximately 1.4 miles west of the Project Site (NID and PG&E 2010a).

OSPREY (CDFW WL)

Osprey *(Pandion haliaetus)* is associated with large, fish-bearing waters surrounded by ponderosa pine and mixed conifer habitats. This species preys primarily on fish and other small mammals but requires open clear waters for foraging. Regular breeding sites for osprey include Shasta Lake, Eagle Lake, Lake Almanor, and other inland lakes and reservoirs. Osprey typically arrives on nesting grounds in mid-March to early April and migrates south to Central and South America in October. Breeding takes place from March through September. Osprey frequently compete for prey with bald eagles and gulls (Zeiner et al. 1988b, updated in 2008).

Threats to this species include man-made hazards such as the use of pesticides, toxic chemicals, synthetic fish nets, and other modern products. Other threats include powerlines, gunshots, polluted lakes, rivers, and streams, and the loss of forested habitat along major waterways.



Projection: UTM Zone 10
Datum: NAD 83

0 0.5 1 2 Miles

Project Site Boundary
5-Mile Buffer Around Project Site

CNDDB Data*
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (circular)

*SOURCE: CDFW, 2017

(NID and PG&E Survey Data, 2010)
- Bald Eagle, Night / Winter Roost
- Bald Eagle, Adult
- Bald Eagle, Sub-adult
- Bald Eagle, Occupied Nest
- Osprey, Adult
- Osprey, Occupied Nest
- Osprey, Unoccupied Nest

Cardno

Greenhorn Sediment Removal at Rollins Reservoir Project
Nevada County, CA

Map 3.3-2

Occurrences of Special-Status Animal Species within 5 miles of the Project Site

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The location of osprey nests were documented in the Project Site in conjunction with focused bald eagle nesting and winter roost surveys conducted in 2009 and 2010 for relicensing of the Yuba-Bear Hydroelectric Project (NID and PG&E 2010a).

Project-specific Information. Osprey are known to nest and forage on Rollins Reservoir. An individual was observed foraging in Rollins Reservoir and an inactive nest was observed on a tower on the Drum-Bell 115kV line located east of the Project Site during reconnaissance surveys conducted in August 2017. During surveys as part of relicensing of the Yuba-Bear Hydroelectric Project there were two active osprey nests present on Rollins Reservoir (NID and PG&E 2010a). One of these active nests, is the nest observed on the tower associated with the Drum-Bell 115kV transmission line, which sits above and approximately 255 feet east of the Project Site (NID and PG&E 2010a). The second is located on the east bank of the Bear River Arm of Rollins Reservoir (NID and PG&E 2010a). Osprey were also observed during reconnaissance surveys conducted in November 2014 (Stantec 2015).

COOPER'S HAWK (CDFW WL)

Cooper's hawk (*Accipiter cooperii)* frequent landscapes where wooded areas occur in patches and groves (Beebe 1974 as cited in Zeiner et. al 1988). Coopers hawk can also be found in urban areas where trees are abundant. Nesting and foraging usually occurs near open water or riparian vegetation (Zeiner et. al 1988). This species can be found from sea level to 3,000 feet above msl. This species nests from March through August with peak activity in May through July (Zeiner et. al. 1988). Cooper's hawk prefer to construct nests in tall trees approximately 25-50 feet off the ground, often constructing their nests from a remnant nests or clump of mistletoe (BirdWeb 2017). Female Cooper's hawk will lay three to five eggs and incubate for 30 to 33 days. The young begin to emerge from the nest at four weeks and begin flights soon after.

Historically, Cooper's hawk was hunted for preying on poultry; however, hunting has not been a threat to the species for several years. Additionally, this species was negatively impacted by pesticides, specifically DDT. With the ban on DDT this species has adapted well to changing habitats and thrived.

Project-specific Information. This species was not observed during reconnaissance surveys conducted in August 2017. There are no documented occurrences of Cooper's hawk within 5 miles of the Project Site. Suitable nesting and foraging habitat for this species is present within the Project Site.

NORTHERN GOSHAWK (BLM-S, CSC)

Northern goshawk (*Accipiter gentilis*) are found in mature, dense conifer forests, though they can be found in pinyon-juniper and low-elevation riparian habitats. Foraging takes place in wooded areas where it uses snags and dead-toped trees for observation and prey-plucking. This species

nests on north-facing slopes, in dense stands near water, from March through August. Nests are typically 19-82 ft above the ground (Zeiner et. al. 1988). Average clutch sizes for northern goshawk range from one to five with an average of three. The female will incubate for 36 to 41 days and the young typically fledge within 45 days (Zeiner et. al. 1988).

Historically this species was hunted because of its predatory nature; however, with the MBTA inclusion of raptors this species was afforded protection. Currently northern goshawks are threatened by loss of habitat from logging operations, disease, cattle grazing, insect and tree disease, fire suppression and activities that lead to the loss of nesting habitat.

Project-specific Information. This species was not observed during reconnaissance surveys conducted in August 2017. There are no documented occurrences of this species within 5 miles of the Project Site. Suitable foraging and nesting habitat for this species is located within the mixed conifer forest that line Greenhorn Creek and the Greenhorn Arm of Rollins Reservoir.

YELLOW WARBLER (CSC)

The yellow warbler breeds in riparian vegetation along streams or in wet meadows, especially in willows, cottonwoods, and various riparian shrubs. It may occasionally use shrublands and understory trees in mixed conifer forests. The yellow warbler is fairly abundant in the Sierra Nevada, although nearly extirpated from the Central Valley.

Project-specific Information. This species was not observed during reconnaissance surveys conducted in August 2017. There are no documented occurrences of yellow warbler within 5 miles of the Project Site; however, limited suitable nesting and foraging habitat (riparian vegetation) is present in the Project Site along Greenhorn Creek and the Greenhorn Arm of Rollins Reservoir.

YELLOW-BREASTED CHAT (CSC)

The yellow-breasted chat can be found in valley foothill riparian habitat up to elevations of 6,500 feet msl. This species requires riparian thickets of willow and other brushy tangles near watercourses for cover. This species feeds on insects, spiders, berries, and other fruits and mostly gleans from foliage of shrubs and low trees. Yellow-breasted chat breed from early May into early August with peak activity in June.

Loss and degradation of riparian habitat have caused a marked decline in the breeding population of yellow-breasted chat in recent decades in California. Parasitism by brown-headed cowbirds also has contributed to the decline (Zeiner et al. 1988a, updated in 2005).

Project-specific Information. This species was not observed during reconnaissance surveys conducted in August 2017. There are no documented occurrences of this species within 5 miles of the Project Site; however, suitable nesting and foraging habitat is present for this species and it could occur.

Special-Status Bats

Based on literature review and surveys completed, three special-status bat species are known or could potentially occur in the Project Site.

No special-status bats were observed during reconnaissance surveys conducted in August 2017. However, focused special-status bat surveys were conducted as part of relicensing of the Yuba-Bear Hydroelectric Project in 2007 and 2009 (NID and PG&E 2010a). The survey included an inspection of facilities (e.g., Rollins Reservoir Dam) and project recreation facilities (e.g., Greenhorn Campground) for evidence of bat activity and completion of acoustic sampling, mist net sampling, long-term acoustic monitoring (LTAM), and winter hibernacula evaluations.

Information on the status, life history, distribution, potential for occurrence, and results of surveys conducted as part of the Yuba-Bear Hydroelectric Project Relicensing for each species is described below.

PALLID BAT (BLM-S/CSC)

The pallid bat is a year-round resident in California. The pallid bat is found in arid desert areas, grasslands and oak savanna, coastal forested areas, and coniferous forests of the mountain regions of California. Day and night roost sites typically include rock outcroppings, caves, hollow trees, mines, buildings, and bridges. Pallid bats will use more open sites such as eaves, awnings, and open areas under bridges for night feeding roosts.

Project-specific Information. There are no documented occurrences of pallid bat within 5 miles of the Project Site. This species was not identified in the Project Site during reconnaissance surveys conducted in August 2017 or during surveys conducted for the Yuba-Bear Hydroelectric Project (NID and PG&E 2010c). However, suitable foraging habitat is present for this species in the Project Site.

TOWNSEND'S BIG-EARED BAT (CSC)

Townsend's big-eared bat *(Corynorhinus townsendii)* is a year-round resident in California, occurring from low desert to mid-elevation montane habitats. They are found primarily in rural settings, from inland deserts to coastal redwoods, oak woodland of the inner Coast Ranges and Sierra Nevada foothills, and low to mid-elevation mixed coniferous-deciduous forests. Townsend's big-eared bats are non-migratory, year-round residents that are active April through September, and hibernate October through March. They typically roost during the day in caves

and mines, but can roost in buildings that offer suitable conditions (Kunz 1982). Night roosts are in more open settings and include bridges. Hibernation occurs in October through April for prolonged periods in colder areas and intermittently in non-freezing areas.

Historically, this species has declined due to direct killing by people and because of destruction or disturbance of roost sites. These animals are sensitive to light and movement so if they are disturbed during the day, they awake and their ears begin to move as they try to identify the intruder. If the disturbance occurs for more than a few seconds, the entire group takes flight and the roost may be abandoned (NPS 2017b).

Project-specific Information. This species was not identified in the Project Site during surveys conducted in August 2017 or during surveys conducted for the Yuba-Bear Hydroelectric Project (NID and PG&E 2010c). However, suitable foraging and roosting habitat for this species is present throughout the Project Site.

WESTERN RED BAT (CSC)

Western red bat (*Lasiurus blossevillii*) can be found from Shasta County in northern California to the Mexican border, west of the Sierra Nevada/Cascade crest and deserts. This species roosts in forests and woodlands ranging from sea level through mixed conifer forests. Roosting takes place primarily in trees in areas that area protected from above. Roost sites are often adjacent to streams, fields, or urban areas. This species forages over a variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands. Threats to this species include motor vehicles, pesticides, and poor water quality.

Project-specific Information. Suitable foraging and roosting habitat for this species is present throughout the Project Site. During acoustic surveys and LTAM for the relicensing for the Yuba-Bear Hydroelectric Project this species was identified at Rollins Dam and Powerhouse (approximately 2.3 miles south of the Project Site) (NID and PG&E 2010c).

SIERRA NEVADA MOUNTAIN BEAVER (CSC)

The Sierra Nevada mountain beaver is a small, thick-bodied rodent with tiny eyes and small ears, and is usually found in communal burrows dug in the banks of streams. The mountain beaver is the only member of its genus; it resembles a muskrat and is also known as a mountain beaver. The mountain beaver is about 12 inches long, grayish or brownish-red in color, and is nearly tailless. The Sierra Nevada mountain beaver frequents open forests near water. Deep, friable (easily crumbled) soils are required for burrowing, along with a cool, moist microclimate. Burrows are located in deep soils in dense thickets, preferably near a stream or spring. The mountain beaver lines its nest with dry vegetation. Nest chambers are 1 to 4½ feet below the ground surface. Breeding occurs from December through March (peaking in February). Young are born February

to June (peaking March through May). There is one litter per year, and litter size averages between two and three.

The typical habitat for the mountain beaver in the Sierra Nevada is open, forested areas near water below 2,700 feet in elevation.

Project-specific Information. There are no documented occurrences of this species within 5 miles of the Project Site and this species was not observed during reconnaissance surveys conducted by JNA-Consulting in August 2017 by Stantec in 2014 (Stantec 2015); however, suitable habitat is present within the Project Site.

AMERICAN BADGER (CSC)

The American badger is a nocturnal, fossorial (burrowing) mammal with a stout, compact, heavy body and partially webbed toes and long claws that aid in digging. Its fur is yellowish-gray with a white stripe over the top of the head, white cheeks, black feet, and a black spot in front of each ear. The American badger's diet is largely carnivorous, although some plant foods are consumed. It primarily feeds on fossorial rodents such as ground squirrels and pocket gophers. Other food items include fish, snakes, lizards, carrion, and insects, as well as eggs and nestlings of ground-nesting birds. American badgers construct burrows, mainly in the pursuit of prey, but burrows are also used for sleeping and as natal dens. Badgers have been observed plugging accessory entrances to burrow systems, presumably to trap prey within the burrow. American badgers mate in summer and early fall. Females have delayed implantation, and pregnancies are suspended until December or as late as February. Young are born in February to May with litter sizes ranging from one to four.

In California, the American badger occurs throughout most of the state in areas with dry, friable (crumbly) soils. It is most abundant in drier open stages of most shrub, forest, and herbaceous habitats up to 12,000 feet in elevation.

Project-specific Information. There are no documented occurrences of this species within 5 miles of the Project Site. This species was not observed during reconnaissance surveys conducted by JNA-Consulting in August 2017 or by Stantec in 2014 (Stantec 2015); however, suitable habitat for this species is present within the Project Site and it could occur.

3.3.3.2 Threshold of Significance

The significance criteria used to evaluate the Project impacts to terrestrial resources are based on Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.). According to Appendix G, a significant impact related to biological resources would occur if the project would:

1. 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 CDFW or U.S. Fish and Wildlife Service.
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or U.S. Fish and Wildlife Service.
3. Interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
4. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
5. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan.

3.3.3.3 Impacts Analysis

Impact 3.3-4. The Proposed Project will not 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 CDFW or USFWS with implementation of mitigation.

The Proposed Project Site represents potential habitat for 13 special-status plant species and 13 special-status wildlife species, as well as raptors protected under California Fish and Game Code or other bird species protected under the MBTA. The following is a discussion of potential impacts to these special-status species.

Implementation of the Proposed Project could impact special-status plants.

Two populations of Brandegee's clarkia were identified during previous surveys of the Project Site in 2009 and 2010. Twelve additional species also have potential to occur at the Project Site. The Proposed Project includes use of heavy equipment, establishment of the new haul road and crossings, use of Project staging areas, and excavation of sediments in the Greenhorn Arm of Rollins Reservoir). Ground disturbance, vehicular operation, and foot traffic occurring during

these activities could potentially impact special-status plant species, if present, through trampling, crushing, burial, or removal.

To minimize the potential for impacts to special-status plants, MM-BIO-8 requires NID to conduct protocol-level special-status plant surveys during the appropriate blooming period for the 13 plants occurring or potentially occurring at the Project Site (refer to Table 3.3-1). Surveys would include an early-season survey in April/May and a late-season survey in July/August. If special-status plant species are found in the Project Site and could be affected by Project implementation, a protective buffer of a minimum of 25 feet will be designated around the population with stakes, fence, or flagging prior to the start of each construction season. No vehicular traffic or use of ground-based equipment will be permitted within the buffer. A letter report providing the results of the special-status plant surveys and proposed buffers will be provided to resource agencies prior to initiation of construction. MM-BIO-4 requires WEAP training regarding measures to protect sensitive resources, including special-status plants. MM-BIO-5 requires delineation of the haul roads, staging areas, and Work Area and restricts vehicular traffic and use of ground-based equipment to these designated areas. A biologist would be present during the delineation of Project features to ensure that buffers for special-status plants, if required, are integrated into the delineation. With implementation of MM-BIO-4, MM-BIO-5, and MM-BIO-8, impacts to special-status plant species will be **less than significant**.

Implementation of the Proposed Project could disturb nesting bald eagles.

During Yuba-Bear Hydroelectric relicensing surveys bald eagles were observed in the Project Site (NID and PG&E 2010a). A pair of bald eagles are known to nest approximately 1 mile south of the Project Site.

Project activities, including use of heavy equipment and two diesel generators, establishment of the new haul road and crossings, use of Project staging areas, and excavation of sediments in the Greenhorn Arm of Rollins Reservoir could result in disturbance of nesting bald eagles (January 1 through July 31). The USFWS has developed the National Bald Eagle Management Guidelines (Guidelines) (USFWS 2007), which provide recommendations for avoidance of bald eagle nests during various activity types. The Guidelines recommend that “Category B” activities involving construction (or similar activities) within a project footprint of 0.5 acre or larger be restricted within 660 feet (1/8 mile) of bald eagle nests. The Project is located more than 1 mile from the nest. In addition, trees and hills provide visual and auditory screening between the nest and Project work areas. Therefore, the Project is not expected to result in disturbance of breeding eagles at the existing nest.

It is unlikely that new eagle nests would be constructed in the Project vicinity. Due to the size of Rollins Reservoir, no more than one pair of eagles is expected to use the Project Site for foraging

or nesting. The pair of bald eagle that have been documented at the existing nest would likely defend the Project Site as their territory. MM-BIO-9 would further minimize any probability for disturbance of new eagle nests, in the unlikely event that a new breeding pair colonizes the reservoir. This mitigation measure requires pre-construction surveys within 30 days prior to initiation of the Project. A qualified biologist would survey suitable nest trees within approximately 660 feet of the Project Site. If a new nest is identified that could potentially be affected by the Project, ground-disturbing activities, use of heavy equipment, or other activities that could create noise disturbance would be prohibited within 660 feet of the nest until a qualified biologist determines that the young have successfully fledged.

Considering that the existing nest at Rollins Reservoir is well outside established disturbance buffers, is not visible from the Project Site, and with implementation of MM-BIO-9, disturbance of nesting bald eagles would be reduced to a **less-than-significant** level.

Implementation of the Proposed Project could disturb nesting osprey.

There are two active osprey nests on Rollins Reservoir, one on a tower associated with the Drum-Bell 115kV transmission line on a hill above the Project Site, and one located on the east bank of the Bear River Arm of Rollins Reservoir (NID and PG&E 2010a). Osprey were also observed during reconnaissance surveys conducted in 2013 and 2014 (Stantec 2015).

Project implementation will overlap with the breeding season for osprey, which is March 15 through August 30. However, the Project is not expected to disturb the osprey nests for several reasons. The nest on the east bank of the Bear River Arm of Rollins Reservoir is more than 1 mile from the Project Site, and therefore would not be disturbed by the Project. The second nest, on the Drum-Bell transmission line tower, is located on a hill approximately 255 feet east of, and approximately 300 feet above, the eastern boundary of the Work Area. A 500-foot buffer is typically recommended to avoid disturbance of nesting raptors, including osprey. While this nest is within 500 feet of the Project, disturbance is not anticipated for several reasons. The nest is separated from Work Area by a steep hill (approximately 300 feet high) and is additionally buffered by trees. The osprey has used the nest during ongoing operation of the Hansen Bros. Enterprises operations in the Project Site and periodic sediment removal within the Project Site by NID, as well as recreational use along and within Rollins Reservoir. Therefore, the osprey are presumably acclimated to and tolerant of human presence and noise in the vicinity of the nest.

NID completed a noise analysis to determine potential disturbance from Project implementation on the osprey nest. This analysis considered noise generated from activities to be implemented in the following areas: sediment barrier (initial, intermediate, final), sediment removal, stockpile areas, staging areas, and haul road. This analysis modeled noise levels at the nest assuming distances provided below in Table 3.3-4.

Table 3.3-4
Distance of Noise-Generating Activity and Predicted Noise Levels in Relation to the Osprey Nest

Project Feature	Distance of Feature to Osprey Nest (feet)[1]	Predicted Noise Level at Nest dBA (L_{eq}/L_{max})[2]
Sediment Barrier		
• Initial	2,225	(55/60)
• Intermediate	1,782	(58/62)
• Final	835	(66/70)
• Work Area (Sediment Removal Area)	255	(74/74)
• Stockpile Area	4,190	(40/45)
Staging Areas		
• SA-1	7,843	(8/30)
• SA-2	3,660	(21/43)
• SA-3	2,053	(28/51)
• Haul Route	670	(40/62)

[1] Source: NID & PG&E 2010a; BAC 2017; Google Earth aerial imagery; and Project Site plans
[2] Source: Bollard Acoustical Consultants, Inc. 2019

The existing ambient noise levels in the general Project vicinity, which are a result of activities such as aggregate mining conducted by Hansen Bros. Enterprises, boating, and flat-water recreation, range from 40 to 45 A-weighted decibels (dBA) equivalent continuous sound level Leq), and 70 to 80 dBA maximum sound level (Lmax). Assuming a distance of 255 feet from the nest, activities in the Work Area (sediment removal area), would increase noise levels above the current averages approximately 74 dB (Leq and Lmax). This is approximately equivalent to the sound of a vacuum cleaner (75 dB). Based on the results of the noise analysis, noise level increases associated with the proposed activities would not substantially increase the overall ambient noise level near the nest. In addition, as stated previously, the osprey have tolerated similar noise levels under existing conditions. Therefore, the osprey is anticipated to tolerate the increase in noise level associated with work activities in the sediment removal area.

Disturbance of any new osprey nests would be minimized by the pre-construction surveys as described in MM-BIO-9. Biologists would conduct a pre-construction survey of all trees and other suitable nesting structures within approximately 500 feet of the Project Site. If a new nest (other than the existing nest on the Drum-Bell transmission line) is identified that could potentially be affected by the Project, disturbance would be prohibited within 500 feet of the nest until a qualified biologist determined that the young had successfully fledged or site-specific measures are developed in consultation with CDFW considering project activities, location of the nest, topography, and potential natural barriers.

Considering that the active nest is located on a tower on a hill above and away from the Project Site that the ospreys have nested in the area previously regardless of noise and human presence associated with ongoing gravel and sediment removal and recreational use, and with implementation of MM-BIO-9, impacts to nesting osprey would be considered **less than significant**.

Implementation of the Project could result in impacts to foraging bald eagle and osprey.

Rollins Reservoir provides aquatic foraging habitat for bald eagle and osprey. Implementation of Project activities could potentially result in water quality effects within the reservoir downstream of the Work Area, with resultant indirect effects to reservoir fish (prey species). Fish could also be directly impacted, if individuals were to become stranded within the Work Area.

The Project will not affect the extent or amount of foraging habitat available because the Project will be implemented during the dry season (MM-BIO-1) when flows are typically too shallow to support habitat for fish. As described in MM-BIO-6 and MM-BIO-7, any fish that become stranded in the Work Area would be captured and released into the nearest suitable habitat. Inundation levels would rise again each year in the spring after completion of the work season.

Ground-disturbing activities in the Work Area including (but not limited to) installation of the sediment barrier, establishment of the new haul road and stream crossings, and excavation of sediments could result in sedimentation and increases in downstream turbidity. In addition, inadvertent releases of pollutants from machinery (e.g., oil or gasoline) into aquatic habitats could potentially adversely impact aquatic species, including fish. In order to minimize the potential for impacts to aquatic habitats and fish from excess turbidity or pollutant releases, NID will implement MM-HYD-1 and MM-HYD-2 (Section 3.8 Hydrology and Water Quality) and MM-HAZ-1 through MM-HAZ-3 (Section 3.7 Hazards and Hazardous Materials), which collectively implement BMPs for erosion control and prevention of sediment releases in accordance with the SWPPP and require proper management of water quality and hazardous materials.

Considering that the extent of foraging habitat available in the Work Area fluctuates under existing conditions; and with implementation of measures to avoid and minimize impacts to fish (MM-BIO-1, MM-BIO-6, and MM-BIO-7) and maintain water quality within aquatic habitats (MM-HYD-1, MM-HYD-2, and MM-HAZ-1 through MM-HAZ-3), impacts to foraging bald eagle and osprey would be **less than significant**.

Implementation of the Project will not result in impacts to other nesting raptors or migratory bird species.

There are no known nests of other raptors in the Project Site. However, raptors such as northern goshawk and Cooper's hawk could potentially occur in the forest habitat adjacent to the Project Site. In addition, other non-raptorial migratory birds, including (but not limited to) yellow warbler

and yellow-breasted chat, could potentially nest in suitable habitat in or adjacent to the Project Site. Therefore, increased human presence, use of heavy equipment, and construction vehicles could potentially disturb other nesting raptors or songbirds, if present in the Project Site.

However, any disturbance would be minimal for several reasons. The Project does not require removal of trees or other vegetation within forested areas surrounding the Project. MM-BIO-9 requires a qualified biologist to conduct a pre-construction survey within 30 days prior to initiation of construction activities. If a new nest is identified that could potentially be affected by the Project, a protective buffer would be established (500 feet for raptor nests; and between 25 and 100 feet for other migratory and non-raptorial birds, as appropriate based on the species, site-specific features, and the nature and extent of construction activities proposed in the vicinity of the nest). No use of ground-disturbing equipment or implementation of activities that could directly impact nest trees or shrubs) will be permitted within the protective buffer. If NID cannot comply with these recommended buffers, reduced buffers or other site-specific avoidance and protection measures will be developed in consultation with CDFW.

Furthermore, NID will implement MM-BIO-4, which states that NID will provide WEAP training for all construction personnel regarding measures for the avoidance and protection of sensitive species in the Project Site (including special-status birds); and MM-BIO-5, which limits Project activities to designated access routes and work and staging areas.

With implementation of MM-BIO-4, MM-BIO-5, and MM-BIO-9, the Project would not result in disturbance to special-status raptors or other migratory birds. This impact is **less than significant with mitigation incorporated**.

Implementation of the Project may potentially affect foraging or roosting special-status bats.

The Project Site does not support mines or caves, and does not have abandoned structures; and therefore, does not provide appropriate roosting habitat for Townsend's big-eared bat. The roosting habitat requirements for pallid bat and western red bat are less specific and include features such as crevices and cavities in trees. The Project does not include removal of vegetation that may contain roosting habitat for pallid bat and western red bat. Therefore, the Project would not directly affect roosting habitat for special-status bats.

Human presence and noise from mechanical equipment could potentially result in disturbance to roosting or foraging bats. However, disturbance is expected to be minimal for several reasons. Human activity occurs year-round in the Project Site under existing conditions. Activities include operation of the Hansen Bros. Enterprises and periodic sediment removal within the Project Site by NID, as well as recreational use associated with Rollins Reservoir and adjacent campgrounds. Therefore, bats that roost and forage in the vicinity are presumably acclimated to human presence and noise. As described in MM-BIO-1, ground-disturbing activities in the Work Area would be

restricted to between July and November when stream flows are low. Implementation of seasonal work restrictions would minimize disturbance of both roosting and foraging bats. Bats typically give birth in spring (May/June), with intensive maternal care continuing through mid- to-late summer. Ground-disturbing activities would therefore avoid the spring period when young are non-volant, confined to roosts, and entirely dependent on the mother for food and water. In addition, the Work Area would be mostly devoid of water during this period, and would provide only minimal aquatic foraging habitat for bats (including mothers providing food for young). Rollins Reservoir would continue to provide aquatic foraging habitat for special-status bats during implementation of the Project in the dry season. NID will maintain the quality of the aquatic habitat through implementation of water quality measures in MM-HYD-1, MM-HYD-2, and MM-HAZ-1 through MM-HAZ-3 (described previously under the discussion of impacts to aquatic foraging habitat for bald eagle and osprey). In addition, as described in MM-BIO-1, work activities would be restricted to between 7:00 a.m. and 7:00 p.m. Therefore, work would not be conducted during dusk and dawn when bats are actively foraging in and around Rollins Reservoir.

Considering implementation of MM-BIO-1, MM-HYD-1, MM-HYD-2, and MM-HAZ-1 through MM-HAZ-3, effects to special-status bats would be **less than significant with mitigation incorporated**.

Implementation of the Project could result in impacts to animals that use burrows including Blainville's horned lizard, Sierra Nevada mountain beaver, and American badger.

The Project is within the geographic range of three species that use burrows—Blainville's horned lizard, Sierra Nevada mountain beaver, and American badger. The Project involves ground-disturbing activities within the 50-acre Work Area and therefore could potentially impact these species, if present, through collapse or burial of burrows. In addition, vehicular traffic or use of ground-based construction equipment could potentially harm or kill these species through direct collisions. However, impacts to these species are expected to be negligible for several reasons.

While the Project is within the range of these species, these species are rare and occur at low densities, and are therefore unlikely to be present in the Project Site. As required by MM-BIO-1, Project activities are restricted to between 7:00 a.m. and 7:00 p.m., when Sierra Nevada mountain beaver and American badger are inactive and remain in their burrows. Therefore, direct effects to these species outside of their burrows are unlikely. MM-BIO-9 requires pre-construction surveys, during which a qualified biologist would flag any animal burrows for avoidance. Any burrows that cannot be avoided will be inspected to determine whether they are actively inhabited. Uninhabited burrows that cannot be avoided will be collapsed by or in the presence of the biologist to avoid future occupation. If a burrow is inhabited and cannot be avoided, NID will consult with CDFW to determine appropriate avoidance and protection measures. Such measures would depend on the species involved, site-specific conditions and nature and extent of work activities to be

implemented near the burrow. Measures could include, but are not limited to, implementation of a protective buffer around the burrow or exclusion/evacuation and collapse of the burrow by a CDFW-approved biologist. MM-BIO-4 and MM-BIO-5 would further minimize the potential for impacts to these species. MM-BIO-4 requires construction personnel to receive WEAP training on avoidance and protection measures for sensitive resources, including Blainville's horned lizard, Sierra Nevada mountain beaver, and American badger. MM-BIO-5 states that a qualified biologist will be present to assist in delineating Project features in the work areas to ensure avoidance of any animal burrows identified during pre-construction surveys. Vehicular traffic and use of ground-based construction equipment will be confined to fenced, staked, or flagged areas.

With implementation of MM-BIO-1, MM-BIO-4, MM-BIO-5, and MM-BIO-9, the potential for impacts to burrowing species including Blainville's horned lizard, Sierra Nevada mountain beaver, and American badger. Therefore, this impact is **less than significant with mitigation incorporated**.

Impact 3.3-5. The project would not have a substantial adverse effect on a riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

Limited riparian habitat is present along the margins of Greenhorn Creek and the Greenhorn Arm of Rollins Reservoir in the Project Site. No other sensitive natural communities are present in the Project Site. In general, Project activities will occur within the wide floodplain of the Greenhorn Arm of Rollins that has extensive sediment build-up and generally lacks riparian vegetation. Therefore, effects to riparian habitat are not anticipated. The following mitigation measures would be implemented to further minimize the potential for impacts to riparian. First, MM-BIO-10 states that no riparian vegetation will be removed as part of the Project. MM-BIO-5 states that a qualified biologist will be present during fencing, staking, and/or flagging of the existing and new haul road, staging areas, and the Work Area within which sediment removal activities will occur. The biologist will ensure that the delineation of Project features is consistent with MM-BIO-10. As described in MM-BIO-4, all construction personnel would be made aware of the location of riparian vegetation and applicable avoidance buffers during required WEAP training. With implementation of mitigation measures MM-BIO-4, MM-BIO-5, and MM-BIO-10 impacts to riparian habitats would be **less than significant**.

Impact 3.3-6. The project would not 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.

The Project Site may be used by large mammals (e.g., mule deer, American black bear (*Ursus americanus*), cougar (*Puma concolor*) as a movement corridor. The characteristics that make this area suitable for movement are the wide channel, periods of low-flow velocity, and adjacent natural bank. Implementation of the Project will remove sediment from the Project Site and increase human presence during the sediment removal, including heavy equipment use in the Work Area. However, the changes in the river channel that would result from sediment removal activities would not be expected to reduce its utility as a movement corridor, as it would remain wide, with periods of low-flow rates and adjacent natural habitat. The Project Site is not located in a known migration corridor, fawning area, or recognized flyway. Therefore, this impact would be **less than significant** and no mitigation is required. Refer to Section 3.3.2.3 for analysis of potential effects to movement of resident and native fish species.

Impact 3.3-7. The project would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

The Nevada County General Plan includes policies for compliance with state and federal regulations when removing wetland habitat, protection of habitat functions and values, protection of heritage oak trees (trees >36-inch diameter at breast height), and to minimize impacts to corridors to ensure movement of wildlife. The Project does not include removal of vegetation and would therefore not affect heritage oaks and vegetated wetland habitat. Prior to implementation of sediment removal NID will obtain all necessary permits and approvals for work within WOUS (MM-BIO-11). The Project will prevent future build-up of sediment within the Greenhorn Arm of Rollins Reservoir, and to the extent possible, restore the Greenhorn Arm to historic conditions. Removal of sediment may increase the aquatic habitat function and value within the Greenhorn Arm of Rollins Reservoir, but will not result in changes to surrounding upland communities and will therefore not affect habitat function and value. In addition, the Project is not located within a known migration corridor, fawning area or recognized flyway. Therefore, he Project would not conflict with local policies and ordinances protecting biological resources and there would be **no impact**.

Impact 3.3-8. The project would not 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 Habitat Conservation Plan, Natural Community Conservation Plan, or other approved Habitat Conservation Plan applies to the Project Site, and no conflict with such a plan would occur; therefore, no impact would occur.

3.3.4 Mitigation Measures

The following mitigation measures (MMs) will be implemented to reduce potential impacts to aquatic (Section 3.3.1) and terrestrial resources (Section 3.3.2) to less-than-significant levels.

MM-BIO-1 *Work Period and Timing:* The following restrictions for work period and timing will be observed:

- Ground-disturbing activities in the Work Area (including, but not limited to, construction of stream road crossings, modification/relocation of the stream channel, or sediment removal) will be restricted to the period between July and November, when stream flows are low and weather conditions are dry.
- Work activities in the Project Site will be timed with awareness of precipitation forecasts and likely increases in streamflow. If the NOAA National Weather Service forecasts a storm event that will result in more than 1 inch of rain in a 24-hour period, sediment removal activities will cease until all reasonable erosion and stormwater pollution prevention measures (including, but not limited to, measures required in the Project SWPPP) have been implemented.
- All work activities will be restricted to the hours between 7:00 am to 7:00 pm.

MM-BIO-2 *Biological Monitor.* NID will submit to CDFW for approval the resumes of a qualified biologist (or biologists) who will lead implementation of aquatic and/or terrestrial surveys and monitoring required for the Project. The biological monitor(s) must have the following qualifications:

- Academic and professional experience in biological sciences or related resource management activities;
- Experience with construction-level biological monitoring;
- For biologists conducting aquatic surveys and monitoring, the ability to recognize resident and native aquatic species and familiarity with their behaviors and habitats (species include, but are not limited to FYLF, WPT, and resident fish species);
- For biologists conducting terrestrial surveys and monitoring:
  - The ability to recognize bald eagle, osprey, and other migratory birds and their nests, and familiarity with their behaviors and habitats; and
  - Familiarity with special-status species that may inhabit burrows in the Project Site.

All biological monitors will obtain any necessary authorizations prior to handling or relocating special-status species.

MM-BIO-3 *Foothill Yellow-Legged Frog Breeding Surveys and Breeding Area Avoidance.* A survey for FYLF (including egg masses, tadpoles, sub-adult, and adults) will be conducted by an approved biologist during the spring breeding season (e.g., April/May) prior to initiation of the Project each year. The purpose of the survey will be to determine whether and where FYLF are breeding in the Work Area. If FYLF egg masses and/or amplexing adults are found during the breeding surveys, a BAAP will be developed prior to initiation of sediment removal in the vicinity of the breeding area. The BAAP will include a description and maps/diagrams showing how the Work Area will be modified to avoid negative impacts to the breeding area(s). Modifications may include, but are not limited to, the installation of exclusionary or high visibility fencing. The BAAP will be submitted to CDFW 30 days prior to initiation of sediment removal and implemented as part of the Project.

MM-BIO-4 *Workers Environmental Awareness Program.* Construction personnel will participate in WEAP designed to minimize the potential for impacts to sensitive biological resources. Under this program, workers will be informed by a qualified biologist about the potential presence of sensitive biological resources, including special-status species and habitat, and applicable measures incorporated into the Project to avoid and protect these species and their habitats.

MM-BIO-5 *Delineation of Project and Environmentally Sensitive Areas.* Before starting work each season, NID will clearly fence, stake, and/or flag the boundaries of the existing and new haul road, staging areas, and the Work Area within which sediment removal activities will occur. Delineation of work areas will consider avoidance and protection measures established for aquatic and terrestrial resources, including, but not limited to, breeding areas for FYLF (MM-BIO-3); special-status plants (MM-BIO-8); active bird nests and animal burrows (MM-BIO-9); and riparian vegetation (MM-BIO-10). Vehicular traffic and use of ground-based construction equipment will be confined to fenced, staked, or flagged areas. All fencing, stakes, or flags will be maintained in good condition throughout sediment removal.

MM-BIO-6 *Aquatic Species Pre-Construction Survey and Species Relocation.* Immediately prior to initiation of ground-disturbing activities in the Work Area (including, but not limited to, construction of stream road crossings, modification/relocation of the stream channel, or sediment removal), a pre-construction survey will be conducted by an approved biologist. Native and resident aquatic species including resident fish, FYLF (all lifestages) and WPT, will be captured and immediately relocated

from within the Work Area to the closest suitable aquatic habitat. Capture methods may include fish landing nets, dip nets, buckets, and by hand.

A record will be maintained that will include the following data for each individual rescued and relocated (or as specified in CDFW permit conditions):

- Date of Capture and Relocation
- Method of Capture
- Life Stage (for FYLF and WPT)
- Life Stage, Fork Length, and Weight (for Fish)
- Location of Relocation in Relation to the Project Site

A letter report of the results of the survey and capture/relocation data will be provided to CDFW for review within 14 days of completion of the survey.

MM-BIO-7 *Biological Monitor On-site with Stop-Work Authorization.* An approved aquatic biologist will be responsible for monitoring activities that may result in impacts to native and resident aquatic species (i.e., relocating the stream and constructing road crossings of the stream). The biological monitor will have the authority to immediately stop any activity that may harm native or resident aquatic resources and to authorize the resumption of work once individuals have moved and/or are relocated out of harm's way. All reasonable efforts will be made to capture and move all stranded species or species otherwise in the way of harm. Capture will only be conducted by the biological monitor and may include fish landing nets, dip nets, buckets and by hand. Captured aquatic life will be released within the closest suitable habitat outside of the work site.

Relocations of fish and aquatic species will be recorded as described under MM-BIO-6, and submitted in a letter report to CDFW at the conclusion of each work season.

MM-BIO-8 *Special-status Plant Surveys.* Protocol-level surveys for special-status plants will be completed prior to initiation of the Project and during the appropriate blooming period for the 13 plants occurring or potentially occurring at the Project Site (refer to Table 3.3-1). This will include an early-season survey in April/May and a late-season survey in July/August. Surveys will be conducted consistent with the *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). If special-status plant species are found in the Project Site and could be affected by Project

implementation, a protective buffer of a minimum of 25 feet (or smaller, if approved by CDFW) will be designated around the population with stakes, fence or flagging prior to the start of each construction season. No vehicular traffic or use of ground-based equipment will be permitted within the buffer. A letter report providing the results of the special-status plant surveys will be provided to CDFW prior to initiation of construction.

MM-BIO-9 *Terrestrial Species Pre-Construction Surveys.* A pre-construction survey will be conducted by a qualified biologist to determine if there are active bird nests or burrows of special-status species including Blainville's horned lizard, Sierra Nevada mountain beaver, and American badger present in the Project Site which could be affected by the Project. The survey will be conducted no more than 30 days prior to initiation of any Project activities. The survey would include an inspection of the following:

- Trees and other suitable nesting structures within 660-feet around the Project Site for bald eagles and within 500 feet of the Project Site for other raptors;
- Suitable nesting habitat within 100 feet around the Project Site for other migratory and non-raptorial birds; and
- Suitable habitat within Project Site boundaries for burrows that may potentially be used by Blainville's horned lizard, Sierra Nevada mountain beaver, and American badger.

The location of active nests will be recorded and an appropriate protective buffer delineated around the nest of 660 feet for bald eagle nests; 500 feet for other raptor nests; and between 25 and 100 feet for other migratory and non-raptorial birds, as appropriate based on the species, site-specific features, and the nature and extent of construction activities proposed in the vicinity of the nest. No use of ground-disturbing equipment will be permitted within the protective buffer. If NID cannot comply with these recommended buffers, reduced buffers or other site-specific avoidance and protection measures will be developed in consultation with the appropriate resource agencies. This protective buffer does not apply to the existing osprey nest on the Drum-Bell transmission line tower (refer to Section 3.3.2.4)

Animal burrows will be flagged and avoided to the degree possible. Any burrows that cannot be avoided will be inspected to determine whether they are actively inhabited. Uninhabited burrows that cannot be avoided will be collapsed by or in the presence of the biologist to avoid future occupation. If a burrow is inhabited and cannot be avoided, NID will consult with CDFW to determine alternative avoidance,

protection, and/or exclusion measures. Such measures would depend on the species involved, site-specific conditions and nature and extent of work activities to be implemented near the burrow. Measures could include, but are not limited to, implementation of a protective buffer around the burrow or exclusion/evacuation and collapse of the burrow by a CDFW-approved biologist.

A letter report providing the results of the terrestrial pre-construction survey will be provided to CDFW prior to initiation of construction. The report will include (1) a map of the location of any active nests and all burrows identified, and (2) a description of buffers or other proposed avoidance and protection measures to be implemented to protect any nests or inhabited burrows that may be affected by the Project. Agreed upon buffers and/or avoidance and protection measures will be implemented as part of the Project.

MM-BIO-10 *Protection of Riparian Vegetation.* No riparian vegetation will be removed as part of the Project. If riparian vegetation becomes established within the Project Site and may potentially be affected by Project activities, NID will establish a 25-foot-buffer around the riparian vegetation. The buffer will be flagged or fenced prior to implementation of the Project.

MM-BIO-11 *Clean Water Act Permitting*. Prior to implementation of the Project, NID will obtain the appropriate permits to authorize Project activities within waters of the U.S. and state. This includes the following:

- All proposed discharges of dredge or fill material into waters of the U.S. will first be authorized by the USACE, pursuant to Section 404 of the CWA, and all avoidance, protection, and mitigation measures associated with Corps permits will be implemented.
- Pursuant to Section 401 of the CWA, NID will obtain Water Quality Certification from the Regional Water Quality Control Board for the Proposed Project. Avoidance, protection, and mitigation measures identified in this certification will be implemented.
- Pursuant to Section 1600 of the Fish and Game Code, NID will obtain a Streambed Alteration Agreement (SAA) for the Proposed Project. Avoidance, protection, and mitigation measures identified in this SAA will be implemented.

3.3.5 Level of Significance After Mitigation

3.3.5.1 Aquatic

The Proposed Project will not have a substantial adverse effect, either directly or through habitat modifications, on any resident fish species or special-status species (foothill yellow-legged frog or western pond turtle) with implementation of mitigation measures. Impacts of the Project are **less than significant.**

3.3.5.2 Terrestrial

The Proposed Project will not have a substantial adverse effect, either directly or through habitat modifications on terrestrial resources with the implementation of mitigation measures. Impacts of the Project would be reduced to **less than significant**.

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3.4 CULTURAL AND TRIBAL RESOURCES

This section discusses the existing conditions and potential impacts on cultural and tribal resources that could result from implementation of the Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project). It presents the methods and results of cultural resources studies conducted within the Project vicinity.

There are seven cultural resources adjacent to the Project Site, two of which are unevaluated for listing in the California Register of Historical Resources (CRHR). Five cultural resources were previously determined not eligible. The analysis concludes that impacts on cultural resources will be less than significant. Incorporation of the mitigation measures described in Section 3.4.5 will further minimize potential less-than-significant impacts on cultural resources. No tribal cultural resources were identified within the Project Site during previous studies or during recent Native American consultation. The Project's potential impacts on cultural and tribal resources were evaluated using the significance criteria set forth in Appendix G of the California Environmental Quality Act (CEQA) Guidelines.

The Rollins Reservoir area and surrounding vicinity contain evidence of past human activity ranging from early Native American sites and artifacts to historic-era mining, ranching, and logging. Cultural resources are protected under various state and local regulations including CEQA and the Nevada County General Plan.

3.4.1 Existing Conditions

A brief outline of the archaeological, ethnographic, and historic context of the region is provided below. This context aides in understanding their significance, as well as the potential impacts on these cultural resources.

3.4.1.1 Prehistoric Archaeology

This section describes, in general terms, broad patterns in the prehistory of north-central California, focusing on major environmental, technological, and adaptive changes evident in the archaeological record of this region. The Project area spans transitional geography from the Sierra Nevada foothills to the Sacramento Valley. However, general trends of cultural development can be discerned across the region, although some variation may exist within subregions. These general cultural periods are described below.

North-Central Sierra Nevada – Late Pleistocene Pattern (Prior to 10,000 Years Before Present [B.P.]

Evidence of earliest human occupation in the foothills and eastern Sacramento Valley is practically nonexistent. Possible exceptions consist of archaeological CA-SAC-370 and CA-SAC-379, located near Rancho Murrieta in Sacramento County. The SAC-370, and SAC-379 assemblages include numerous chipped stone artifacts including bifaces and cores, and lithic raw materials (which may be indicative of prehistoric quarrying operations) from gravel strata estimated to be between 12,000 and 18,000 years in age (Moratto 1984). It is possible that cultural deposits dating to this time period within the valley are covered with several meters of alluvium and have yet to be discovered. Identifying these sites may be difficult because the artifact assemblages are often redeposited and no organic materials suitable for radiocarbon dating have been encountered.

Early Holocene Pattern and Period (10000–7000 B.P.)

Human settlement during Early Holocene is referred to the Western Pluvial Lakes Tradition (WPLT) (Jackson and Ballard 1999). The WPLT reflects a human adaptation to lake, marsh, and grassland environments, which were prevalent around 11000 B.P. However, as the environment became warmer and drier, these ecosystems changed and the WPLT slowly disappeared by ca. 8000–7000 B.P.

Archaic Pattern and Period (7000–3200 B.P.)

With a warmer and drier climate, milling stones became abundant, suggesting an emphasis on the exploitation of plant resources that were newly available. Sites from this time frequently contain numerous mortar fragments, indicating that acorns and/or various seeds were relatively important food items (Moratto 1984). This emphasis was accompanied with a reduced focus on hunting. Chipped stone tools were primarily made on locally available lithic materials.

One of the most notable cultural occurrences during this time consists of the Windmiller pattern that dates to as early as 4750 B.P. and possibly as late as 2500 B.P. Materials recovered from Windmiller sites suggest that a great deal of trade was taking place as evidenced by the presence of nonlocal obsidian, Haliotis and Olivella shell beads and ornaments, quartz crystals, and other exotic materials, which are frequently found in archaeological assemblages (Heizer 1949, 1974; Moratto 1984). While primarily a Sacramento Valley and lower foothill phenomenon, similar cultural elements are found at elevations up to 3,000 feet in the foothills of the west slope, suggesting that the people who resided here were in the middle of this trade network (Bennyhoff and Heizer 1958; Bennyhoff and Hughes 1983).

Sierran Pattern (CA. 3200–150 B.P.)

This broad time period, comprised of the Early, Middle, and Late Sierran, exhibits an increased use of obsidian, which may indicate an expansion in regional land use, and the regular use of certain locales (Bouey and Basgall 1984). This pattern begins with a return to cool/moist climatic conditions, where forays into the Sierra may have been made by groups with resident populations in the western Sierran foothills, Central Valley and/or Great Basin. Jackson and Ballard (1999:45) suggest that increased level of land use during this time was concurrent with a reliance upon acorns and heavy exploitation of large game. Using a model of site patterning first proposed by Jackson (1984), the increased exploitation of resources during the later portion (ca post 1,400 B.P.) of this time period is marked by the adoption of mortar technology. Based on their distribution, use of mortars is most intense below the snow line, with high usage continuing within the black oak and sugar pine woodlands above the snow line, and decreasing within the alpine zone. Models of toolstone acquisition suggest east/west trade routes existed during this period between the Sierran crest and the Central Valley of California.

By the time of the Late Sierran Period in the foothill region, archaeological village sites generally correspond to those identified in the ethnographic literature. Diagnostic artifacts found in these late sites include small contracting-stemmed points, clam shell disk beads, and trade beads marking the arrival of European groups into the region (Beardsley 1954:77-79; Elsasser 1978:44; Fredrickson 1984).

3.4.1.2 Ethnographic Context

The Project Site is situated within the traditional territory of the Nisenan (sometimes referred to as the Southern Maidu) sphere of influence. Kroeber (1925) recognized three Nisenan dialects including Northern and Southern Hill, and Valley Nisenan. The Nisenan territory included the drainages of the Yuba, Bear, and American rivers, and the lower drainages of the Feather River, extending from the crest of the Sierra Nevada to the banks of the Sacramento River. The southern boundary with the Miwok was probably a few miles south of the American River, bordering a shared area used by both Miwok and Nisenan groups that extended to the Cosumnes River.

Within the Nisenan territory, several political divisions constituting tribelets had their respective headmen in the larger villages. However, which of these larger population centers wielded more influence than others is not known, although they were all located in the foothill areas. In general, more substantial and permanent Nisenan villages were not established on the valley plain between the Sacramento River and the foothills, although this area was utilized as a rich hunting and gathering ground. According to Kroeber (1925:831), the larger villages could have had populations in excess of 500 individuals, although small settlements consisting of 15 to 25 people and extended families were common.

Three ethnographic Hill Nisenan village sites have been recorded in the vicinity of the Project. The closest of these (approximately half a mile west of the Project Site) was recorded as *Topnimkum* by Littlejohn in 1928. Littlejohn (1928) also recorded (from south to north along present-day Highway 174), the sites of *Tohi*, *Yolsian*, and *Poydok*. Little is known of these sites and their current locations do not appear to have been more thoroughly investigated by Littlejohn or subsequent researchers. Wilson and Towne (1978) also identify the village site of *Siponi* just about a mile northeast of the Project Site. This site appears to have consisted of a larger settlement than the other local villages and boasted a significant dance house which was used for a wide variety of social and political events.

As with most valley and foothill groups, the Nisenan exploited a wide variety of floral and faunal food sources. The primary staple food was acorn and gathering expeditions were organized seasonally, although hunting, fishing, and the gathering of other floral foodstuffs occurred throughout the year. The seasonal harvests were often communally shared and important social behaviors were intricately related to these harvests. Various roots, nuts, wild onion, wild sweet potato and many varieties of grasses, berries, and fruits were also gathered when seasonally available. Many were processed and stored for winter use, although fresh fruits such as various berries, wild plums, grapes and other native fruits were also consumed fresh. Studies within the Project area indicate that Native Americans deliberately burned the meadows to increase forage and improve the habitat, clear the areas around habitations, kill insects, improve wild seed crops and facilitate travel and hunting.

Reluctance on the part of traditional Nisenan and the virtual destruction of the culture in the nineteenth century make discussions regarding Nisenan spiritual beliefs and practices difficult to discuss in any detail. However, historic records document a number of observances and dances, some of which are still performed today, that were important ceremonies in early historic times. In general, the basic religious system noted throughout central California, the Kuksu cult, appeared among the Nisenan. Cult membership was restricted to those initiated in its spirit and deity-impersonating rites. The Kuksu cult, however, was only one of several levels of religious practice among the Nisenan. Various dances associated with mourning and the change of seasons were also important. One of the last major additions to Nisenan spiritual life occurred sometime shortly after 1872 with a revival of the Kuksu cult as an adaptation to the Ghost Dance religion (Wilson and Towne 1978).

3.4.1.3 Historic Period Setting

Although a number of early Spanish and Mexican period expeditions traveled through the foothill and Central Valley regions, none appear to have focused on the Project or its vicinity. Various trapping parties working for the Hudson's Bay Company or other organizations likely extended their reach into the area now occupied by Rollins Reservoir but there are no known accounts

detailing such travels. While the historic period in northern California can be said to have begun in northern California as early as the 1760s when the first of the Spanish expeditions struck out for the interior wilderness of Alta California, it wasn't until the Gold Rush that a sustained Euro-American presence was established within and in the vicinity of the Project Site.

Local Mining

The earliest and most significant historic-era settlement to have developed in the vicinity of the Project was the town of Little York, which was situated on a narrow ridge between Steephollow Creek and the Bear River. In the winter of 1850, a small group of miners traveled up the ravine and built a cabin (which would become the first house to be built in the town). By the time they packed up and left in the spring, the men had made just under $10,000. Their success inspired other miners to pursue work in the gravel beds, which were exposed in an extensive cut of "blue cement". By the time they arrived, the easy gold had already been recovered. While small flecks of gold were clearly visible across the entire face of the cut, the rudimentary mining techniques available at the time made extraction of such small quantities of gold simply not economically feasible.

In the spring of 1852, William Starr and John Robinson came to the area to prospect in the gravel banks and dug the first mine tunnel in the region. Robinson also began prospecting lower down from Starr along the face of what was known as Cousin Hill. After only tunneling for a short distance, Robinson realized that he had found a place where money could be made. It did not take long for the miners to locate the entire gravel range, which was extensive and traveled through many nearby hills. Once the largest of the deposits were discovered, the town Little York was on the map and was divided into lots which were distributed among the miners. The construction of sawmills, stores, saloons, a meeting house, and even a theater were soon under way. A town meeting was called in August of 1852 to elect a Recorder and to formally name the township. By September of 1852, Little York had nearly all the amenities of a large town and a population of approximately 600. However, in keeping with the boom-and-bust pattern so typical of mining towns in the foothills, once the gold began to play out, the towns began to disappear. Within months of the town's rise, the mines began to close and soon, Little York essentially ceased to exist as the population quickly left for better opportunities.

Despite the exhaustion of the local diggings and the collapse of Little York, mining continued at a brisk pace throughout the region during the middle and latter decades of the 19th century. One of the richest ledges of quartz ever found in the area was discovered in the late 1860s and by 1870, plans were in the works to cut a tunnel through the Colfax Divide near Secret Town (just north of the Project Site). The tunnel would be low enough to tap into the Bear River and a sluice was planned off of the substantial tailings that ran alongside the river for several miles. Later discoveries included those of F.C. Gayety & Son who established a quartz claim near Secret Town,

approximately 7 miles north of Colfax. By 1896, the Gayety & Son's Secret Town Mine appeared in the California State Mining Bureau's State Mineralogist Report. It was described as a quartz mine located 3 miles south of Gold Run at an elevation of 2,875 feet above mean sea level (amsl), with a 2-foot quartz vein striking northwest and dipping 60 degrees northeast in a slate formation.

The Chicago Park Colony

While mining served as the primary economic driver in the region, agriculture, and livestock ranching was perhaps a close second and emigrants were arriving in droves to seek out prime agricultural and grazing lands. In response, in 1887, plans were announced to start dividing up a large number of tracts and lots in an area that became known as the Chicago Park Colony, which was strategically located along the narrow- gauge railroad line between Sacramento and Grass Valley near the town of Colfax. It was purported to be "the first real colony in the northern part of this State" and to be populated by "actual new settlers, most of whom will come from the city of Chicago or its immediate vicinity." Once enough land in the colony had been sold, Chicago Park was touted as a success, with the sale of its lands "doubly assured." According to a report in the Sacramento Daily Union, the colony was established by Morris Lobner and W.B. Hayford of Colfax, who convinced nine men from Chicago to join them in a syndicate, which purchased 6,700 acres of land approximately 3 miles from Colfax on the Nevada County side of the Bear River (just over a mile southwest of the Project Site). Large lots were sold on the condition that at least 5 acres be improved and planted in the coming year. By 1887, approximately 2,000 acres had already been sold to support at least 100 families. The Chicago Park Colony was viewed as a place that would draw attention to the Sierra Foothills (SDU 1887).

Nevada Irrigation District and Rollins Reservoir

The Nevada Irrigation District (NID) was formed on August 15, 1921 by Nevada County voters in response to the local need for a reliable water supply. When it was first established approximately 202,000 acres were designated as NID land. In 1926, residents of adjacent Placer County opted to join the NID and an additional 66,500 acres were added. Shortly after its formation, the Bear River Water and Power Company, founded by Dr. Jarret Laban Rollins in 1900, joined with the NID to construct a new water storage and conveyance system. Rollin's firm and the NID acquired numerous private water systems in the 1920s through the 1950s. While a public water system was already developed to supply water from the Yuba and Bear River watersheds to farmers and their crops on the western slope, a complete network of pipes and canals was still lacking.

In the 1950s, Pacific Gas and Electric Company (PG&E) prompted an initiative to harness the powers of the Yuba and Bear Rivers. As a result, NID partnered with PG&E to develop the Yuba-Bear Hydroelectric Project. As California began to embrace the idea of hydroelectric power plants to help meet the state's high demand for energy, NID district leaders rallied enough support to pass

a $65 million bond to construct the Yuba-Bear River Power Project in 1962. The project included four areas of development: Bowman, Dutch Flat, Chicago Park, and Rollins (NID 2005). The project broke ground on August 23, 1963 at what would become the site of Rollins Reservoir. Most of the project was completed between the years 1963 and 1966 (NID 2005). Dying of a heart attack in 1933, Dr. Rollins never saw the entire water system completed but Rollins Reservoir was named in his memory during the facility's dedication ceremony on May 7, 1966 (Barrett 2008).

3.4.1.4 Documented Cultural Resources

The Project Site and vicinity at Rollins Reservoir were subjected to an intensive cultural resources survey for the Yuba-Bear Hydroelectric Project Federal Energy Regulatory Commission (FERC) relicensing effort in 2011 (NID 2011a). This survey identified a total of 48 prehistoric and historic-era cultural resources within the FERC project boundary for the Rollins Reservoir. Of these 48 cultural resources, seven are located adjacent to the Project Site.

The FERC determined that five of the resources (P-29-3928, P-29-3929, P-29-3937, P-29-3958, and P-29-4283) were not eligible for listing in the National Register of Historic Places (NRHP) (see Table 3.4-1); a finding concurred with by the State Historic Preservation Officer (SHPO). The CRHR generally follows NRHP determinations, so these resources may be considered not eligible for listing in the CRHR as well. All five resources were associated with the historic era.

Table 3.4-1
Evaluated Cultural Resources within the Project Site

Site Number[1]	Site Type[2]	Description	Site Function/Category	Landowner[3]	CRHR Status[4]
P-29-3928	H	Concrete check dam	Water Conveyance	PRV	NE
P-29-3929 CA-NEV-2005H	H	Prospect pits, historic refuse scatter (ca. 1914-1930)	Mining	NID	NE
P-29-3937	H	Stone retaining wall	Structural	NID	NE
P-29-3958 CA –NEV-2023H	H	Earthen pad, possible privy pit, prospect pit, and tailings pile	Mining	NID	NE
P-29-4283 CA-NEV-2111H	H	Dimensioned lumber scatter	Refuse Deposit	PRV	NE

1 Primary No., Trinomial

2 P = prehistoric; H = historic; P/H = prehistoric and historic

3 BLM = Bureau of Land Management; NID = Nevada Irrigation District; TNF = Tahoe National Forest; PG&E = Pacific Gas and Electric Company; PRV= Private; SPI= Sierra Pacific Industries; SPTC = Sierra Pacific Transportation Company

4 NE= not eligible, evaluated; PE= potentially eligible, unevaluated; TE= treated as eligible without evaluation. CRHR eligibility recommendation as per NID 2011a.

The NID determined that effects from continued operation and maintenance of the Yuba-Bear Hydroelectric Project would not impact one cultural resource (P-29-3946), within the Greenhorn Arm of Rollins Reservoir, and decided to treat the site as eligible without conducting evaluation (Table 3.4-2). P-29-3946 is a prehistoric site consisting of bedrock milling outcrops. Furthermore, the NID determined this site would be included in a routine site monitoring program to be defined and implemented under the Historic Properties Management Plan (HPMP) developed for the project (Maniery 2012).

The remaining cultural resource (P-29-3971) was categorized as potentially eligible and required further research (NID 2011a). P-29-3971 is a multi-component site consisting of historic refuse scatter, railroad track, bedrock milling outcrop, and basalt core, which is unevaluated (NID 2011a). Effects from continued operation and maintenance of the Yuba-Bear Hydroelectric Project were determined at P-29-3971 (NID 2011a). The NID recommended further investigations at the site, to be completed under the HPMP that would be implemented at such time FERC may issue to the Licensee a new operating license (NID 2011a:116).

Table 3.4-2
Unevaluated Cultural Resources within the Project Site

Site Number[1]	Site Type[2]	Description	Site Function/Category	Landowner[3]	CRHR Status[4]
P-29-3946 CA-NEV-2015	P	Bedrock milling outcrops	Resource processing	NID	TE
P-29-3971 CA-NEV-2031/H	P/H	Refuse scatter, railroad track, bedrock milling outcrop, basalt core	Resource processing/ Refuse deposit/ Transportation	NID	PE

1 Primary No., Trinomial

2 P = prehistoric; H = historic; P/H = prehistoric and historic

3 BLM = Bureau of Land Management; NID = Nevada Irrigation District; TNF = Tahoe National Forest; PG&E = Pacific Gas and Electric Company; PRV= Private; SPI= Sierra Pacific Industries; SPTC = Sierra Pacific Transportation Company

4 NE= not eligible, evaluated; PE= potentially eligible, unevaluated; TE= treated as eligible without evaluation. CRHR eligibility recommendation as per NID 2011a.

3.4.1.5 Paleontological Resources

A search of the University of California Museum of Paleontology (UCMP) database indicated that no paleontological specimens have been documented within or in the immediate vicinity of the Proposed Project (UCMP 2017). The underlying geologic formations at Rollins Reservoir consist of Paleozoic and Mesozoic metavolcanics (Saucedo and Wagner 1992) which typically do not contain paleontological remains. In general, Nevada County is not sensitive for paleontological resources with the exception of an area in the immediate vicinity of Chalk Bluff. Chalk Bluff is located in Township 16 North, Range 10 East, Section 29 on the Chicago Park U.S. Geological

Survey (USGS) topographic quadrangle approximately 5 miles northeast of the Project Site where specimens of Tertiary period Magnoliopsida (a class of flowering plants) have been identified. Several examples of Filicopsida (ferns), and Liliopsida (a type of lily) were also documented from the Buckeye Diggings area about 7 miles northeast of the Project Site in Sections 17–20 of Township 16 North, Range 10 East on the Chicago Park USGS quadrangle.

3.4.1.6 Native American Community Consultation

In accordance with the consultation requirements of Assembly Bill 52 (AB-52), Cardno initiated the consultation process with appropriate Native American groups with a possible interest in the cultural resource studies and the Proposed Project. Cardno contacted the Native American Heritage Commission (NAHC) in Sacramento and requested a list of suitable tribal organizations and individuals and a search of the NAHC Sacred Lands Files. The Sacred Lands Files search revealed that no properties possessing culturally significant associations for the present-day Native American community were known to exist within or near the Project Site. The NAHC also provided contact information for the following groups and individuals from the Project vicinity:

- Mr. Gene Whitehouse, Chairman – United Auburn Indian Community of the Auburn Rancheria
- Mr. Darrel Cruz, Tribal Historic Preservation Officer – Washoe Tribe of Nevada and California
- Mr. Don Rydberg, Chairman – Tsi Akim Maidu
- Mr. Grayson Coney, Cultural Director – Tsi Akim Maidu

NID sent letters to each of the individuals noted above to solicit information regarding sensitive cultural resources in and near the Project Site and to determine if they or their respective tribal organizations had an interest in or concerns with, the Proposed Project. Two entities responded to NID's outreach; the United Auburn Indian Community (UAIC) and the Nevada City Rancheria. The Nevada City Rancheria responded to NID by letter on June 1, 2017, and requested consultation for the Proposed Project. The UAIC also responded to NID by letter (May 30, 2017) requesting consultation and that a UAIC monitor be present during Project-related ground-disturbing activities. NID will continue to engage both the Nevada City Rancheria and the UAIC during the course of the Project.

Additionally, the NID had previously conducted traditional cultural properties (TCP) studies in the Project Site as part of the NID Yuba-Bear Hydroelectric Project (between 2006 and 2011) (NID 2011b). Archival research and interviews with tribal informants for the Yuba-Bear Hydroelectric Project did not identify any resources that meet the definition of a TCP or that meet the NRHP criteria for listing on the NRHP.

3.4.2 Relevant Plans, Policies, and Ordinances

3.4.2.1 National Historic Preservation Act

No federal regulations related to cultural resources are applicable to the Project. However, federal regulations, namely Section 106 of the National Historic Preservation Act (NHPA), was the regulatory framework for the cultural resources investigations completed for the FERC project. As such, it is discussed here.

Section 106 of the NHPA (54 U.S.C. 300101 et seq.), as amended, requires that any Federal or Federally assisted project or any project requiring Federal licensing or permitting take into account the effect of the undertaking on historic properties listed in or eligible for the NRHP within the area of potential effects (APE). Section 106's intent is for Federal agencies to consult with the Advisory Council on Historic Preservation (ACHP), SHPO, Federally recognized Indian tribes, other Federal agencies with concurrent undertakings as a result of the project, applicants for Federal assistance, local governments, and any other interested parties regarding the proposed undertaking and its potential effects on historic properties. Engaging in consultation allows Federal agencies to seek ways to avoid, reduce, or mitigate any effects on NRHP-listed or eligible properties. Effects include, but are not limited to, destruction or alteration of all or part of a property; isolation from or alteration of its surrounding environment; introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting; transfer or sale of a Federally owned property without adequate conditions or restrictions regarding preservation, maintenance, or use; and neglect of a property resulting in its deterioration or destruction.

The SHPO is appointed by each state to protect the interests of its citizens with respect to issues of cultural heritage. The NHPA provides each SHPO a prominent role in advising the responsible Federal agencies and ACHP (54 U.S.C. 3023 et seq.). In addition to the SHPO, the Lead Federal Agency has an obligation to work with state and local governments, private organizations, and individuals during the initial planning and development of the Section 106 process.

On nontribal lands, the Lead Federal Agency, in consultation with the SHPO, and other consulting parties, assesses the need for historic and archaeological resource investigations in the Proposed Project APE, generates and approves methodologies for undertaking such investigations within the state, and evaluates the preliminary NRHP status of any historical or archaeological resources located within the APE. The SHPO also assists the Lead Federal Agency in assessing any potential effects on historic properties. On tribal lands, the SHPO's Section 106 responsibilities can also be assumed by a Tribal Historic Preservation Officer (THPO) (54 U.S.C. § 302702).

The National Register of Historic Places

The NRHP, created under the NHPA, is the Federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture. NRHP properties have significance to the history of their community, state, or the Nation and have been deemed worthy of preservation based on value, integrity, and relevance. The National Park Service (NPS) maintains and expands the NRHP on behalf of the Secretary of the Interior.

To guide the determination of eligibility of archaeological resources, historic buildings and structures, or sites of religious and traditional significance as historic properties for inclusion in the NRHP, the NPS has developed the following NRHP Criteria for Evaluation (36 CFR 60.4). The criteria are standards by which every property is evaluated for listing in the NRHP. The criteria (36 CFR 60.4 [a–d]) used to evaluate the significance of a resource are as follows:

- *Criterion A.* Are associated with events that have made a significant contribution to the broad patterns of our history; or
- *Criterion B.* Are associated with the lives of persons significant in our past; or
- *Criterion C.* Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- *Criterion D.* Have yielded, or may be likely to yield, information important in prehistory or history.

Additional "Criteria Considerations" A through G are defined to guide application of the Criteria for Evaluation A through D, listed above. Properties also need to exhibit integrity of location, materials, setting, design, association, workmanship, and feeling and must also be at least 50 years old. Buildings less than 50 years old do not meet the NRHP criteria unless they are of exceptional importance under Criterion Consideration G, as described in NPS Bulletin No. 22, "How to Evaluate and Nominate Potential National Register Properties That Have Achieved Significance Within the Last 50 Years."

3.4.2.2 California Environmental Quality Act

Before discretionary projects are approved and agency undertakings occur in California, the potential impacts of a project on cultural resources must be considered (Public Resources Code Sections 21083.2 and 21084.1 and the State CEQA Guidelines [California Code of Regulations Title 14, Section 15064.5]).

CEQA uses a broad definition of what constitutes a cultural resource, which is outlined in the California Code of Regulations Title 14, Section 4852. Cultural resources can include traces of prehistoric habitation and activities, historic-era sites and materials, and places used for traditional Native American observances or places with special cultural significance. In general, any trace of human activity over 50 years in age must be treated as a potential cultural resource. However, because projects can extend over a period of years from planning to implementation stages, 45 years is the minimum age generally accepted for resources to be considered historic for the purposes of CEQA.

Generally, a resource shall be considered by the lead agency to be historically significant and constituting a "historical resource" if it meets any of the criteria for listing in the CRHR. A property may be considered a historical resource if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic value; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

To be eligible for listing in the CRHR, a property must have both historic significance and integrity. Integrity is judged by considering the property's retention of location, design, setting, workmanship, materials, feeling, or association. Section 15064.5 of the State CEQA Guidelines also defines a historical resource as a location or property that is listed on a local register or as a significant resource in a historical resource survey, or as a site determined to be significant as supported by substantial evidence in the record.

In addition, Section 21083.2 of CEQA defines a "unique archaeological resource" as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, a high probability exists that it meets one or more of the following criteria:

- That it contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;

- That it has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- That it is directly associated with a scientifically recognized important prehistoric or historic event or person.

Concerning discoveries of human remains the State CEQA Guidelines (CCR Section 15064.5[e]) require that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the NAHC must be contacted within 24 hours. At that time, the State CEQA Guidelines (CCR Section 15064.5[d]) direct the lead agency to consult with any appropriate Native Americans as identified by the NAHC in a timely manner, and direct the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains. NID has developed a Cultural Resources Policy (No. 6085) that outlines efforts for the District to protect inadvertent discovery of cultural resources or human remains (refer to Appendix C for the NID Policy).

Assembly Bill AB-52

Assembly Bill 52 (AB-52) created a new category of environmental resources that must be considered under CEQA: "tribal cultural resources." Tribal cultural resources are defined as either (1) "sites, features, places cultural landscapes, sacred places and objects with cultural value to a California Native American tribe" that are included in the state register of historical resources or a local register of historical resources, or that are determined to be eligible for inclusion in the state register; or (2) resources determined by the lead agency, in its discretion, to be significant based on the criteria for listing in the state register.

Recognizing that tribes may have expertise with regard to their tribal history and practices, AB-52 requires lead agencies to provide notice to tribes that are traditionally and culturally affiliated with the geographic area of a proposed project, and if they have requested notice of projects proposed within that area. If the tribe requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the tribe. Consultation may include discussing the type of environmental review necessary, the significance of tribal cultural resources, the significance of the project's impacts on the tribal cultural resources, and the alternatives and mitigation measures recommended by the tribe. The parties must consult in good faith, and consultation is deemed concluded when either the parties agree to measures to mitigate or avoid a significant effect on a tribal cultural resource (if such a significant effect exists) or when a party concludes that mutual agreement cannot be reached.

California Health and Safety Code and Public Resources Code

Broad provisions for the protection of Native American cultural resources are contained in the California Health and Safety Code, Division 7, Part 2, Chapter 5 (Sections 8010 through 8030).

Several provisions of the Public Resources Code (PRC) also govern archaeological finds of human remains and associated objects. Procedures are detailed under PRC Section 5097.98 through 5097.996 for actions to be taken whenever Native American remains are discovered. Furthermore, Section 7050.5 of the California Health and Safety Code states that any person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in PRC Section 5097.99. Any person removing human remains without authority of law or written permission of the person or persons having the right to control the remains under PRC Section 7100 has committed a public offense that is punishable by imprisonment.

PRC Chapter 1.7, Section 5097.5/5097.9 (Stats. 1965, c. 1136, p. 2792), entitled Archaeological, Paleontological, and Historical Sites, defines any unauthorized disturbance or removal of a fossil site or remains on public land as a misdemeanor, and specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources.

Nevada County General Plan

The Nevada County General Plan includes a chapter on cultural resources which outlines goals and policies designed to protect cultural resources identified in the County. Although the County does not have a specific cultural resources ordinance, the goals and policies from the general plan that are applicable to the Proposed Project are listed below:

Goal 19.1 Identify and protect and where economically feasible restore significant archaeological and historic resources.

Objective 19.1 Encourage the inventory, protection and interpretation of the cultural heritage of Nevada County, including historical and archaeological landscapes, sites, buildings, features, artifacts.

Objective 19.2 Implement development standards, including the preservation of open space, to protect identified significant cultural sites.

Policy 19.6 Require all applications for discretionary project permits, and all applications for ministerial project permits except single family residences on individual lots shall be accompanied by a Site Sensitivity Literature Review, prepared by a qualified archaeologist or entity such as the North Central Information Center, Department of Anthropology, California State University at Sacramento.

Where review indicates significant archaeological or historical sites or artifacts are, or are likely, present, on-site field review shall be required. If a site or artifacts are discovered, the find shall be evaluated and potential significance determined. If significant cultural resources may be directly or indirectly impacted by proposed development, appropriate mitigation shall be developed and implemented in accordance with California Environmental Quality Act standards, including Appendix K, prior to onset of ground disturbance. Avoidance of significant cultural resources shall be considered the mitigation priority. Excavation of such resources shall be considered only as a last resort when sufficient planning flexibility does not permit avoidance. On-site field review, evaluation of site significance, and development of mitigation measures, as identified above, shall be performed by a qualified professional archaeologist.

Objective 19.3 Include in the development review process consideration of historic, cultural, and Native American concerns and values.

Policy 19.7 Cooperate with local historical societies and the Native American community to protect significant historical, cultural and archaeological artifacts, improve access to and interpretation of unrestricted resources and archaeological history by involving them in the development review process (County of Nevada 1996).

Nevada Irrigation District

NID has developed a Cultural Resources Policy (No. 6085) that outlines efforts of the District to protect inadvertent discovery of cultural resources or human remains (refer to Appendix C for the NID Policy). This includes the following implementation of the following:

- 6085.1 Discovery of Cultural Resources, and
- 6085.2 Discovery of Human Remains.

3.4.3 Thresholds of Significance

The significance criteria used to evaluate the Project impacts to cultural and tribal resources are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to cultural resources would occur if the Project would:

1. Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5.
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.
3. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
4. Disturb any human remains, including those interred outside of formal cemeteries.

According to Appendix G of the CEQA Guidelines, a significant impact related to tribal resources would occur if the Project would:

1. Cause a substantial adverse change in the significance of a tribal cultural resource which is listed or eligible for listing in the CRHR or local register of historical resources.

2. Cause a substantial adverse change in the significance of a tribal cultural resource that is determined by the lead agency, in its discretion and supported by substantial evidence, to be significant.

3.4.4 Impacts Analysis

Potential Project impacts related to cultural and tribal resources were evaluated against the CEQA significance criteria and are discussed below. The impact analysis evaluates potential Project impacts during the annual removal of sediment and associated activities. The Project would cause ground disturbance through sediment removal, establishing and using staging and stockpile areas, installation of the sediment barrier, establishing the access/haul road including the installation of bridges and/or culverts, channelizing the creek, and installing dewatering pipes or excavation of dewatering channels.

Project impacts on cultural and tribal resources are defined by CEQA as a change in the characteristics of a resource that convey its significance or justify its eligibility for inclusion in the CRHR, or local register. Direct impacts may occur by: (1) physically damaging, destroying, or altering all or part of a resource; (2) altering characteristics of the surrounding environmental setting that contribute to the significance of a resource; (3) allowing a resource to deteriorate through neglect; or (4) incidental discovery of archaeological resources without proper

notification. Direct impacts can be assessed by determining the exact location of historical resources and assessing their significance under CEQA criteria, identifying the types and extent of the proposed impacts and their effect on significant resources, and determining appropriate measures to reduce impacts to less-than-significant levels. Indirect impacts may include changes to the viewshed of a significant resource through introduction of a new project element.

CEQA recommends avoidance or preservation in-place as the preferred treatment for eligible properties and unique or significant archaeological or historical resources (PRC 21083.2). If avoidance is not a feasible option, data recovery is a common treatment. For architectural resources, if physical changes to a property—excluding demolition—can be treated following the Secretary of Interior Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings, the Project-related impact on the historical resource will generally be considered reduced below a level of significance.

Impact 3.4-1. The Project could result in damage to or destruction of significant documented cultural resources.

A total of seven prehistoric and historic-era cultural resources have been documented adjacent to the Project Site. Five of these cultural resources have been determined not eligible for listing in the CRHR. The remaining two sites, P-29-3946 and P-29-3971, were unevaluated, and Cardno archaeologists determined that both sites would not be affected by the Project. P-29-3946 is located approximately 325 feet outside of the Project Work Area where active sediment removal activities would occur. The site is also above the high water line of the reservoir. In addition, P-29-3971 would not be affected by implementation of the Project. Portions of the site are subject to periodic submergence and/or natural erosion (eastern site boundary) as a result of fluctuating reservoir levels. In addition, there was visible erosion from recent heavy rain events. Both the fluctuating reservoir levels and recent rain events are unrelated to implementation of the Project. Implementation of the Project does have the potential to remove artifacts that have eroded from the cultural site (eastern site boundary), but is not considered an impact as they lack locational integrity because they have been redeposited within the reservoir. Additionally, the western site boundary, where the prehistoric component is located, would not be affected by sediment removal activities as it is outside of the sediment removal Work Area.

Because P-29-3946 and P-29-3971 are not located within the Work Area and activities would not result in direct or indirect effects on the sites, the Project would have **no impact** on the unevaluated sites that may be eligible for listing in the CRHR. However, NID will implement mitigation measure MM-CUL-1 to provide further protection of potentially eligible sites.

Impact 3.4-2. The Project could result in damage to or destruction of significant undocumented cultural resources.

Although the Project Site has been previously surveyed, encountering undocumented cultural resources may occur. Subsurface disturbances could potentially destroy or damage these cultural resources. If these resources were to represent "unique archaeological resources" or "historic resources" as defined by CEQA, a significant impact would occur. However, NID will implement mitigation measure MM-CUL-1 and MM-CUL-2 reducing impacts to undocumented cultural resources to **less than significant**.

Impact 3.4-3. The Project could result in damage to or destruction of human remains.

The Project Site has been previously surveyed and no human remains were identified during the survey. However, human remains were reported at site P-29-3953 by a tribal representative, though no human remains were encountered during testing at the site in September and October 2010 (NID 2011a:128).

The inadvertent discovery of unmarked historic-era or prehistoric burials may occur during subsurface disturbances. Any such disturbance would represent a significant impact.

California law recognizes the need to protect historic-era and Native American human burials, skeletal remains, and items associated with Native American interments from vandalism and inadvertent destruction. The procedures for the treatment of Native American human remains are contained in California Health and Safety Code Section 7050.5 and Section 7052 and California Public Resources Code Section 5097. NID will implement mitigation measure MM-CUL-3 reducing impacts to human remains to **less than significant**.

Impact 3.4-4. The Project could result in damage to or destruction of significant undocumented paleontological resources.

Due to the geological context (metavolcanic rocks) of the Greenhorn Arm of Rollins Reservoir, it is highly unlikely that any intact paleontological resources would be encountered during the course of Project implementation. However, subsurface disturbances could potentially destroy or damage presently undiscovered paleontological resources. If these resources were determined to be significant per CEQA criteria, a significant impact would occur. NID will implement mitigation measure MM-CUL-4 reducing impacts to undocumented paleontological resources to **less than significant**.

Impact 3.4-5. The Project would not cause a substantial adverse change in the significance of a tribal cultural resource.

From 2006 to 2011, NID conducted TCP studies for its Yuba-Bear Hydroelectric Project, which included evaluation of the Greenhorn Arm of Rollins Reservoir and the Project Site. The objective of the study was to identify TCPs that may potentially be affected by Project operation and maintenance, evaluate their eligibility for inclusion in the NRHP, and identify Project-related effects on NRHP-eligible TCPs, other tribal interests, or traditional interests of other groups. The study included archival research, tribal consultation, and site visits. The study did not identify any resources that meet the definition of a TCP or that meet the NRHP criteria for listing on the NRHP. In addition, NID initiated Project-specific consultation in 2017 with Native American groups with a possible interest in the Proposed Project and requested a Sacred Lands Files search from the NAHC. No properties possessing culturally significant associations for the present-day Native American community were identified as existing within or near the Project Site. Since no TCPs were identified within the Project Site, **no impact** would occur.

3.4.5 Mitigation Measures

The following mitigation measures will be implemented as part of the Project to reduce potentially significant impacts to a less-than-significant level.

MM-CUL-1 **Development and Implementation of a Worker Environmental Awareness Program.** NID will design and implement a Worker Education Program that will be provided to all Project personnel who may encounter and/or alter historical resources or unique archaeological properties, including construction supervisors and field personnel. No construction worker will be involved in field operations without having participated in the Worker Education Program. The Worker Education Program will include, at a minimum:

- A review of archaeology, history, prehistory and Native American cultures associated with historical resources in the Project vicinity;
- A review of applicable local, state and federal ordinances, laws and regulations pertaining to historic preservation;
- A discussion of procedures to be followed in the event that unanticipated cultural resources are discovered during implementation of the Project;
- A discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and NID policies; and

- A statement by the construction company or applicable employer agreeing to abide by the Worker Education Program, NID policies and other applicable laws and regulations.

The Worker Education Program may be conducted in concert with other environmental or safety awareness and education programs for the Project, provided that the program elements pertaining to cultural resources are provided by a qualified instructor meeting applicable professional qualifications standards.

MM-CUL-2 **Unanticipated Discovery of Potentially Significant Prehistoric and Historic Resources.** If an inadvertent discovery of cultural materials (e.g., unusual amounts of shell, animal bone, glass, ceramics, structure/building remains, etc.) is made during Project-related construction activities, the NID Cultural Resources Policy (No. 6085.1 Discovery of Cultural Resources) will be implemented. This policy includes a stop work order, communication with the NID project manager, avoidance of the discovery by 150 feet, and coordination with a qualified archaeologist. Refer to Appendix C for the NID Policy.

As part of this policy, the archaeologist shall determine whether the resource is potentially significant per the CRHR and develop appropriate mitigation in consultation with the NID and SHPO to protect the integrity of the resource and ensure that no additional resources are impacted. Mitigation could include, but not necessarily be limited to preservation in-place, archival research, subsurface testing, or data recovery.

Implementation of the above mitigation measure would reduce potentially significant impacts resulting from inadvertent damage or destruction of unknown cultural resources during construction to a **less-than-significant** level.

MM-CUL-3 **Unanticipated Discovery of Human Remains.** In accordance with the California Health and Safety Code and NID Cultural Resources Policy (No. 6085.2 Discovery of Human Remains), if human remains are uncovered during ground-disturbing activities, all work within 150 feet of the area of the burial shall be halted. The NID project manager will be notified immediately, who in turn will notify the qualified archaeologist. The qualified archaeologist will contact the Nevada County Sheriff/Coroner to determine the nature and extent 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 Native American descent, the coroner must contact the Native American Heritage

Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). The NAHC shall identify the most likely descendant (MLD). Once given the permission by NID and the land owner (if different from NID), the MLD shall be allowed on-site. The MLD shall complete their inspection and make their recommendation to NID for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98. MLD recommendations must be made within 48 hours of the NAHC notification to the MLD.

No additional work shall take place within the immediate vicinity of the find until the qualified archaeologist gives approval to resume work in that area. Refer to Appendix C for the NID Policy.

A range of possible treatments for the remains, including nondestructive removal and analysis, preservation in-place, relinquishment of the remains and associated items to the descendants, or other culturally appropriate treatment, may be discussed. AB 2641 suggests that the concerned parties may extend discussions beyond the initial 48 hours to allow for the discovery of additional remains. AB 2641(e) includes a list of site protection measures and states that the landowner shall comply with one or more of the following:

- Record the site with the NAHC or the appropriate Information Center;
- Utilize an open space or conservation zoning designation or easement; and/or
- Record a document with the county in which the property is located.

The landowner or their authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance if the NAHC is unable to identify a MLD or the MLD fails to make a recommendation within 48 hours after being granted access to the site. The landowner or their authorized representative may also re-inter the remains in a location not subject to further disturbance if they reject the recommendation of the MLD, and mediation by the NAHC fails to provide measures acceptable to the landowner. Adherence to these procedures and other provisions of the California Health and Safety Code and AB 2641(e) will reduce potential impacts to human remains to a less than significant level.

MM-CUL-4 **Unanticipated Discovery of Paleontological Resources.** If an unanticipated discovery of paleontological materials is made during Project-related construction activities, all work within 100 feet (30 meters) of the discovery will be halted and redirected to another location. A qualified paleontologist will be notified regarding the discovery. The paleontologist shall determine whether the resource is potentially significant per the CEQA and develop appropriate mitigation to protect the integrity of the resource and ensure that no additional paleontological resources are impacted. Mitigation could include, but not necessarily be limited to preservation in-place, archival research, and specimen excavation and recovery.

Implementation of the above mitigation measure would reduce potentially significant impacts resulting from inadvertent damage or destruction of paleontological resources during construction to a less than significant level.

3.4.6 Level of Significance After Mitigation

MM-CUL-1 through MM-CUL-4 describe measures to be implemented to prevent inadvertent damage or destruction of known and unknown cultural resources, paleontological resources, and human remains. Implementation of these measures would reduce impacts to cultural resources to a **less-than-significant** level.

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3.5 ENERGY

This section provides a discussion of the potential energy impacts of sediment removal in the Greenhorn Arm of Rollins Reservoir (Project or Proposed Project), with emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of nonrenewable energy. As no significant impacts related to energy were identified during the analysis, no mitigation measures are required.

3.5.1 Existing Conditions

While California's energy consumption is the second-highest in the nation overall, its per capita consumption has been relatively constant since the mid-1970s and is currently ranked at 48th in the nation due in part to its climate and energy efficiency programs (U.S. Energy Information Administration [EIA] 2019; California Energy Commission [CEC] 2019). The majority of electricity in California is generated by natural gas, followed by non-hydroelectric renewables, nuclear, and finally hydroelectric sources. In 2017, California ranked first as a producer of electricity from solar, geothermal, and biomass resources; and second in hydroelectric generation (EIA 2019).

3.5.2 Relevant Plans, Policies, and Ordinances

Recent updates to the California Environmental Quality Act (CEQA) Guidelines as related to energy include: (1) the addition of a specific subsection under Section 15126.2 related to energy impacts and analysis; and (2) the addition of an energy section in the sample environmental checklist included in Appendix G of the CEQA Guidelines. The intent of these changes is to better integrate the energy analysis with the rest of CEQA. An analysis of energy implications, as required under Appendix F of the CEQA Guidelines, is provided in Section 4.4 of this document.

3.5.2.1 Federal

Energy Policy Act of 2005

The Energy Policy Act of 2005 was signed into law in August 2005. The Act established renewable fuel standards and created energy-related tax incentives, including tax incentives for energy efficiency and conservation, renewable energy, oil and gas production and transmission, coal production, and electricity generation and transmission. The Act also established renewable fuel standards and established provisions to increase oil and natural gas production on federally owned land. The Energy Policy Act of 2005 also gave the Federal Energy Regulatory Commission (FERC) expanded responsibilities to oversee the reliability of the nation's electricity transmission grid; issue rules to prevent market manipulation in jurisdictional power and gas markets, transmission, and transportation services; provide rate incentives to promote investments in

electricity transmission; oversee state transmission siting efforts to more efficiently align with national electric transmission corridors; and review holding company mergers and acquisitions involving electric utilities.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 set aside several provisions in four broad Titles to provide additional incentives for alternative energy to supplement the Energy Policy Act of 2005. Title I set standards and incentives for automakers to meet Corporate Average Fuel Economy standards for passenger cars and commercial vehicles; incentives for development of and investment in plug-in hybrid vehicles and electric vehicles; and fuel conservation requirements for federal vehicle fleets. Title II set a renewable fuel standard to increase the proportion of renewable biofuels and increased grants for the research and development of biofuels. Title III set energy efficiency standards for ten types of household appliances and set lighting energy efficiency standards. Title IV set energy efficiency standards for residential, commercial, and federal buildings; provided grants for energy efficiency research; and provided grants to build energy efficient schools, public institutions, public and assisted housing, other federal buildings, and universities. The Energy Independence and Security Act also expanded research on renewable energy and carbon sequestration technologies.

3.5.2.2 State

Warren-Alquist State Energy Resources Conservation and Development Act of 1974

The California Legislature passed the Warren-Alquist Act in 1974. The Warren-Alquist Act created the CEC. The Act also incorporated the following key provisions designed to address energy demand:

- It directed the CEC to formulate and adopt the nation's first energy conservation standards for buildings constructed and appliances sold in California;
- The Act removed the responsibility of electricity demand forecasting from the utilities, which had a financial interest in high demand projects, and transferred it to the CEC; and
- The CEC was directed to embark on a research and development program, focused on fostering non-conventional energy sources.

California Code of Regulations, Title 20: Public Utilities and Energy

Title 20 supplements the Warren-Alquist State Energy Resources Conservation and Development Act and provides the State Energy Resources Conservation and Development Commission with rules of practice and procedure. These rules include standards for data collection, standards for energy conservation of various types of buildings, regulations for energy loan applications, rules

for site certification, the Public Interest Energy Research Program, designation of transmission corridor zones, the Solar Offset Program, greenhouse gases emission performance standards, and alternative and renewable fuel and vehicle technology program regulations. Title 20 also outlines the enforcement procedure for the renewable portfolio standards for local publicly owned electric utilities.

California Code of Regulations, Title 24: California Energy Code

Title 24 outlines the California Building Standards Code, published by the California Building Standards Commission and it applies to all building occupancies throughout California. Title 24 sets standards and mandatory requirements for the structural, mechanical, electrical, and plumbing systems and requires measures for energy conservation and green design. Cities and counties are required to enforce Title 24 and may adopt more restrictive requirements according their local climatic conditions. Multiple state agencies have the authority to develop and propose building standards to the California Building Standards Code, and the agency that assumes enforcement of building standards varies by building type. The 2019 version of the California Energy Code becomes effective in January 2020 and sets new energy efficiency standards for the construction of new homes.

California Green Building Standards Code (CALGreen)

CALGreen sets mandatory measures for residential and nonresidential buildings, including standards for planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency during construction, maintenance, and operation; and environmental quality of building features. CALGreen also outlines voluntary measures for residential and nonresidential buildings, as well as the requirements and qualifications for installers and special inspectors.

Assembly Bill 1007 (2007)

Assembly Bill 1007, passed in 2005, required the CEC to prepare a statewide plan to increase the use of alternative fuels in California (State Alternative Fuels Plan). The CEC prepared the plan in partnership with the California Air Resources Board (CARB) and in consultation with other state, federal, and local agencies. The plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce greenhouse gas (GHG) emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Assembly Bill 32 (2006) and Senate Bill 32 (2016)

In 2006, the Legislature enacted Assembly Bill 32, the California Global Warming Solutions Act of 2006. Assembly Bill 32 requires California to reduce its GHG emissions to 1990 levels by 2020. In 2016, the Legislature enacted Senate Bill 32, which extended the horizon year of the state's codified GHG reduction planning targets from 2020 to 2030, requiring California to reduce its GHG emissions to 40% below 1990 levels by 2030. In accordance with Assembly Bill and Senate Bill 32, CARB prepares scoping plans to guide the development of statewide policies and regulations for the reduction of GHG emissions. Many of the of the policy and regulatory concepts identified in the scoping plans focus on increasing energy efficiencies and the use of renewable resources, as well as reducing the consumption of petroleum-based fuels such as gasoline and diesel.

Senate Bill 100

Senate Bill 100, the 100 Percent Clean Energy Act of 2018, as well as an Executive Order establishing carbon neutrality goals, was signed into law in September 2018. Senate Bill 100 increases to 60%, from 50%, how much of California's electricity portfolio must come from renewables by 2030. It establishes a further goal to have an electric grid that is entirely powered by clean energy by 2045, which could include other carbon-free sources, like nuclear power, that are not renewable.

3.5.3 Thresholds of Significance

The significance criteria used to evaluate potential Project impacts associated with energy consumption are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to energy would occur if the Project would:

1. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
2. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

3.5.4 Impacts Analysis

Impact 3.5-1. The Project would not result in significant impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

The extraction of aggregate resources inherently requires energy. The Proposed Project requires energy to extract the material, to screen and stockpile the material, and to haul the material off site either for delivery to the end user, for additional processing, or for disposal at an approved site. In addition, energy must be expended for placement of the sediment barrier and stockpile barrier wall and installation/removal of seasonal structures and equipment (the access/haul road, including

bridges and culverts; channel berm; dewatering pipes/channels; valve box/pond; aeration system; processing plant (grizzly); construction equipment and mats).

Estimated energy consumption is based on the GHG emissions modeling for the Project. Project carbon dioxide (CO_2) emissions were converted to gallons of fuel using the EIA's Carbon Dioxide Emission Coefficients (EIA 2016). The results are shown in Table 3.5-1, Estimated Fuel Consumption at Maximum Operation.

Table 3.5-1
Estimated Fuel Consumption for Removal of 200,000 Tons of Sediment/Year

Phase	Source	CalEEMod CO_2 (MT/yr)	Fuel Type	Factor (kg CO_2/gal)	Gallons
On site	Off-road	479.33	Diesel	10.21	46,947
Off site	Haul trucks[1]	979.29	Diesel	10.21	95,914
	Employee	9.28	Gasoline	8.78	1,057
		Total			**143,918**

Source: U.S. Environmental Protection Agency's Emission Factors for Greenhouse Gas Inventories updated in March 2018.
Notes:
CalEEMod = California Emissions Estimator Model
CO_2 = carbon dioxide
gal = gallon
kg = kilograms
MT/yr = million tons per year
[1] This includes vendor trips to bring materials to/from the Project Site.

Note that these estimates are based on the maximum proposed production rate of removal of 200,000 tons of sediment per year. It is anticipated that the average production rate, removal of 50,000 tons of sediment per year, would result in approximately 75% less fuel usage, or 35,980 gallons per year.

However, this energy consumption would not be considered wasteful, inefficient, or unnecessary when balanced by the importance of maintaining/restoring water storage capacity in the Greenhorn Arm of Rollins Reservoir and preventing further migration of suspended sediment into the main body of the reservoir. As evidenced by voter approval of funding for legislation such as the Water Quality, Supply, and Infrastructure Improvement Act (2014), maintenance of existing water infrastructure is a key issue in the state; and addressing the impacts of reservoirs affected by sedimentation is important not only for water storage, but for environmental protection, and public safety. In addition the Project will restore recreation opportunities and would provide a local aggregate source. As the California Geological Survey (CGS) has noted:

> *Increased aggregate haul distances not only increase the cost of aggregate to the consumer, but also increases environmental and societal impacts such as increased*

fuel consumption, carbon dioxide emissions, air pollution, traffic congestion and road maintenance (CGS 2012).

The Project would also consume some electricity for lighting the processing plant (grizzly). However, as required by MM-AES-3, Project lighting would be kept at the minimum necessary for safety and security, which would avoid wasteful usage of electricity.

Any impacts related to wasteful, inefficient, or unnecessary consumption of energy resources would, therefore, be **less than significant**.

Impact 3.5-2. The Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

As summarized in Section 3.5.2, state regulations on renewable energy and energy efficiency are focused on green building standards, development of more efficient passenger and commercial vehicles, and increasing renewable energy sources for generation of electricity; and do not include any specific plans regarding or thresholds for determining the energy efficiency of sediment removal or other construction-type projects. Therefore, the Project would not conflict with any state plans in regard to energy efficiency. Nevada County is currently working with the Sierra Business Council to prepare an Energy Action Plan for the county (Nevada County 2019). The goal of the Energy Action Plan is to accelerate energy efficiency, renewable energy, and water efficiency projects done by residents, businesses, and public agencies in an effort to reduce energy bills and increase resiliency in the community. However, at the time of development of this Environmental Impact Report (EIR), the plan has not been approved and provided to the public for review. Therefore, analysis of consistency with this plan is not applicable.

Therefore, there is **no impact** in terms of conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

3.5.5 Mitigation Measures

No significant impacts would occur; therefore, no mitigation is required.

3.5.6 Level of Significance After Mitigation

All impacts related to energy would be considered **less than significant** without mitigation.

3.5.7 References

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3.6 GREENHOUSE GAS EMISSIONS

This section describes the characteristics of global climate change, identifies regulatory requirements, and evaluates potentially adverse impacts related to greenhouse gas (GHG) emissions associated with implementation of the Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project). As no significant impacts related to GHG emissions were identified during the analysis, no mitigation measures are required.

3.6.1 Existing Conditions

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind, lasting for an extended period (decades or longer). The earth's climate has undergone many changes during its history, ranging from ice ages to long periods of warmth. Natural factors such as volcanic eruptions, changes in the earth's orbit, and the amount of energy received from the sun have affected global temperatures and thus the earth's climate. Gases that trap heat in the atmosphere are often called GHGs. The greenhouse effect traps heat in the troposphere through a threefold process: short-wave radiation emitted by the sun is absorbed by the earth; the earth emits a portion of this energy in the form of long-wave radiation; and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and back toward the earth. This "trapping" of the long-wave (thermal) radiation emitted back toward the earth is the underlying process of the greenhouse effect.

The greenhouse effect is a natural process that contributes to regulating the earth's temperature. Without it, the temperature of the earth would be about 0 degrees Fahrenheit (°F) (−18 degrees Celsius [°C]) instead of its current 57°F (14°C). Global climate change concerns are focused on whether human activities are leading to an enhancement of the greenhouse effect.

Principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and water vapor (H_2O). Some GHGs, such as CO_2, CH_4, and N_2O, can occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely byproducts of fossil-fuel combustion, whereas CH_4 results mostly from off-gassing associated with agricultural practices and landfills. Man-made GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3), which are associated with certain industrial products and processes (CAT 2006).

The effect each GHG has on climate change is measured as a combination of the mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP). Table 3.6-1 below shows the different GWPs for each of the GHGs.

Table 3.6-1
Greenhouse Gas – Global Warming Potential

GHG	Annual GHG Emissions (MMT CO_2E)
Carbon Dioxide (CO_2)	1
Methane (CH_4)	21
Nitrous Oxide (N_2O)	213
Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs)	6,500
Sulfur Hexafluoride (SF_6)	23,900

Source: CCAR 2009
Notes:
MMT CO_2E = million metric tons of carbon dioxide equivalent

As shown in the table above, the GWP varies between GHGs; for example, the GWP of CH_4 is 21, and the GWP of N_2O is 213. Total GHG emissions are expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG gas emissions are typically measured in terms of pounds or tons of CO_2 equivalent (CO_2E).[1]

3.6.1.1 Contributions to Greenhouse Gas Emissions

In 2014, the United States emitted 6,870 million metric tons (MMT) (15.1 trillion pounds) of CO_2E. This represents a 7% increase from 1990 levels but a 7% decrease since 2005. The primary GHG emitted by human activities in the United States is CO_2 (EPA 2016a).

According to the 2015 GHG inventory data compiled by California Air Resources Board (CARB) for the California Greenhouse Gas Inventory for 2000–2015, California emitted 440.4 MMT CO_2E of GHGs, including emissions resulting from out-of-state electrical generation (CARB 2017). The primary contributors to GHG emissions in California are transportation, electric power production from both in-state and out-of-state sources, industry, agriculture and forestry, and other sources, which include commercial and residential activities. These primary contributors to California's GHG emissions and their relative contributions in 2015 are presented in Table 3.6-2, GHG Sources in California.

[1] The CO_2 equivalent for a gas is derived by multiplying the mass of the gas by the associated GWP, such that metric tons of CO_2E = (metric tons of a GHG) × (GWP of the GHG). For example, the GWP for CH_4 is 21. This means that emissions of 1 metric ton of CH_4 are equivalent to emissions of 21 metric tons of CO_2.

Table 3.6-2
Greenhouse Gas Sources in California – 2015

Source Category	Annual GHG Emissions (MMT CO_2E)	% of Total
Agriculture	35.23	8%
Commercial and residential uses	48.44	11%
Electricity generation	83.68[a]	19%
Industrial uses	101.29	23%
Transportation	171.76	39%

Source: CARB 2017a
Notes:
MMT CO_2E = million metric tons of carbon dioxide equivalent
[a] Includes emissions associated with imported electricity, which account for 35.23 MMT CO_2E annually.

3.6.1.2 Potential Effects of Human Activity on Climate Change

According to CARB, some of the potential impacts in California of global warming may include loss of snowpack, sea level rise, more extreme heat days per year, more high O_3 days, more large forest fires, and more drought years (CARB 2006). Several recent studies have attempted to explore the possible negative consequences that climate change, left unchecked, could have in California. These reports acknowledge that climate scientists' understanding of the complex global climate system and the interplay of the various internal and external factors that affect climate change remains too limited to yield scientifically valid conclusions on such a localized scale. Substantial work has been done at the international and national level to evaluate climatic impacts, but far less information is available on regional and local impacts.

The primary effect of global climate change has been a rise in average global tropospheric temperature of 0.2°C (0.36°F) per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using emission rates from the year 2000 shows that further warming would occur that would induce further changes in the global climate system during the current century. Changes to the global climate system and ecosystems and to California are expected to include, but would not be limited to, the following:

- The loss of sea ice and mountain snowpack, resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures (IPCC 2007).
- A rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps and the Greenland and Antarctic ice sheets (IPCC 2007).

- Changes in weather that include widespread changes in precipitation, ocean salinity, and wind patterns and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and increased intensity of tropical cyclones (IPCC 2007).
- A decline of Sierra snowpack, which accounts for approximately half of the surface water storage in California, by 70% to as much as 90% over the next 100 years (CAT 2006).
- An increase in the number of days conducive to O_3 formation by 25% to 85% (depending on the future temperature scenario) in high O_3 areas of Los Angeles and the San Joaquin Valley by the end of the 21st century (CAT 2006).
- A high potential for erosion of California's coastlines and seawater intrusion into the delta and levee systems due to the rise in sea level (CAT 2006).

3.6.2 Relevant Plans, Policies, and Ordinances

Regulation of GHGs in the United States and California is relatively recent, beginning early in the 2000s. In the absence of major federal efforts, California's former governor, Arnold Schwarzenegger, and the legislature took the initiative to establish goals for reductions of GHG emissions in California and to prescribe a regulatory approach to ensure that the goals would be achieved.

The federal government, primarily through actions of the U.S. Environmental Protection Agency (EPA), has also begun to regulate GHG emissions, although not as comprehensively. This section provides a brief foundation for these regulatory efforts and identifies the primary federal, state, and local regulatory efforts that could apply to the Proposed Project.

3.6.2.1 Federal

Massachusetts v. EPA

On April 2, 2007, in *Massachusetts v. EPA*, the U.S. Supreme Court directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA administrator is required to follow the language of Section 202(a) of the Clean Air Act. On December 7, 2009, the administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- The administrator found that elevated concentrations of GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the "endangerment finding."

- The administrator further found the combined emissions of GHGs—CO_2, CH_4, N_2O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

Energy Independence and Security Act

On December 19, 2007, President George W. Bush signed the Energy Independence and Security Act of 2007. Among other key measures, the act requires the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
2. Set a target of 35 miles per gallon (mpg) for the combined fleet of cars and light trucks by model year 2020 and direct National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
3. Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler and electric motor efficiency, and home appliances.

EPA and NHTSA Joint Final Rule for Vehicle Standards

On April 1, 2010, the EPA and NHTSA announced a joint final rule to establish a national program consisting of new standards for light-duty vehicles model years 2012 through 2016. The joint rule is intended to reduce GHG emissions and improve fuel economy. The EPA approved the first-ever national GHG emissions standards under the Clean Air Act, and NHTSA approved Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act (75 FR 25324–25728).

The EPA GHG standards require new passenger cars, light-duty trucks, and medium-duty passenger vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile in model year 2016, equivalent to 35.5 mpg if the automotive industry were to meet this CO_2 level through fuel economy improvements alone. The CAFE standards for passenger cars and light trucks will be phased in between 2012 and 2016, with the final standards equivalent to 37.8 mpg for passenger cars and 28.8 mpg for light trucks, resulting in an estimated combined average of 34.1 mpg. Together, these standards will cut GHG emissions by an estimated 960 MMT

and save 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program. The rules will simultaneously reduce GHG emissions, improve energy security, increase fuel savings, and provide clarity and predictability for manufacturers (EPA 2016b).

In August 2012, the EPA and NHTSA approved a second round of GHG and CAFE standards for model years 2017 and beyond (77 FR 62624–63200). These standards will reduce motor vehicle GHG emissions to 163 grams of CO_2 per mile, which is equivalent to 54.5 mpg if this level were achieved solely through improvements in fuel efficiency, for cars and light-duty trucks by model year 2025. A portion of these improvements, however, will likely be made through reductions in air conditioning leakage and through the use of alternative refrigerants, which would not contribute to fuel economy. The first phase of the CAFE standards (for model year 2017 to 2021) is projected to require, on an average industry fleet-wide basis, a range from to 41.0 mpg in model year 2021. The second phase of the CAFE program (for model years 2022 to 2025) is projected to require, on an average industry fleet-wide basis, a range from 48.7 to 49.7 mpg in model year 2025. The regulations also include targeted incentives to encourage early adoption and introduction into the marketplace of advanced technologies to dramatically improve vehicle performance, including the following:

- Incentives for electric vehicles, plug-in hybrid electric vehicles, and fuel-cell vehicles
- Incentives for hybrid technologies for large pickup trucks and for other technologies that achieve high fuel economy levels on large pickup trucks
- Incentives for natural gas vehicles
- Credits for technologies with potential to achieve real-world GHG reductions and fuel economy improvements that are not captured by the standard test procedures

3.6.2.2 State

Assembly Bill 1493

Assembly Bill (AB) 1493 (Pavley), enacted on July 22, 2002, required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. It is expected that compliance with the standards for model years 2009–2012 resulted in a reduction of about 22% in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards will result in a reduction of about 30%.

Before these regulations could go into effect, the EPA had to grant California a waiver under the federal Clean Air Act, which ordinarily preempts state regulation of motor vehicle emission standards. The waiver was granted by Lisa Jackson, the EPA administrator, on June 30, 2009. On March 29, 2010, the CARB executive officer approved revisions to the motor vehicle GHG standards to harmonize the state program with the national program for 2012–2016 model years (see EPA and NHTSA Joint Final Rule for Vehicle Standards). The revised regulations became effective April 1, 2010.

Senate Bill 1078

Approved by Governor Gray Davis in September 2002, Senate Bill (SB) 1078 (Sher) established the Renewal Portfolio Standard program, which requires an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107 and Executive Orders S-14-08 and S-21-09.)

Executive Order S-3-05

In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010, GHG emissions should be reduced to 1990 levels by 2020, and GHG emissions should be reduced to 80% below 1990 levels by 2050. The California EPA secretary is required to coordinate efforts of various agencies to collectively and efficiently reduce GHGs. The California Climate Action Team is responsible for implementing global warming emissions reduction programs. Representatives from several state agencies compose the California Climate Action Team. Under the Executive Order, the California EPA secretary is directed to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The California Climate Action Team fulfilled its initial report requirements through the 2006 *Climate Action Team Report to Governor Schwarzenegger and the Legislature* (CAT 2006).

The 2009 *Climate Action Team Biennial Report* (CAT 2010a), published in April 2010, expands on the policy outlined in the 2006 assessment. The 2009 report provides new information and scientific findings regarding the development of new climate and sea level projections using new information and tools that have recently become available and evaluates climate change within the context of broader social changes, such as land use changes and demographics. The 2009 report also identifies the need for additional research in several different aspects that affect climate change in order to support effective climate change strategies. The aspects of climate change determined to require future research include vehicle and fuel technologies, land use and smart growth, electricity and natural gas, energy efficiency, renewable energy and reduced carbon energy

sources, low-GHG technologies for other sectors, carbon sequestration, terrestrial sequestration, geologic sequestration, economic impacts and considerations, social science, and environmental justice.

Subsequently, the 2010 *Climate Action Team Report to Governor Schwarzenegger and the California Legislature* (CAT 2010b) reviews past Climate Action Milestones including voluntary reporting programs, GHG standards for passenger vehicles, the Low Carbon Fuel Standard (LCFS), a statewide renewable energy standard, and the cap-and-trade program. Additionally, the 2010 report includes cataloging of recent research and ongoing projects; mitigation and adaptation strategies identified by sector (e.g., agriculture, biodiversity, electricity, and natural gas); actions that can be taken at the regional, national, and international levels to mitigate the adverse effects of climate change; and today's outlook on future conditions. The 2010 report also focuses on case studies involving collaborative efforts among multiple agencies on research projects related to climate change and policy development.

Senate Bill 107

Approved by Governor Arnold Schwarzenegger on September 26, 2006, SB 107 (Simitian) requires investor-owned utilities such as Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric to generate 20% of their electricity from renewable sources by 2010. Previously, state law required that this target be achieved by 2017 (see SB 1078).

Assembly Bill 32

In furtherance of the goals established in Executive Order S-3-05, the legislature enacted AB 32 (Núñez and Pavley), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006. AB 32 requires a reduction in California's GHG emissions to 1990 levels by 2020. CARB is required to carry out and develop the programs and requirements necessary to achieve the goals of AB 32.

One of the primary requirements of CARB is the development of a Scoping Plan identifying key strategies to reduce GHG emissions in California and meet the goals of AB 32. The following lists the titles and CARB approval dates of the initial Scoping Plan and subsequent updates.

- Climate Change Proposed Scoping Plan: A Framework for Change, December 2008
- First Update to the Climate Change Scoping Plan: Building on the Framework, May 2014
- California's 2017 Climate Change Scoping Plan, November 2017

The December 2008 Scoping Plan established an overall framework of key measures to reduce California's GHG emissions to 1990 levels by 2020, including outlining the role of the cap-and-trade program. While the 2014 Scoping Plan update examined California's progress to meeting

the 2020 GHG emissions reduction target, identified additional strategies and recommendations for further investments needed, and also established the groundwork to reach the goals promulgated with the approval of Executive Order S-3-05 and B-16-2012.

The 2017 Scoping Plan update lays out the strategy for achieving the 2030 GHG emissions reduction target of 40% below 1990 levels set by Executive Order B-30-15 and codified by SB 32 and ensures that California stays on track to becoming a low- to zero-carbon economy. The strategies involve a mix of solutions, including building on California's achievements while strengthening existing, successful programs, and further combining efforts to reduce GHG and air pollution. The key sectors involved in these solutions are: energy, industry, transportation, natural and working lands, including agricultural lands, waste management and water. The key sector most applicable to this Proposed Project is the water sector. The 2017 Scoping Plan update, GHG reduction goals for the water sector are as follows:

- Develop and support more reliable water supplies for people, agriculture, and the environment, provided by a more resilient, diversified, sustainably managed water resources system with a focus on actions that provide direct GHG reductions.
- Make conservation a California way of life by using and reusing water more efficiently through greater water conservation, drought tolerant landscaping, stormwater capture, water recycling, and reuse to help meet future water demands and adapt to climate change.
- Develop and support programs and projects that increase water sector energy efficiency and reduce GHG emissions through reduced water and energy use.
- Increase the use of renewable energy to pump, convey, treat, and utilize water.
- Reduce the carbon footprint of water systems and water uses for both surface and groundwater supplies through integrated strategies that reduce GHG emissions while meeting the needs of a growing population, improving public safety, fostering environmental stewardship, aiding in adaptation to climate change, and supporting a stable economy.

Senate Bill 1368

In September 2006, Governor Schwarzenegger signed SB 1368, which requires the California Energy Commission (CEC) to develop and adopt regulations for GHG emissions performance standards for the long-term procurement of electricity by local publicly owned utilities. These standards must be consistent with the standards adopted by the California Public Utilities Commission (CPUC). This effort will help protect energy customers from financial risks associated with investments in carbon-intensive generation by allowing new capital investments in power plants whose GHG emissions are as low as or lower than new combined-cycle natural gas plants by requiring imported electricity to meet GHG performance standards in California and by requiring that the standards be developed and adopted in a public process.

Executive Order S-1-07

Issued on January 18, 2007, Executive Order S-1-07 sets a declining LCFS for GHG emissions measured in CO_2E grams per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020. The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered. CARB adopted the implementing regulation in April 2009. The regulation is expected to increase the production of biofuels, including those from alternative sources, such as algae, wood, and agricultural waste. In addition, the LCFS would drive the availability of plug-in hybrid, battery electric, and fuel-cell power motor vehicles. The LCFS is anticipated to lead to the replacement of 20% of the fuel used in motor vehicles with alternative fuels by 2020.

Senate Bill 97

In August 2007, the legislature enacted SB 97 (Dutton), which directs the Governor's Office of Planning and Research to develop guidelines under the California Environmental Quality Act (CEQA) for the mitigation of GHG emissions. On April 13, 2009, the Office of Planning and Research submitted to the Secretary for Natural Resources its proposed amendments to the CEQA Guidelines (14 CCR 15000 et seq.). On July 3, 2009, the California Natural Resources Agency (CNRA) commenced the Administrative Procedure Act rulemaking process for certifying and adopting the proposed amendments, starting the public comment period. The CNRA adopted the amendments to the guidelines on December 30, 2009. The amendments were approved by the Office of Administrative Law and submitted to the Secretary of State on February 16, 2010. The amendments went into effect on March 18, 2010.

The amendments added and revised several sections of the CEQA Guidelines, providing guidance for addressing analysis and mitigation of the effects of GHG emissions. The changes included the following:

- Requiring a lead agency to "make a good faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of GHG emission resulting from a project" (Section 15064(a)).
- Providing a lead agency with the discretion to determine whether to use quantitative or qualitative analysis or performance standards to determine the significance of GHG emissions resulting from a particular project (Section 15064.4(a)).

- Requiring a lead agency to consider the following factors when assessing the significant impacts from GHG emissions on the environment:
  - The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting.
  - Whether the project emissions exceed a threshold of significance the leady agency determines applies to the project.
  - The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (Section 15064.4(b)).
- Allowing lead agencies to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures, including offsets that are not otherwise required (Section 15126.4(c)).

The amended guidelines also establish two new guidance questions regarding GHG emissions in the Environmental Checklist set forth in CEQA Guidelines, Appendix G:

- Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The adopted amendments do not establish a GHG emission threshold; instead, they allow a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts.[2] The CNRA also acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions.[3]

[2] "The CEQA Guidelines do not establish thresholds of significance for other potential environmental impacts, and SB 97 did not authorize the development of a statement threshold as part of this CEQA Guidelines update. Rather, the proposed amendments recognize a lead agency's existing authority to develop, adopt, and apply their own thresholds of significance or those developed by other agencies or experts" (CNRA 2009a, p. 84).

[3] "A project's compliance with regulations or requirements implementing AB 32 or other laws and policies is not irrelevant. Section 15064.4(b)(3) would allow a lead agency to consider compliance with requirements and regulations in the determination of significance of a project's greenhouse gas emissions" (CNRA 2009a, p. 100).

Senate Bill 75

In August 2008, the legislature passed, and on September 30, 2008, Governor Schwarzenegger signed, SB 375 (Steinberg), which addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. Regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, as determined by CARB, are required to consider the emission reductions associated with vehicle emission standards (see SB 1493), the composition of fuels (see Executive Order S-1-07), and other CARB-approved measures to reduce GHG emissions. Regional metropolitan planning organizations will be responsible for preparing a Sustainable Communities Strategy (SCS) within their Regional Transportation Plan. The goal of the SCS is to establish a development plan for the region, which, after considering transportation measures and policies, will achieve the GHG reduction targets, if feasible. If an SCS is unable to achieve the GHG reduction target, a metropolitan planning organization must prepare an alternative planning strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies. SB 375 provides incentives for streamlining CEQA requirements by substantially reducing the requirements for "transit priority projects," as specified in SB 375, and eliminating the analysis of the impacts of certain residential projects on global warming and the growth-inducing impacts of those projects when the projects are consistent with the SCS or alternative planning strategy. On September 23, 2010, CARB adopted the SB 375 targets for the regional metropolitan planning organizations.

Executive Order S-13-08. Governor Schwarzenegger issued Executive Order S-13-08 on November 14, 2008. The Executive Order is intended to hasten California's response to the impacts of global climate change, particularly sea level rise. It directs state agencies to take specified actions to assess and plan for such impacts. It directs the CNRA, in cooperation with the California Department of Water Resources, CEC, California's coastal management agencies, and the Ocean Protection Council, to request that the National Academy of Sciences prepare a Sea Level Rise Assessment Report by December 1, 2010. The Ocean Protection Council, California Department of Water Resources, and CEC, in cooperation with other state agencies, are required to conduct a public workshop to gather information relevant to the Sea Level Rise Assessment Report. The Business, Transportation, and Housing Agency was ordered to assess within 90 days of the order the vulnerability of the state's transportation systems to sea level rise. The Governor's Office of Planning and Research and the CNRA are required to provide land use planning guidance related to sea level rise and other climate change impacts. The order also requires the other state agencies to develop adaptation strategies by June 9, 2009, to respond to the impacts of global climate change that are predicted to occur over the next 50 to 100 years. A discussion draft adaptation strategies report was released in August 2009, and the final adaptation strategies report was issued in December 2009. To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: public health, ocean and coastal

resources, water supply and flood protection, agriculture, forestry, biodiversity and habitat, and transportation and energy infrastructure. The report then recommends strategies and specific responsibilities related to water supply, planning and land use, public health, fire protection, and energy conservation.

Executive Order S-14-08

On November 17, 2008, Governor Schwarzenegger issued Executive Order S-14-08. This Executive Order focuses on the contribution of renewable energy sources to meet the electrical needs of California while reducing GHG emissions from the electrical sector. The governor's order requires that retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the order directs state agencies to take appropriate actions to facilitate reaching this target. The CNRA is directed to lead this effort, through collaboration with the CEC and California Department of Fish and Game (CDFG).[4] Pursuant to a Memorandum of Understanding between the CEC and CDFG creating the Renewable Energy Action Team, these agencies will create a "one-stop" process for permitting renewable energy power plants.

Executive Order S-21-09

On September 15, 2009, Governor Schwarzenegger issued Executive Order S-21-09. This Executive Order directed CARB to adopt a regulation consistent with the goal of Executive Order S-14-08 by July 31, 2010. CARB is further directed to work with the CPUC and CEC to ensure that the regulation builds upon the Renewable Portfolio Standard program and is applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB is to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health, and that can be developed most quickly in support of reliable, efficient, cost-effective electricity system operations.

Senate Bill X1 2

On April 12, 2011, Governor Jerry Brown signed SB X1 2 in the First Extraordinary Session, which would expand the Renewable Portfolio Standard by establishing a goal of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current and that meets

[4] In January 2013, the California Department of Fish and Game (CDFG) officially changed its name to the California Department of Fish and Wildlife (CDFW). In this document, references to guidance or documents from the department before the name change use CDFG, whereas references after 2012 use CDFW.

other specified requirements with respect to its location. In addition to the retail sellers covered by SB 107, SB X1 2 adds local publicly owned electric utilities to the Renewable Portfolio Standard. By January 1, 2012, the CPUC is required to establish the quantity of electricity products from eligible renewable energy resources to be procured by retail sellers in order to achieve targets of 20% by December 31, 2013; 25% by December 31, 2016; and 33% by December 31, 2020. The statute also requires that the governing boards for local publicly owned electric utilities establish the same targets and that the governing boards be responsible for ensuring compliance with these targets. The CPUC will be responsible for enforcement of the Renewable Portfolio Standard for retail sellers, while the CEC and CARB will enforce the requirements for local publicly owned electric utilities.

Executive Order B-30-15

On April 29, 2015, Governor Jerry Brown issued Executive Order B-30-15. This Executive Order sets a GHG emission target for 2030 at 40% below 1990 levels. The order also addresses the need for climate adaptation and requires state governments to incorporate climate change impacts into their infrastructure plans, identify how climate change will impact California's infrastructure and industry and identify solutions to reduce the risks, and implement measures under existing agency and departmental authority to reduce GHG emissions.

Senate Bill 32

On September 8, 2016, Governor Jerry Brown signed SB 32 that extends the state's target to reduce GHG emissions. The bill mandates a 40% reduction in GHG emissions below 1990 levels by 2030 and essentially builds upon the AB 32 GHG reduction target to reduce GHG to 1990 levels by 2020. To achieve the SB 32 reductions the plan is to increase renewable energy use, improve energy efficiency, get more zero emissions vehicles on California's roadways, and curb emissions from key industries.

3.6.2.3 Local

Northern Sierra Air Quality Management District

The Project is under the jurisdiction of Nevada County, which is within the Northern Sierra Air Quality Management District (NSAQMD). The NSAQMD comprises three contiguous, mountainous, rural counties in northeastern California (Nevada, Sierra, and Plumas Counties). The NSAQMD has not yet established significance thresholds for GHG emissions from project operations and recommends use of the threshold recommended by the neighboring Placer County Air Pollution Control District (PCAPCD). The PCAPCD recommends using a threshold of 10,000 metric tons of CO_2E per year for industrial projects (PCAPCD 2017).

3.6.3 Thresholds of Significance

3.6.3.1 Cumulative Nature of Climate Change

Global climate change is a cumulative impact; a project contributes to this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. There are currently no established thresholds for assessing whether the GHG emissions of an individual project would be considered a cumulatively considerable contribution to global climate change; however, all reasonable efforts should be made to minimize a project's contribution to global climate change.

While the Project would result in emissions of GHGs, no guidance exists to indicate what level of GHG emissions would be considered substantial enough to result in a significant adverse impact on global climate. However, it is generally believed that an individual project is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory, as scientific uncertainty regarding the significance of a project's individual and cumulative effects on global climate change remains.

Thus, GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective (CAPCOA 2008). This approach is consistent with that recommended by the CNRA, which noted in its public notice for the proposed CEQA amendments that the evidence indicates that in most cases, the impact of GHG emissions should be considered in the context of a cumulative impact, rather than a project-level impact (CNRA 2009b). Similarly, the *Final Statement of Reasons for Regulatory Action on the CEQA Amendments* confirms that an Environmental Impact Report (EIR) or other environmental document must analyze the incremental contribution of a project to GHG levels and determine whether those emissions are cumulatively considerable (CNRA 2009a). Accordingly, further discussion of the project's GHG emissions and its impact on global climate is included below.

CEQA Guidelines

The significance criteria used to evaluate potential Project impacts associated with GHG emissions are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to GHGs would occur if the Project would:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Status of Proposed NSAQMD Thresholds

As previously mentioned, the NSAQMD has not established a threshold of significance for construction- or operations-related GHG emissions; however, the NSAQMD has recommended the use of 10,000 metric tons CO_2E per year as a threshold for project operations.

3.6.4 Impacts Analysis

Impact 3.6-1. The Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

The Proposed Project would produce GHG emissions associated with employee vehicles, heavy-duty diesel haul trucks, and off-road diesel equipment. For hauling activities, the GHG emissions were estimated for two different haul scenarios to identify estimated emissions to haul 200,000 tons of material versus emissions estimates to haul 50,000 tons of material. The details and assumptions used to quantify estimated GHG emissions are the same as those discussed in Section 3.2.4, Air Quality Impact Analysis. Electricity consumption for Project operations is anticipated to be negligible.

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate the Proposed Project's annual GHG emissions expressed as metric tons of CO_2E, which includes emissions of CO_2 plus methane (CH_4) and nitrous oxide (N_2O) as adjusted by their corresponding GWP. The GWP is based on the IPCC's 2007 Fourth Assessment Report and is consistent with CARB's 2014 Scoping Plan update (CAPCOA 2016).

Table 3.6-3 presents the estimated annual GHG emissions associated with implementation of the Proposed Project to excavate and transport 50,000 tons of aggregate off-site. Table 3.6-4 presents the estimated annual GHG emissions associated with implementation of the Proposed Project to excavate and transport 200,000 tons of aggregate off-site. See Appendix D for the annual GHG emissions summary results.

Table 3.6-3
Estimated Greenhouse Gas Emissions – 50,000 Tons of Removal (metric tons CO_2E/year)

Phase	Metric Tons of CO_2E/Year
Transport Equipment and Material to Staging Area (Mobilize)	1.43
Establish New Haul Road	17.34
Channelize Creek and Excavate Channel	12.11
Conduct Sediment Removal	250.96
Transport Material to Stockpile Area	86.43
Materials Sorting and Processing	147.97
Off-site Transport of Materials	238.48
Remove Equipment and Material (Demobilize)	1.43
Total	**756**
GHG Emissions Threshold	10,000
Threshold Exceeded?	No

Source: See Appendix D for complete results.

Table 3.6-4
Estimated Greenhouse Gas Emissions – 200,000 Tons of Removal (metric tons CO_2E/year)

Phase	Metric Tons of CO_2E/Year
Transport Equipment and Material to Staging Area (Mobilize)	1.43
Establish New Haul Road	17.34
Channelize Creek and Excavate Channel	12.11
Conduct Sediment Removal	250.96
Transport Material to Stockpile Area	86.43
Materials Sorting and Processing	147.97
Off-site Transport of Materials	953.98
Remove Equipment and Material (Demobilize)	1.43
Total	**1,472**
GHG Emissions Threshold	10,000
Threshold Exceeded?	No

Source: See Appendix D for complete results.

As shown in the both of the above tables, the Proposed Project would not exceed the GHG emissions threshold of 10,000 metric tons CO_2E per year whether the Project removes and hauls 50,000 tons or 200,000 tons of sediment, therefore impacts would be **less than significant**.

Impact 3.6-2. The Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

As discussed above, the Proposed Project is not considered a significant contributor of GHG emissions, and would not result in growth-inducing impacts or substantial population or employment growth in the region that would increase vehicle trips associated with the generation of GHG emissions. Furthermore, Nevada County has not developed a local climate action plan or climate change strategy to which the Project would be subject. Therefore, the applicable plan for this Proposed Project is CARB's 2017 Scoping Plan update that includes goals to reduce GHG emissions from the water sector, focusing on water supply reliability, water conservation, energy efficiency, use of renewable energy, and reduce carbon footprint of water systems and water uses.

The Proposed Project involves the removal of sediment from the Greenhorn Arm of Rollins Reservoir to restore and maintain the water storage capacity. Therefore, implementation of the Propose Project would help ensure a reliable water supply and thus lend to and not conflict with the goals of the 2017 Scoping Plan. Impacts would be **less than significant**.

3.6.5 Mitigation Measures

No significant impacts would occur; therefore, no mitigation is required.

3.6.6 Level of Significance After Mitigation

All impacts related to GHG emissions would be considered **less than significant** without mitigation.

3.6.7 References

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3.7 HAZARDS AND HAZARDOUS MATERIALS

This section describes the existing hazardous materials within the vicinity of the Project site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project). Impacts associated with sediment contaminated with mercury are discussed in Section 3.8 Hydrology and Water Quality.

3.7.1 Existing Conditions

3.7.1.1 Site Description

The Project is located in unincorporated Nevada County, approximately 6 miles north of the City of Colfax on the Greenhorn Arm of Rollins Reservoir. The Project site is approximately 108 acres in size, including the sediment removal area, three staging areas, and the haul/access road. Sediment removal operations will occur in a 49.7-acre area (Work Area), from the southern end of the Hansen Bros. Enterprises' lease boundary, south toward Rollins Reservoir.

3.7.1.2 Site History

Following construction of the Rollins Reservoir Dam in 1965, sediments have accumulated in Rollins Reservoir. An estimated 10,000 acre-feet of storage capacity (17%) has been lost in Rollins Reservoir, which had a capacity of 65,998 acre-feet upon its completion in 1965.

Sediment accumulation in the Greenhorn Arm of Rollins Reservoir can occur very quickly depending on water year type and flows from Greenhorn Creek. In July 2014 sediments extended in the Greenhorn Arm approximately 9,300 feet from the intersection of You Bet Bridge and the existing access/haul road. In late 2016, sediment build-up extended into the main body of the reservoir (extending an additional 980 feet).

In October 2013, NID entered into an agreement with Hansen Bros. Enterprises to remove sediment from the Greenhorn Arm of Rollins Reservoir during record low water levels. During the work, it was discovered that foothill yellow-legged frogs (FYLF) were present along the haul route in the Greenhorn Arm of Rollins Reservoir. Accordingly, work was halted and no sediment removal has occurred sense 2013. Sediment has continued to be deposited in the Greenhorn Arm and subsequently transported into the reservoir during high-flow events.

3.7.1.3 Wildfire Hazard

The Proposed Project is located within a California Department of Forestry and Fire Protection (CAL FIRE) state responsibility area and is designated as a "Very High" fire hazard severity zone (CAL FIRE 2007). Additional information on fire response is located in Section 3.13, Public Utilities and Services, and Section 3.14, Wildfire, of this Environmental Impact Report (EIR).

3.7.2 Relevant Plans, Policies, and Ordinances

3.7.2.1 Federal

Hazardous Waste Management

The Federal Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976 established a program administered by the U.S. Environmental Protection Agency (EPA) for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. The Resource Conservation and Recovery Act was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle to grave" system of regulating hazardous wastes. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act.

Hazardous Substances, Materials, and Waste

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites; provided for liability of persons responsible for releases of hazardous waste at these sites; and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled the revision of the National Contingency Plan, which provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The National Contingency Plan also established the National Priorities List, which is a list of contaminated sites warranting further investigation by the EPA. CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986.

Under Title 40 of the Code of Federal Regulations (CFR), Part 112, specific facilities must prepare, amend, and implement spill prevention control and countermeasure (SPCC) plans. The SPCC rule is part of the Oil Pollution Prevention regulation, the purpose of which is to prevent oil discharges to navigable waters and adjoining shorelines. The SPCC rule applies to facilities that are engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, using, or

consuming oil and that store oil aboveground or belowground in volumes greater than 1,320 U.S. gallons or 42,000 U.S. gallons, respectively. The California EPA has published a fact sheet, dated December 2007, outlining the requirements for preparing and implementing SPCC plans in California.

Department of Transportation

Transportation of hazardous materials is regulated by the U.S. Department of Transportation's Office of Hazardous Materials Safety. The office formulates, issues, and revises hazardous materials regulations under the Federal Hazardous Materials Transportation Law. The hazardous materials regulations cover hazardous materials definitions and classifications, hazard communications, shipper and carrier operations, training and security requirements, and packaging and container specifications. The hazardous materials transportation regulations are codified in 49 CFR 100–185.

The hazardous materials transportation regulations require carriers transporting hazardous materials to receive required training in the handling and transportation of hazardous materials. Training requirements include pre-trip safety inspections, use of vehicle controls and equipment including emergency equipment, procedures for safe operation of the transport vehicle, training on the properties of the hazardous material being transported, and loading and unloading procedures. All drivers must possess a commercial driver's license as required by 49 CFR 383. Vehicles transporting hazardous materials must be properly placarded. In addition, the carrier is responsible for the safe unloading of hazardous materials at the site, and operators must follow specific procedures during unloading to minimize the potential for an accidental release of hazardous materials.

3.7.2.2 State

California Hazardous Waste Control Law

The California Hazardous Waste Control Law is administered by the California EPA to regulate hazardous wastes. While the Hazardous Waste Control Law is generally more stringent than the Resource Conservation and Recovery Act, until the EPA approves the California program, both the state and federal laws apply in California. The Hazardous Waste Control Law lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

The California Code of Regulations (CCR), Title 22, Chapter 11, Article 2, Section 66261, defines hazardous waste as:

> *[A] waste that exhibits the characteristics that may: (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed or otherwise managed.*

According to Title 22 of the CCR, substances having a characteristic of toxicity, ignitability, corrosivity, or reactivity are considered hazardous waste. Hazardous wastes are hazardous substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, or contaminated, or that is being stored prior to proper disposal.

Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability or death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substance involved). Carcinogens (substances known to cause cancer) are a special class of toxic substances. Examples of toxic substances include most heavy metals, pesticides, and benzene (a carcinogenic component of gasoline). Ignitable substances are hazardous because of their flammable properties. Gasoline, hexane, and natural gas are examples of ignitable substances. Corrosive substances are chemically active and can damage other materials or cause severe burns upon contact. Examples include strong acids and bases such as sulfuric (battery) acid or lye. Reactive substances may cause explosions or generate gases or fumes. Explosives, pressurized canisters, and pure sodium metal (which reacts violently with water) are examples of reactive materials.

Other types of hazardous materials include radioactive and biohazardous materials. Radioactive materials and wastes contain radioisotopes, which are atoms with unstable nuclei that emit ionizing radiation to increase their stability. Radioactive waste mixed with chemical hazardous waste is referred to as “mixed wastes.” Biohazardous materials and wastes include anything derived from living organisms. They may be contaminated with disease-causing agents, such as bacteria or viruses.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the work place. Cal/OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure

(8 CCR 337–340). The regulations specify requirements for employee training, availability of safety equipment, accident prevention programs, and hazardous substance exposure warnings.

Cal/OSHA is the agency responsible for enforcement of the construction safety orders of 8 CCR 1529 related to asbestos removal and cleanup. Section 1529 regulates construction-related asbestos exposure involving demolition of structures, removal of asbestos-containing materials, asbestos cleanup, or excavation activities that may involve exposure to asbestos.

State Water Resources Control Board

The State Water Resources Control Board protects water quality in California by setting statewide policy. The State Water Resources Control Board supports the nine Regional Water Quality Control Boards, which, within their areas of jurisdiction, protect surface and groundwater from pollutants discharged or threatened to be discharged to the waters of the state. This protection is carried out by the Regional Water Quality Control Boards through the issuance and enforcement of National Pollutant Discharge Elimination System permits, regulation of leaking underground storage tanks and contaminated properties through the Leaking Underground Storage Tank program and the Spills, Leaks, Investigation, and Cleanup program, respectively. Underground storage tanks are regulated under Chapter 6.7 of the California Health and Safety Code and 23 CCR 16.

California Health and Safety Code

The handling and storage of hazardous materials is regulated on the federal level by the EPA under CERCLA, as amended by SARA. Under SARA Title III, a nationwide emergency planning and response program was established that imposed reporting requirements for businesses which store, handle, or produce significant quantities of hazardous or acutely toxic substances as defined under federal laws. SARA Title III requires each state to implement a comprehensive system to inform federal authorities, local agencies, and the public when a significant quantity of hazardous, acutely toxic substances are stored or handled at a facility.

Ammonia is an example of an acutely hazardous material that is regulated by the California Office of Emergency Services under the California Accidental Release Program, the EPA under the Risk Management Program (40 CFR 68), and the OSHA under the Process Safety Management Program (OSHA 1910.119). The California Accidental Release Program and Risk Management Program require that all facilities that store, handle, or use acutely hazardous materials above a minimum quantity, known as the threshold planning quantity, are required to develop a plan and prepare supporting documentation that summarizes the facility's potential risk to the local community and identifies safety measures to reduce potential risks to the public.

In California, the handling and storage of hazardous materials is regulated by Chapter 6.95 of the California Health and Safety Code. Under Sections 25500–25543.3, facilities handling hazardous materials are required to prepare a hazardous materials business plan (HMBP). The plan provides information to the local emergency response agency regarding the types and quantities of hazardous materials stored at a facility and provide detailed emergency planning and response procedures in the event of a hazardous materials release. In the event that a facility stores quantities of specific acutely hazardous materials above the thresholds set forth by the California code, facilities are also required to prepare a Risk Management Plan and California Accidental Release Plan, which provides information on the potential impact zone of a worst-case release and requires plans and programs designed to minimize the probability of a release and mitigate potential impacts.

In California, transportation of hazardous waste is regulated under Chapter 6.5 of the California Health and Safety Code. Under Section 21560, hazardous waste generators must complete a manifest for the waste before it is transported or offered for transportation. A manifest is a shipping document that is signed by the hazardous waste generator and contains the necessary information to be in compliance with all state and federal regulations. The purpose of the manifest is to allow for the waste to be tracked from point of origin through point of disposal and for the generator or regulatory agency to verify that the waste is properly delivered without incurring any loss along the way. The enforcement agencies for the transportation of hazardous materials regulations are the California Highway Patrol and California Department of Transportation (Caltrans).

3.7.2.3 Local

Nevada County Department of Environmental Health

The Nevada County Department of Environmental Health (DEH) is the Certified Unified Program Agency for all cities and unincorporated areas within Nevada County. The DEH is responsible for carrying out a diverse range of programs with environmental protection and public health as their focus. The DEH uses California Health and Safety Codes as guidance, as well as county codes, when conducting plan reviews and inspections.

Hazardous Materials Business Plan

The purpose of the HMBP is to provide information to not only emergency response personnel such as fire and police departments, but also to the employees as to the type, quantity, and location of hazardous materials stored on site, emergency response capability of the business, and procedures for the employees. Businesses must complete an HMBP for the safe storage and use of chemicals. In general, a business must submit an HMBP if it stores/handles hazardous material equal to or greater than the minimum reportable quantities, which are 55 gallons of a liquid, 200 standard cubic feet of a compressed gas, or 500 pounds of a solid.

Nevada County Multi-Hazard Mitigation Plan (2006)

The Multi-Hazard Mitigation Plan for Nevada County is a multi-jurisdictional plan that identifies the goals, objectives, and measures for hazard mitigation and risk reduction for disasters such as earthquakes, flooding, dam or levee failure, hazardous material spills, fires, severe weather, and airborne hazards.

Nevada County Local Hazard Mitigation Plan (2011–2016)

The Local Hazard Mitigation Plan (LHMP) for the Nevada County is a document that provides the participants with a clear understanding of local risks and mitigation plans for reducing or eliminating long-term risk to people and property from natural and human-caused hazards. The Nevada LHMP identified the greatest hazard risks and vulnerabilities to Nevada County as those associated with wildland fire and flood. Hazardous materials incidents were found to be the greatest human-caused risk to the County. This document is currently being updated.

Nevada County and Nevada Operational Area Emergency Operations Plan

The Nevada County and Nevada Operational Area Emergency Operations Plan, published in June 2011, describes the organization, responsibilities, and concept of operations of the Emergency Services Organization, and delineates responsibilities for each county department, agency, office, and individual in response to and recovery from a natural disaster or a man- caused incident. The Emergency Operations Plan provides the guidelines needed for emergency response planning, training, and execution throughout Nevada County. The plan also comprises the standard operating procedures for the flow of information and data within the Emergency Operations Center.

3.7.3 Threshold of Significance

The significance criteria used to evaluate the Project impacts related to hazards and hazardous materials are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.). According to Appendix G, a significant impact related to hazards and hazardous materials would occur if the project would:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

4. 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 result, would is create a significant hazard to the public or the environment.
5. 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.
6. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
7. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

3.7.4 Impacts Analysis

Impact 3.7-1. The project would create a potential hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

During implementation of the Proposed Project, hazardous materials would be used at the site. Fuel would be transported and stored onsite to power construction vehicles and equipment which also contain oils and lubricants. These types of hazardous materials are not acutely hazardous as defined in federal regulations. When used properly, the types and amounts of hazardous materials that would be used for the Project would not pose a substantial health risk to construction workers and the public.

Fuel will be stored in a mobile tanker truck at SA-1 and SA-3 (only in years when the sediment barrier is installed or relocated). Fuel storage and vehicle fueling will occur in designated areas outside of the Ordinary High Water Mark (OHWM) and secondary containment structures will be in place. Any pumps, generators, or other stationery equipment that must be fueled on the dewatered creekbed will be placed on secondary containment structures to avoid soil/water contamination. The use, storage, transportation, and disposal of hazardous materials is highly regulated, and Nevada County requires project construction contractors to comply with all applicable laws and regulations, including preparation of a HMBP and Spill Prevention Control and Countermeasure Plan (SPCCP) prior to implementation of the Project, and implementation of Best Management Practices in accordance with the stormwater pollution prevention plan during Project activities to protect water quality (refer to Section 3.8 Hydrology and Water Quality).

Impacts associated with the transport, use, and disposal of hazardous materials would be potentially significant. With implementation of existing laws and regulations pertaining to hazardous materials use, which would be monitored and enforced by the County during construction activities, and mitigation measures MM-HAZ-1 through MM-HAZ-3, the Proposed Project would not result in or

create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials and impacts would be **less than significant**.

Impact 3.7-2. The project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

The Project requires the transport of fuels to the Project site and use of motor vehicles and equipment within the Greenhorn Arm of Rollins Reservoir. During Project activities, there is potential for hazardous materials to be released, including gasoline, diesel fuel, oil, hydraulic fluid, and lubricants from vehicles and other equipment. Spills and leaks of hazardous materials during Project activities could potentially result in environmental contamination, including soil, surface water, or groundwater contamination. Such an event could potentially result in exposure of construction workers and the public to hazardous materials. In addition, spillage of fuels or other hazardous materials could result in contamination of Rollins Reservoir when the reservoir fills following annual sediment removal. Impacts associated with the release of hazardous materials into the environment would be potentially significant. As described above, in order to minimize the risk of release of hazardous materials, NID will implement mitigation measures MM-HAZ-1 through MM-HAZ-3 reducing impacts to **less than significant**.

Excavated, dewatered sediment will be hauled off site for disposal/use. Based on the known historical environmental impacts of mining in the watershed, sediments could potentially contain metals that are considered hazardous to human health. A pre-Project investigation and sampling of sediments was conducted on March 4, 2019. Sediment samples, which were collected during high water conditions, were collected as grab samples from twelve locations within the Project Site. These samples were evaluated for both inorganics and organics. The total metals concentrations detected in the sediment samples were below the corresponding Total Threshold Limit Concentration (TTLC) values for designation of hazardous waste in California. Complete sediment sampling results are provided in Appendix E. As required by MM-HAZ-4, NID will continue to conduct sediment sampling throughout implementation of the Project to ensure proper disposal of excavated or dredged sediments. This measure requires sampling and analysis of the soil for metals, and comparison of the results to applicable health screening levels. The results of this analysis would indicate the best disposal or use options for the sediments. If sediment is to be disposed of in a landfill, no further restrictions on disposal are required, since landfills operate under their own Waste Discharge Requirements (WDR) and/or National Pollutant Discharge Elimination System (NPDES) permits that are designed to protect water quality. If sediment is to be reused:

- If concentrations exceed Hazardous Waste Thresholds, the sediment will be disposed of in accordance with relevant hazardous waste regulations.

- If concentrations of all metals are below Hazardous Waste Thresholds, no restrictions on reuse will be implemented.

If concentrations of individual metals exceed Human Health Screening Levels or Regional Screening Levels, but not Hazardous Waste Thresholds, the sediment will only be reused on a site where the native soil contains equivalent or higher concentrations of these metals. That is, soil will be sampled and tested for metals for which the sediment exceeds the above thresholds at the proposed disposal/reuse site and compared to the concentrations in the sediment. If the native soil metals concentrations are higher than the sediment concentrations, the sediment can be reused/disposed of without further characterization. With incorporation of MM-HAZ-4, this impact would be **less than significant**.

Impact 3.7-3. The project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

No schools or known proposed schools are located within one-quarter mile of the Project (Nevada County 2017), therefore, **no impact** would occur.

Impact 3.7-4. The project would not 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 result, would create a significant hazard to the public or the environment.

A search of the California Department of Toxic Substances Hazardous Waste and Substances Sites (Cortese) List indicates that the Proposed Project is not located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (CA DTSC 2017), therefore, **no impact** would occur.

Impact 3.7-5. The project is not located within an airport land use plan or within two miles of a public airport or public use airport, and would not result in a safety hazard for people residing or working in the project area.

The Project site is not located within an airport land use plan or within two miles of a public airport. Therefore, the Project would not result in safety hazards for people residing in the Project vicinity and **no impact** would occur.

Impact 3.7-6. The project would not impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Access to and from the Project site would be via Highway 174 to either You Bet Road or Greenhorn Access Road, depending on the activities being carried out and the phase of the Project.

Truck trips along these routes would increase as a result of the Project and this is discussed in Section 3.12 Traffic/Transportation. Section 3.12 also includes a discussion of emergency access impacts and the potential for truck deliveries to obstruct traffic flow in the Project vicinity. To reduce impacts on the local transportation system, NID will be required to implement a Traffic Control Plan (MM-TRA-2) which will include a requirement to provide notification to administrators of police and fire stations, and ambulance service providers of the timing, location, and duration of Project activities and impacts to local roadways; and to maintain access for emergency vehicles in and/or adjacent to roadways affected by Project activities at all times. In addition, the Project will be required to adhere to adopted emergency response and evacuation plans. Therefore, with implementation of mitigation, the Project would not impair or physically interfere with the County's evacuation plan and impacts would be **less than significant**.

Impact 3.7-7. The project may directly expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

The Project is located within a high fire hazard zone. In the event of a fire, the nearest fire stations are Fire Station No. 257 located at 15057 Highway 174, Grass Valley (approximately 3 miles from SA-1), and Fire Station No. 57 located at 18934 Highway 174, Colfax (approximately 5.8 miles from SA-1). The Project would not introduce new residents or residential structures to the area. It would introduce small accessory structures, including a construction trailer, portable toilets, and equipment and fuel storage. Project activities, including the use of equipment and haul trucks, introduces a potential fire risk, given the high hazard rating of the surrounding area. During the fire season, which would coincide with Project activities, this is considered a potentially significant impact. Refer to Section 3.14, Wildfire, for additional discussion of the potential for wildfire associated with implementation of the Project. With implementation of MM-HAZ-5, impacts associated with wildland fires risk would be **less than significant**.

3.7.5 Mitigation Measures

The following mitigation measures will be implemented as part of the Project to reduce potentially significant impacts to a **less-than-significant** level.

MM-HAZ-1 Annually, prior to Project implementation, all contractor and subcontractor personnel shall receive training regarding the appropriate work practices necessary to effectively comply with the applicable environmental laws and regulations, including, without limitation, hazardous materials spill prevention and response measures.

MM-HAZ-2 An HMBP will be prepared and implemented. The HMBP will be consistent with Nevada County requirements and will incorporate industry standard best management practices (e.g., Department of Water Resources' best management practices). The plan will:

- Identify all hazardous materials.
- Identify spill response materials.
- Specify procedures for notification and reporting, including internal management and local agencies (e.g., fire department, DEH), as needed.
- Specify measures to protect worker and public health and safety.
- Specify measures to manage and remediate waste, as needed.

MM-HAZ-3 A SPCCP will be prepared and implemented. The SPCCP will be consistent with Nevada County requirements and will incorporate industry standard best management practices (e.g., Department of Water Resources' best management practices). The plan will:

- Detail fuel storage areas.
- Identify measures to limit and control fuel spills, including use of bermed storage areas, equipment inspections, fueling and refueling procedures.
- Describe the use and placement of spill kits.
- Specify reporting requirements in the event of a spill.

MM-HAZ-4 NID will implement the following to ensure appropriate disposal of excavated or dredged sediments:

- In order to determine acceptable reuse and/or disposal procedures, sediment shall be sampled and analyzed to assess sediment quality and identify any potential hazards to the public or environment during excavation, transportation, and reuse and/or disposal of the sediment.
  - Based on the known historical environmental impacts of mining in the watershed, characterization of the sediment shall be limited to metals listed in the RWQCB General Order for Maintenance Dredging (R5-2009-0085) as the primary constituents of concern.
  - Approximately one sample will be taken per 2,000 cubic yards of sediment removed.

  - Results of the sediment sampling will be compared to applicable health screening levels issued by State and federal agencies that include:
    - Hazardous Waste Thresholds (Title 22 Chapter 11 of CCR),
    - California Office of Environmental Health Hazard Assessment Human Health Screening Levels, and
    - Federal EPA Regional Screening Levels.
- Disposal/reuse of dredged sediment may be subject to WDR, and/or a waiver of WDRs for disposal of dredge material to land.
- If sediment is to be disposed of in a landfill, no further restrictions on disposal are required, since landfills operate under their own WDR and/or NPDES permits that are designed to protect water quality.
- If sediment is to be reused:
  - If concentrations exceed Hazardous Waste Thresholds, the sediment will be disposed of in accordance with relevant hazardous waste regulations.
  - If concentrations of all metals are below Hazardous Waste Thresholds, no restrictions on reuse will be implemented.
  - If concentrations of individual metals exceed Human Health Screening Levels or Regional Screening Levels, but not Hazardous Waste Thresholds, the sediment will only be reused on a site where the native soil contains equivalent or higher concentrations of these metals. That is, soil will be sampled and tested for metals for which the sediment exceeds the above thresholds at the proposed disposal/reuse site and compared to the concentrations in the sediment. If the native soil metals concentrations are higher than the sediment concentrations, the sediment can be reused/disposed of without further characterization.

MM-HAZ-5 The District will develop a Project-specific Fire Plan in consultation with the fire department. The Fire Plan will include (but is not limited to) the following:

- Appropriate contacts and procedures to be followed in case of a fire-related emergency.
- Vehicles will not be parked and equipment will not be placed in areas where dry vegetation could be ignited.

- Project work and staging areas, including the stockpiles, fuel and equipment storage, the office trailer, and accessory buildings, shall be cleared of dried vegetation or other materials that could serve as fire fuel.
- Any vehicles or equipment that normally include a spark arrester shall be equipped with an arrester in good working order.
- Vehicles will be required to carry small fire extinguishers and other equipment, as required by the fire department, while traveling throughout the site.

3.7.6 Level of Significance After Mitigation

MM-HAZ-1 through MM-HAZ-3 describe the planning, training, and cleanup operations for potential hazardous material spills. Implementation of these measures would reduce the potential chance that the Project would create a potential hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials to **less than significant**.

MM-HAZ-4 describes the methods to be used to assess sediment quality and identify any potential hazards, and disposal options based on testing results. Implementation would reduce the potential chance that the Project would create a potential hazard to the public or the environment during excavation, transportation, and reuse and/or disposal of sediment to **less than significant**.

MM-HAZ-5 would reduce the potential effects of the Project exposing 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 to **less than significant**.

3.7.7 References

Battelle. 2001. *Comparative Risks of Hazardous Materials and Non-Hazardous Materials Truck Shipment Accidents/Incidents* Final Report. Prepared for the Federal Motor Carrier Safety Administration. Columbus, Ohio: Battelle. March 2001.

CA DTSC (California Department of Toxic Substances Control). 2017. Accessed March 24, 2017. http://www.dtsc.ca.gov/.

CAL FIRE (California Department of Forestry and Fire Protection). 2007. *Nevada County Fire Hazard Zones in SRA*. November 7, 2007. Accessed April 5, 2019. hhttp://frap.fire.ca.gov/webdata/maps/el_dorado/fhszs_map.9.pdf.

Nevada County. 2017. My Neighborhood Interactive Map Portal. Accessed April 6, 2017. https://www.mynevadacounty.com/580/My-Neighborhood-Map

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3.8 HYDROLOGY AND WATER QUALITY

This section describes existing hydrology and water quality, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project).

3.8.1 Existing Conditions

3.8.1.1 Regional Setting and Climate

The Project Site is located at an elevation of approximately 2,200 feet above mean sea level (msl) in the western foothill region of the Sierra Nevada. Regionally, the area is known as being part of a northwest-trending belt of metamorphic rocks that contains gold-bearing quartz veins (i.e., the Mother Lode) (CGS 2002). The general setting is characterized by steep river canyons, mixed coniferous forests, relatively moderate temperatures, and distinct wet and dry seasons. The average annual rainfall in the watershed[1] is about 60 inches per year (PRISIM[2] data). Precipitation in the Project vicinity mostly occurs between the months of November and April, predominantly in the form of rain. Accumulating snowfall in the winter and convective thunderstorms in the summer do occur in the Project vicinity, albeit rarely. Regionally, all watersheds on the western slope of the Sierra Nevada drain toward the Sacramento and San Joaquin Valleys, eventually reaching the San Francisco Bay and Pacific Ocean.

3.8.1.2 Surface Water Features and Facilities

The perennial[3] surface water features in the Project vicinity include Greenhorn Creek and Rollins Reservoir. Rollins Reservoir was created in 1965 by Rollins Dam, which impounded the Bear River and Greenhorn Creek. The original capacity of the reservoir was 65,998 acre-feet (AF). Approximately 17% of the storage capacity has been lost due to sedimentation, primarily from sediment inflows in the Bear River and Greenhorn arms of the reservoir. The reservoir is used for hydroelectric generation, agriculture and municipal water supply, flood control, and recreation. Greenhorn Creek is an unimpaired creek flowing into Rollins Reservoir. The Bear River provides the primary inflow to Rollins Reservoir. The Bear River is highly regulated through a system of dams, diversions, canals, conduits, and powerhouses that collectively make up Nevada Irrigation

[1] A *watershed* is an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel. The word watershed is sometimes used interchangeably with drainage basin or catchment.

[2] Parameter-elevation Regression on Independent Slopes Model (PRISM) total precipitation data obtained from the PRISM Climate Group (http://prism.oregonstate.edu/).

[3] A *perennial stream* or *perennial river* is a stream or river (channel) that has continuous flow in parts of its stream bed all year round during years of normal rainfall.

District's (NID's) Yuba-Bear River Hydroelectric Project and Pacific Gas & Electric's Drum–Spaulding Project.

The Project Site (Maps 2-1 and 2-2) includes Greenhorn Creek (a perennial stream) from You Bet Road to Rollins Reservoir. The length of the stream from You Bet Road to the Hansen Bros. Enterprises Lease Boundary (Map 2-2) is approximately 1.3 miles. The length of the stream in the Work Area (defined as the area where sediment removal and associated activities will occur), from Hansen Bros. Enterprises Lease Boundary to Rollins Reservoir, is approximately 0.7 mile. However, during the spring/early summer Greenhorn Creek the Work Area is typically inundated by Rollins Reservoir. Due to the low gradient of the stream in this location, seemingly minor changes in reservoir level produce considerable changes in the location of the reservoir shoreline (see Section 3.8.1.4, Hydrology).

3.8.1.3 Watershed Characteristics

Surface water in the Project Site originates in the Greenhorn Creek Watershed (approximately 40 square miles). The hillsides on either side of the Project Site also contribute a small amount of runoff. The headwater of Greenhorn Creek is located approximately 12 miles northeast of the Project Site, where elevations reach approximately 4,600 feet msl. The channel gradient is 0.23% in the Work Area (lower portion of Greenhorn Creek) and increases to 1.76% 8 miles upstream and >8% in the headwaters (14 miles upstream) (Table 3.7-1 and Figure 3.7-1). The lower 8 miles of channel are partially filled with historic debris from either natural or mining tailings.

Table 3.8-1Greenhorn Creek Channel Gradient (%)

Mile	Elevation	% Gradient
0	2170	--
1	2182	0.23
2	2212	0.57
3	2263	0.97
4	2301	0.72
5	2352	0.97
6	2453	1.91
7	2517	1.21
8	2610	1.76
9	2740	2.46
10	2931	3.62
11	3264	6.31
12	3722	8.67
13	4130	7.73
14	4560	8.14

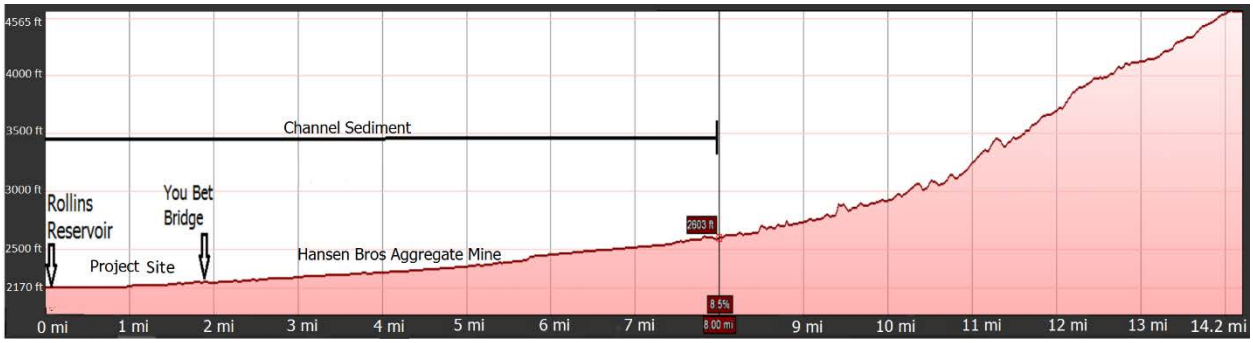

Figure 3.8-1 Greenhorn Creek Channel Elevation/Gradient

The watershed has been profoundly impacted by large-scale historic mining of Tertiary river channel placer gold deposits. The historic mining used hydraulic methods that transported large amounts of sediment debris into the river channels. Figure 3.8-2 shows an aerial image (2017) of the watershed and an overlay image of historical hydraulic mining areas (map from James 1989). Hydraulic mining began in approximately 1852 and continued through 1884 when it became illegal to discharge mining sediment into navigable waters. A few large hydraulic mining operations remained until approximately 1890 (James 1989). Sediment produced and stored in the upper Bear River Basin is estimated at 60 to 90 million cubic yards. The gold-bearing deposits ranged from 1 to 4 miles wide and up to 600 feet thick in portions of the Greenhorn Creek Watershed. Greenhorn Creek and its tributaries drain three principal mining areas (Quaker Hill, Red Dog, and You Bet) which contributed a large percentage of the total mining debris sediment (Alpers et al. 2005).

As a result of early mining activities, sediment filled the Greenhorn Creek Valley to depths of approximately 30 to 90 feet (e.g., James 1989). While erosion of the original aggraded valley sediment has occurred in narrower, steeper sections of the valley where tributary sediment deltas join the main channel, large volumes of sediment (essentially a "river" of sediment) currently fill Greenhorn Creek from valley wall to valley wall for approximately the lower 8 miles of Greenhorn Creek (see Figures 3.8-1, 3.8-2, and 3.8-3). Figure 3.8-3 shows the mining debris in the Project vicinity (also see Figure 3.3-1 in Section 3.3, Biological Resources). James (1989) estimated from quartz concentrations in the sediment that 70 to 85% of the sediment in the Greenhorn Creek Delta at Rollins Reservoir is mining debris sediment.

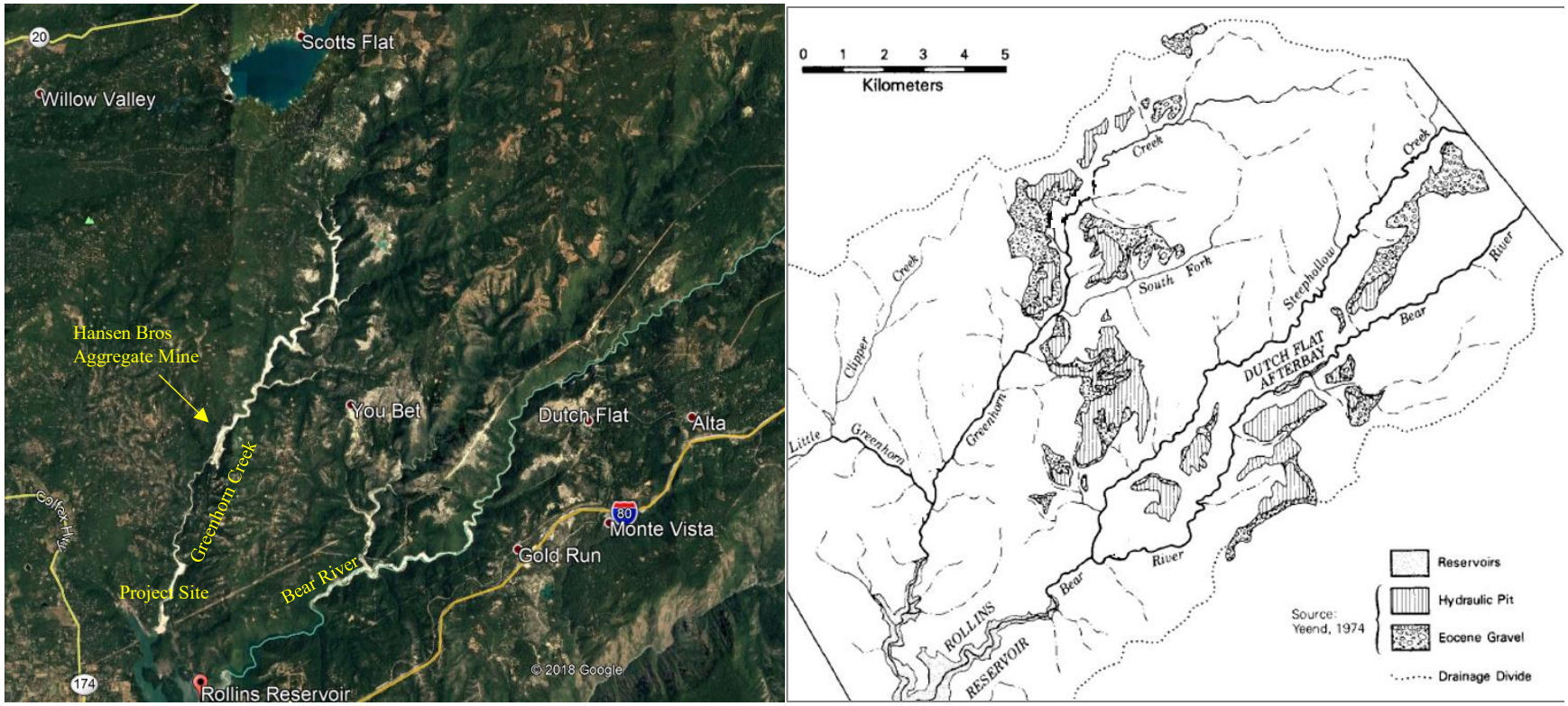

Figure 3.8-2 Aerial Photograph of the Greenhorn Creek Watershed (left) and Overlay Image (right) of Historical Hydraulic Mining Areas (Map from James 1989)

Figure 3.8-3 Aerial Photograph of Lower Greenhorn Creek Showing Sediment in the Work Area in the Greenhorn Arm of Rollins Reservoir and Further Upstream in the Project Site

A description of the historic pristine placer gravel along Greenhorn Creek in 1849 reveals that naturally there was little alluvium present in Greenhorn Creek prior to the historical mining debris aggradation:

> *"The gold bearing gravel is contained and only found in a small 'bar', rarely more than a few feet wide and not over two feet deep to the solid or bed rock, and is so filled with boulders or detached rounded masses of all dimensions, that the wash-gravel is probably less than a fourth or fifth part of the mass."*
> *(Wistar 1914; cited in James 1989)*

Currently, there is an aggregate mine, Hansen Bros. Enterprises Greenhorn Aggregate Mine, operating in Greenhorn Creek that removes natural and historical mining sediment from the 100-year floodplain each year (April to December) during periods of low flow. The mine has processed 200,000 to 600,000 tons of sediment per year for the last 35 years. Each year, after high flows recede, Hansen Bros. installs low elevation gravel berms to divert the braided channels of Greenhorn Creek into one main stream channel. In some locations, temporary channel crossings are installed for equipment to traverse and access the floodplain without entering the stream. Harvesting of sand and gravel is then conducted in the floodplain, typically using paddle wheel scrapers, at least 25 feet from the channel. The aggregate mine depends on annual transport of natural and historical mining sediments from upstream, to be transported downstream (during high flows) and replenish the sediment supply in the aggregate mining area.

3.8.1.4 Hydrology

Greenhorn Creek

No historical or current flow gages are present in Greenhorn Creek. Table 3.8-2 provides estimates of the 2-, 5-, 10-, 25-, and 50-year recurrence interval flows for lower Greenhorn Creek near the Work Area (Gotvald 2012). The 2-year recurrence interval is 1,877 cubic feet per second (cfs). James (1989) estimated 2,300 cfs, approximately 20% higher flows, for the same recurrence interval. Relatively high flow events occur in the creek due primarily to rainfall in the winter and spring. Summer and fall flows in the creek are very low. During the summer of 2017 flows were less than approximately 2 cfs (Figure 3.8-4).

Table 3.8-2
Flood Recurrence Interval for Greenhorn Creek near Rollins Reservoir Confluence

Flood Recurrence Flow (cfs)	Flood Recurrence Interval (yrs)	Percent Annual Exceedance Probability (%)	Drainage Area (40 mi²)	Elevation (3,100 ft)	Precipitation (60 in)
			Equations		
11,121	100 yr	1%	$20.6(DRNAREA)^{0.874}(ELEV)^{-0.250}(PRECIP)^{1.24}$		
9,091	50 yr	2%	$21.1(DRNAREA)^{0.879}(ELEV)^{-0.316}(PRECIP)^{1.31}$		
7,207	25 yr	4%	$20.7(DRNAREA)^{0.885}(ELEV)^{-0.386}(PRECIP)^{1.39}$		
5,159	10 yr	10%	$17.2(DRNAREA)^{0.896}(ELEV)^{-0.486}(PRECIP)^{1.54}$		
3,667	5 yr	20%	$11.6(DRNAREA)^{0.907}(ELEV)^{-0.566}(PRECIP)^{1.70}$		
1,877	2 yr	50%	$2.43(DRNAREA)^{0.924}(ELEV)^{-0.646}(PRECIP)^{2.06}$		

Source: Equations (Gotvald 2012)
Notes:
GIS = Area and Mean Elevation
PRISM data = Precipitation

Figure 3.8-4 Greenhorn Creek in the Project Site (Summer 2017) with a Discharge of Approximately 2 cfs.

Rollins Reservoir

Rollins Reservoir's storage and elevation varies based on runoff (primarily Bear River and Greenhorn Creek), water demands, and electric demands. The maximum water surface elevation of Rollins Reservoir is approximately 2,178 feet msl (Figure 3.8-5). The elevation of the Rollins Reservoir spillway is 2,171 feet msl (Alpers 2005). Late summer minimum elevation and storage of the reservoir varies considerably. Figure 3.8-5 and Table 3.8-3 show historical reservoir elevation and storage data. Monthly maximum, minimum, and average reservoir elevation data illustrate the seasonality of water levels in the reservoir.

The elevation of the sediment delta in the Greenhorn Arm of Rollins Reservoir (Work Area) is in approximately 2,170 feet msl. In the gage record, reservoir storage has been low as 2,040 ft msl and typically in the late summer/fall the elevation is between 2,140 and 2,160 feet msl, thus leaving 10 to 30 feet of delta sediment exposed above the reservoir water surface elevation.

3.8.1.5 Geomorphology

Sediment transport (reworking of natural sediment and historic mine tailings in Greenhorn Creek), during high winter and spring flows has resulted in the movement of sediment/tailings from Greenhorn Creek Watershed into Rollins Reservoir, creating a large delta area and reducing water storage capacity in the reservoir. The sediment in the upstream portion of the watershed is readily available and easily transported by high flows in the active channel. Sustained high transport rates are observable by field evidence of sediment mobility (erosion, deposition), including erosion and deposition at channel cross-sections, erosion at terrace-scarps, braiding of the channel, and sedimentation in the delta in the Greenhorn Creek Arm of Rollins Reservoir. The amount of sediment transport is only limited by the availability of natural high flows to move the sediment. This is in contrast to pre-mining sediment transport rates, which were constrained by the limited availability of fine-grained sediment. James (1989) estimated (using cross-sections and transport calculations) that flow at much less than the 2-year flow exceedance event have the capacity to transport significant volumes of sediment. He also documented significant aggradation in the lower Greenhorn Creek due to the downstream movement of sediment. Figure 3.8-6 shows visually the large extension of the sediment delta into the Greenhorn Creek Arm of Rollins Reservoir over the past 24 years (1993 to 2017).

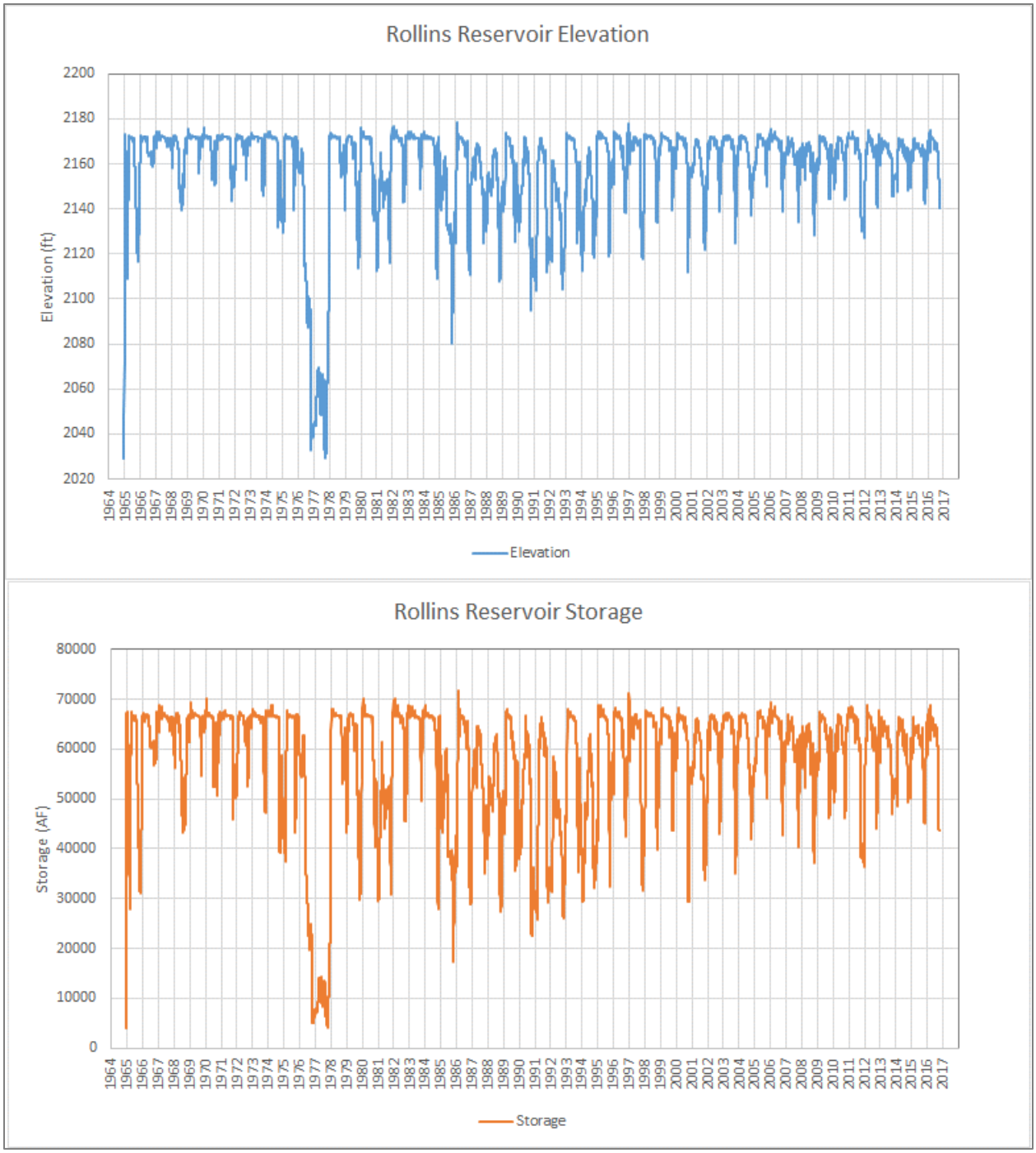

Figure 3.8-5 Historic Rollins Reservoir Elevation and Storage (1964–2016)

Table 3.8-3
Monthly Statistics for Reservoir Storage in Rollins Reservoir[1]

Month	Maximum Storage (AF)	Minimum Storage (AF)	Average Storage (AF)	Maximum Stage (feet)	Minimum Stage (feet)	Average Stage (feet)
January	71,300	6,410	56,735	2177.9	2039.2	2157.0
February	71,700	7,490	59,337	2178.5	2043.7	2160.7
March	68,900	9,070	61,883	2174.7	2050.1	2164.6
April	68,900	12,500	63,266	2174.7	2063.1	2166.6
May	67,900	10,100	63,366	2173.4	2054.1	2166.7
June	66,900	8,590	62,135	2172.1	2048.2	2164.8
July	66,800	10,800	60,717	2172.0	2056.8	2162.9
August	66,700	7,600	58,975	2171.8	2044.2	2160.5
September	66,700	4,880	54,230	2171.8	2032.7	2153.8
October	66,900	4,250	43,735	2172.1	2029.9	2137.2
November	67,800	5,000	50,538	2173.3	2033.2	2147.3
December	69,900	4,080	53,707	2176.1	2029.1	2152.5

Source: Daily data averaged by month for the period from December 1964 to July 2017 (USGS Gage 11421800)
[1]The elevation versus storage relationship was derived from the available elevation versus storage data provided by NID recorded between 1968 and 2016; Elevation = 3.10054897E-13* Storage ^{3} - 5.82296711E-08*Storage^2 + 4.93176856E-03*Storage + 2.00994052E+03).

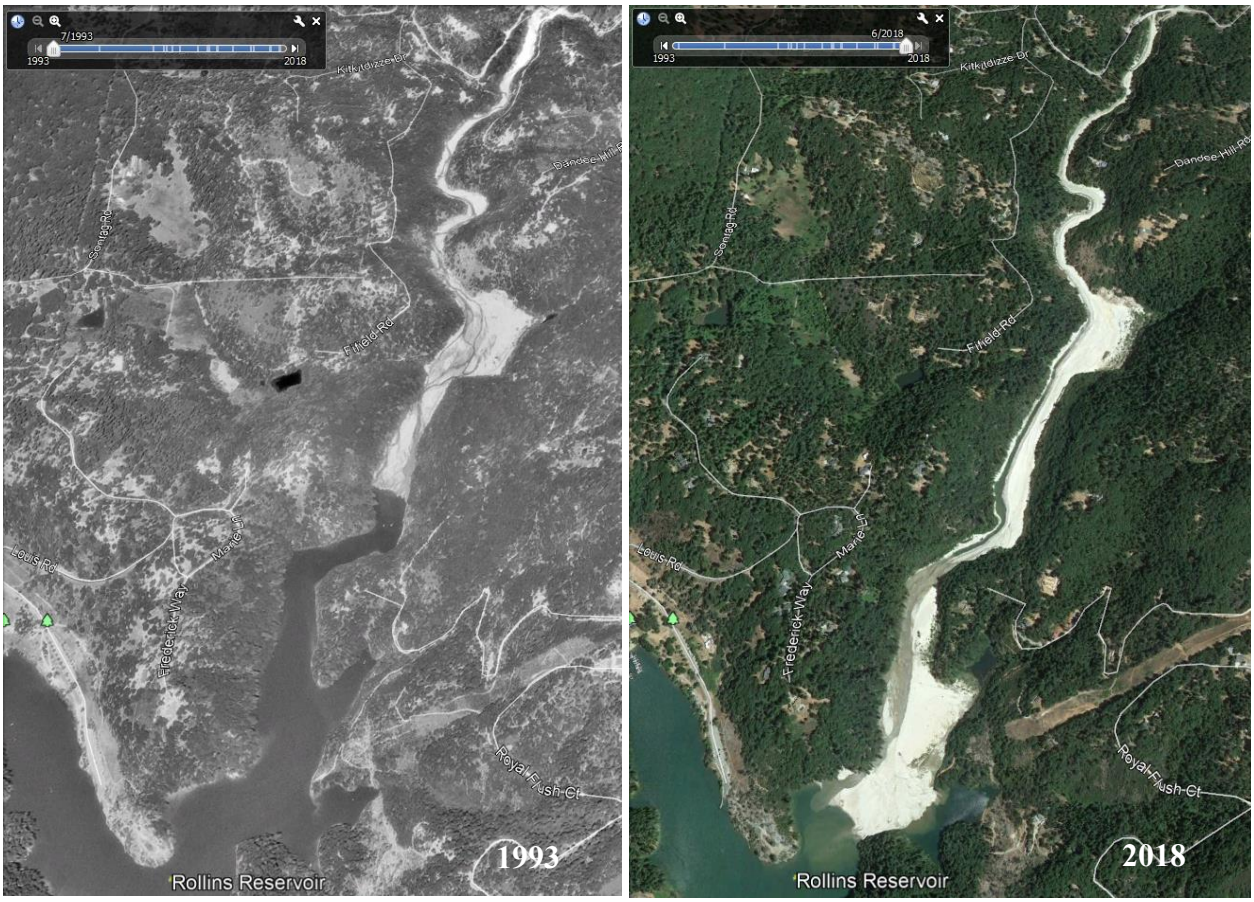

Figure 3.8-6 Historic Greenhorn Creek Arm of Rollins Reservoir Sediment in 1993 (65,900 AF, elevation 2,179.8 ft) (left) and in 2017 (62,800 AF, elevation 2,166.8 ft) (right).

The typical annual geomorphic processes that occur in Greenhorn Creek follow two steps:

- High winter/spring flow events provide transport capacity to move sediment downstream and laterally rework the Greenhorn Creek channel and the valley floor creating a relatively flat, braided channel and valley floor.
- During receding flows the active channel stabilizes into one or a few active channels that transport the base summer/fall flows of Greenhorn Creek. This channel(s) remains in place throughout the summer/fall until high winter/spring flows again occur in the creek.

3.8.1.6 Flood Hazards

The Project is within a Federal Emergency Management (FEMA) Special Flood Hazard Area. FEMA Flood Insurance Rate Map Panel 06057C0675E (effective date February 3, 2010) shows the Special Flood Hazard Area as Zone A (Figure 3.8-7). Zone A designation means the area is subject to inundation by the 1% annual chance flood event (i.e., 100-year flood), but FEMA did not do the detailed hydraulic analysis necessary to determine precise base flood elevations or flood depths.

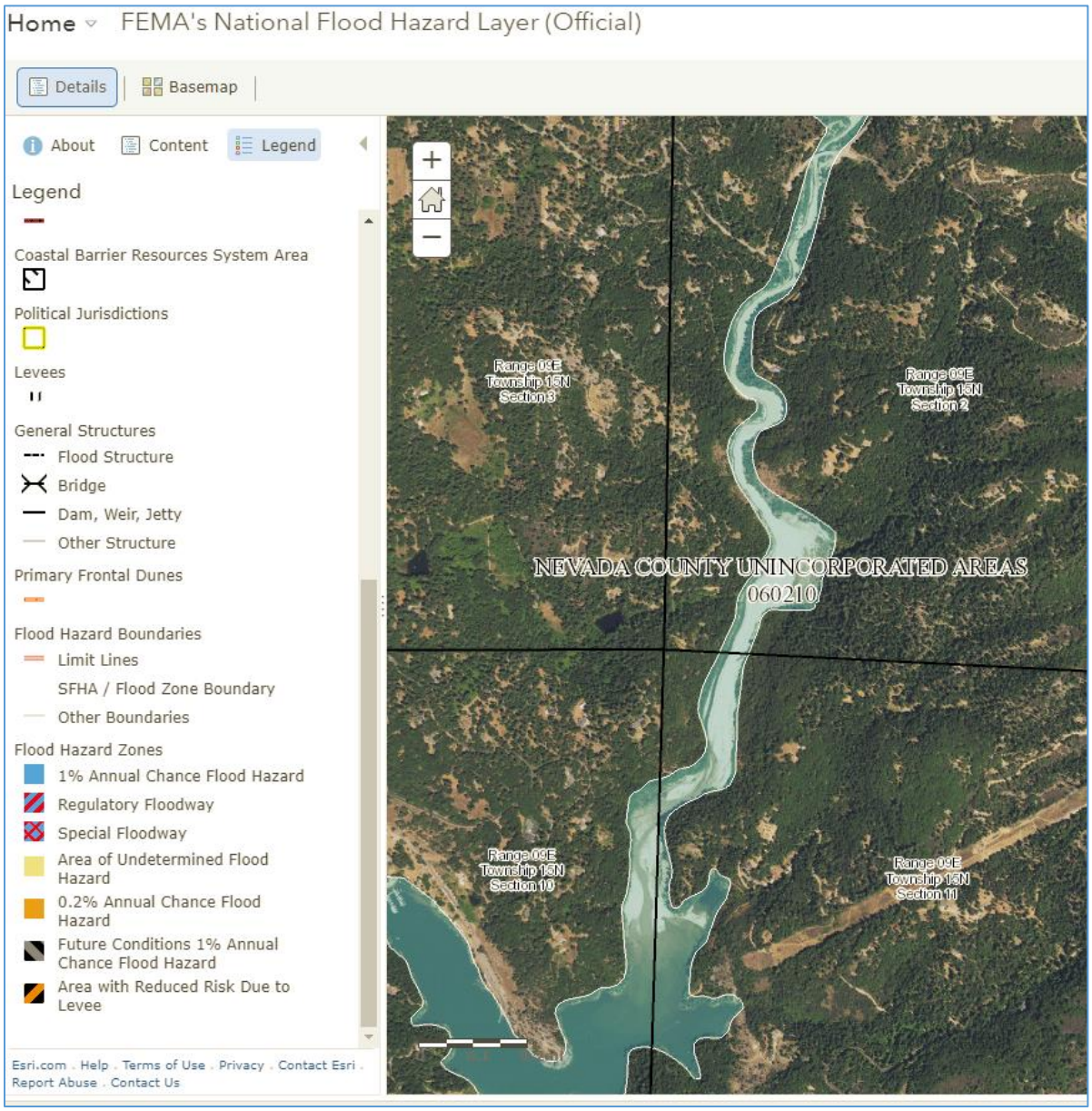

Figure 3.8-7 FEMA Flood Insurance Rate Map Panel 06057C0675E (effective February 3, 2010) Showing the Project Site is in Special Flood Hazard Area Zone A.

3.8.1.7 Surface Water Quality

The existing beneficial uses for the Greenhorn Creek, Rollins Reservoir, and the Bear River downstream of the reservoir include municipal and domestic supply agricultural supply, hydropower generation, recreation (contact, non- contact, and canoeing), and freshwater habitat (warm and cold). Migration and spawning of aquatic species are listed as "potential" beneficial uses (Central Valley RWQCB 2010). The Central Valley Regional Water Quality Control Board (RWQCB) is responsible for the protection of the beneficial uses of waters in the Project vicinity. The RWQCB uses its planning, permitting, and enforcement authority to meet this responsibility and has adopted the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan) to implement plans, policies, and provisions for water quality management (Central Valley RWQCB 2010). The Basin Plan also includes water quality objectives that are protective of the identified beneficial uses.

Turbidity data were not available for Greenhorn Creek, but during the summer turbidity is very low (e.g., <5 Nephelometric Turbidity Unit [NTU]) and during the winter/spring high flow events it is expected to be very high (e.g., >400 NTU). The Basin Plan does specify specific criteria for turbidity; rather it identifies allowable changes in turbidity as a result of a project. The allowable changes are shown below:

> *Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:*
>
> - *Where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), controllable factors shall not cause downstream turbidity to exceed 2.*
> - *Where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU.*
> - *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*
> - *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*
> - *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.*
>
> *In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.*

Water quality samples were collected at 29 stations and mercury concentration data were collected at 40 stations between 1999 and 2011 in the Greenhorn Creek Watershed (Alpers et al. 2005). The water quality data collected in Greenhorn Creek near You Bet Bridge are shown in Table 3.8-4. Water temperature near You Bet Bridge ranged from 7.5 to 21.0°C over the sampling period. The pH ranged from 6.6 to 7.4; specific conductance from 39 to 71 microSiemens/centimeter (µS/cm); dissolved oxygen from 8.5 to 10.1 milligrams/liter (mg/L); and flow from 1.4 to 151 cfs. Mercury concentrations in the water column ranged from 1.8 to 437 nanograms/L (ng/L) (0.0000018 mg/L and 0.000437 mg/L), well below the State of California's maximum contaminant level for mercury in drinking water of 0.002 mg/L (California Regulations Related to Drinking Water, 2017). However, some of the measured mercury concentrations exceed the water quality objective of 12 ng/L as set forth by the State Water Resources Control Board (State Water Board) for flowing water bodies (State Water Board 2017). Various nutrient parameter sample ranges are also shown in Table 3.8-4.

Table 3.8-4
Historical Water Quality Data Collected from Greenhorn Creek at You Bet Road near Nevada City from 1999–2001

Parameter	Units	Range	Criteria
Water Temperature	(Celsius) °C	7.5 – 21.0	COLD and WARM Fish
Specific Conductance	microSiemens/centimeter (µS/cm)	39 – 71	---
pH	--	6.6 – 7.4	6.5 – 8.5
Dissolved Oxygen	milligrams/Liter (mg/L)	8.5 – 10.1	WARM =>5 mg/L COLD >=7.0 mg/L
Mercury, unfiltered	nanograms/Liter (ng/L)	1.8 – 437	12 ng/L[1]
Mercury, filtered	ng/L	0.9 – 9.0	12 ng/L[1]
Methylmercury, unfiltered	ng/L	<0.04 – 0.11	12 ng/L[1]
Methylmercury, filtered	ng/L	<0.04 – 0.05	12 ng/L[1]
Chloride	mg/L	0.8 – 2.3	---
Sulfate	mg/L	7 – 19	---
Alkalinity	mg/L as CaCO3	5 – 13	---
Nitrogen, ammonia, filtered	mg/L as N	<0.04	---
Nitrogen, ammonia plus organic filtered	mg/L as N	<0.01	---
Nitrogen, ammonia plus organic unfiltered	mg/L as N	<=0.11	---
Nitrogen, nitrite plus nitrate, filtered	mg/L as N	<0.05 – 0.15	---
Nitrogen, nitrite, filtered	mg/L as N	<0.01	---
Total phosphorus, filtered	mg/L as P	≤0.004	---
Phosphorus, orthophosphate, filtered	mg/L as P	<0.02	---
Total phosphorus, unfiltered	mg/L as P	0.003 – 0.31	---
Carbon, organic, filtered	mg/L as C	0.005 – 1.5	---
Carbon, organic, particulate	mg/L as C	<0.2 – 2.0	---

Source: Alpers et al., 2005
Notes: Standard based on Table 1 of Final Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions (State Water Board 2017)

Previous studies in the northwestern Sierra Nevada have shown that the highest average levels of mercury bioaccumulation occur in the Bear and South Fork Yuba River watersheds. The U.S. Geological Service (USGS) (1999) study demonstrated a positive correlation of mercury bioaccumulation with intensity of hydraulic gravel mining. Alpers (2005) found the highest concentrations of mercury to be associated with former mining infrastructure. Based on regional correlations of hydraulic mining and elevated mercury concentrations, it is reasonable to conclude the historical gold mining area in the Greenhorn Creek Watershed delivers mercury to Greenhorn Creek and Rollins Reservoir. Mercury concentrations tend to be greatest in mixtures dominated by silt- and clay-sized material (less than 0.0625 millimeter) because (1) small globules of mercury are transported in suspension with similar-sized material, and (2) fine sediment has adsorptive qualities that attract mercury. Once a sediment-mercury mixture is mobilized and deposited on the surface, the mercury is more readily converted from its elemental form to an organic form (e.g., methylmercury), at which point it may enter the food web. Even small amounts of mercury entering the food web is problematic, since mercury concentration increases with higher trophic levels through biomagnification.

Mercury fish tissue samples were collected from Rollins Reservoir in 1984, 1985, 1995, and 1999 from a range of different fish species (including black crappie, bluegill, brown trout, channel catfish, largemouth bass, and smallmouth bass). The mercury concentration in the collected fish tissue samples ranged from 0.02 to 0.56 parts per million (ppm) wet weight (NID and PG&E 2010). Based on Advisory Tissue Levels (ATLS) of between 0.15-0.44 ppm based on wet weight (Klasing and Brodberg 2008), the Office of Environmental Health Hazard Assessment (OEHHA) recommends that women between 18 and 45 years of age and children between the ages of 1 and 17 consume a maximum of one serving of catfish from Rollins Reservoir per week. Women over the age of 46 and men 18 years of age and older are advised against eating more than two servings of Rollins Reservoir catfish per week (https://oehha.ca.gov/fish/advisories/rollins-reservoir).

Frog tissue samples were collected on Greenhorn Creek near You Bet Bridge in 1999. The total mercury concentrations in these samples of foothill yellow-legged frogs ranged from 0.028 to 0.032 micrograms/gram (µg/g) (also ppm) wet weight. These measurements were significantly below the average total mercury concentration for foothill yellow-legged frogs measured at other sites throughout the Greenhorn Creek Watershed (Alpers et al. 2005). The science is currently not well developed regarding the potential for these mercury levels to affect foothill yellow-legged frog populations.

Invertebrate samples were also collected on Greenhorn Creek near You Bet Bridge in 1999. The methylmercury concentrations in these samples averaged 0.11 µg/g (also ppm) wet weight. This concentration was similar to the average methylmercury concentration for invertebrates measured at other sites in the Greenhorn Creek Watershed (Alpers et al. 2005). The science is currently not well developed regarding the potential for these mercury levels to affect invertebrate populations.

In October 2013, NID entered into an agreement with Hansen Bros. Enterprises to remove sediment from Greenhorn Creek during record low water levels. During the work, water quality sampling for mercury (total and dissolved) and methylmercury from the dewatering channel was collected and compared to the levels upstream in the creek. Based on limited water quality sampling, methylation was occurring in the drainage channel (due to anoxia and low flow conditions) (Monohan 2014). The current Project has been designed to provide a constant supply of well-oxygenated water in the dewatering pipes/channels thereby reducing the potential of methylation.

Section 303(d) Impairments

The most recent approved Section 303(d) List of Water Quality Limited Segments, as listed in the 2010 Integrated Report, identifies Rollins Reservoir and the Bear River below Rollins Reservoir as impaired for mercury (State Water Board 2014). This is based on numerous water quality and tissue studies indicating that past mining activities have introduced substantial concentrations of mercury into Rollins Reservoir and the Bear River.

3.8.1.8 Groundwater

No groundwater data was readily available in the Project vicinity. The region is not identified by the California Department of Water Resources as a groundwater basin; instead, it consists of a fractured rock aquifer, in which yield is highly variable and based on the extent, pervasiveness, width, and connectivity of fracture zones. Regionally, residents either connect to small municipal water systems or install private wells (DWR 2014).

Groundwater in the Project Site behaves differently based on whether it resides in bedrock or whether it flows within the alluvium that forms valley bottoms. In the Project Site groundwater levels in alluvium adjacent to the channel are closely correlated to water levels in Greenhorn Creek and Rollins Reservoir. This is expected given the coarseness of the sediments found in the Greenhorn Creek, where groundwater is likely to flow in the same direction, although at lower speeds, as the river itself. Groundwater within active stream channel deposits is also referred to as “throughflow.” Adjacent bedrock slopes may contribute to groundwater and surface water through seepage and springs emanating from fracture zones.

3.8.2 Relevant Plans, Policies, and Ordinances

3.8.2.1 Federal

Clean Water Act

Section 303 of the Clean Water Act requires states to adopt water quality standards for all surface waters of the United States. Water quality standards are typically numeric, although narrative criteria based on biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards (see the description of the Porter-Cologne Water Quality Control Act of 1969 [Porter-Cologne Act]). Standards are based on the designated beneficial use(s) of the water body. Where multiple uses exist, water quality standards must protect the most sensitive use.

Section 402 of the Clean Water Act mandates that certain types of construction activity comply with the requirements of National Pollutant Discharge Elimination System (NPDES) stormwater program. In California, gravel mining permitting occurs under the Industrial General Permit (IGP), issued by the State Water Board and implemented and enforced by the nine RWQCBs. The IGP requires stormwater dischargers to eliminate unauthorized non-stormwater discharges; develop and implement SWPPPs; implement best management practices (BMPs); conduct monitoring; compare monitoring results to numeric action levels; perform appropriate exceedance response actions when numeric action levels are exceeded; and certify and submit all permit registration documents. In addition, storm water dischargers are required to: implement minimum BMPs; electronically file all permit registration documents via SMARTS[4]; comply with new training expectations and roles for qualified industrial stormwater practitioners; sample to detect exceedance of annual and instantaneous numeric action levels; develop and implement exceedance response actions if annual or instantaneous numeric action levels are exceeded; monitor for parameters listed under Clean Water Act Section 303(d); design treatment control BMPs for flow- and volume- based criteria; and understand new criteria, sampling protocols, and sampling frequency for qualifying storm events.

Section 404 of the Clean Water Act requires that a permit be obtained from the U.S. Army Corps of Engineers prior to any activity associated with discharge of dredged or fill material into waters of the United States, including wetlands.

Section 401 of the Clean Water Act requires any person applying for a federal permit or license that may result in the discharge of pollutants into waters of the United States (including wetlands) to obtain a state certification administered by the State Water Board through the RWQCBs. In order to acquire certification, it must be demonstrated that the activity complies with all applicable water quality standards, limitations, and restrictions. No license or permit by a federal agency may be

[4] The Storm Water Multiple Application and Report Tracking System (SMARTS) is SWRCB's online tool to assist dischargers in making inquiries, filings, and applications.

granted until Section 401 certification has been granted. Section 401 water quality certifications are typically required prior to obtaining a Section 404 permit from the U.S. Army Corps of Engineers.

National Flood Insurance Program

FEMA oversees floodplains and administers the National Flood Insurance Program adopted under the National Flood Insurance Act of 1968. The program makes federally subsidized flood insurance available to property owners within communities that participate in the program. Areas of special flood hazard (i.e., subject to inundation by a 100-year flood) are identified by FEMA through regulatory flood maps titled Flood Insurance Rate Maps. The National Flood Insurance Program mandates that development cannot occur within the regulatory floodplain (typically the 100-year floodplain) if that development results in more than 1 foot increase in flood elevation. In addition, development is not allowed in delineated floodways within the regulatory floodplain.

Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. It generally requires federal agencies constructing, permitting, or funding a project in a floodplain to do the following:

- Avoid incompatible floodplain development
- Be consistent with the standards and criteria of the National Flood Insurance Program
- Restore and preserve natural and beneficial floodplain values

Executive Order 11990 requires federal agencies to follow avoidance, mitigation, and preservation procedures, with public input, before proposing new construction in wetlands. It generally requires:

- Avoidance of wetlands
- Minimization of activities in wetlands
- Coordination with the U.S. Army Corps of Engineers and Clean Water Act Section 404 regarding wetlands mitigation

Federal Power Act

The Federal Power Act (FPA) authorizes the Federal Energy Regulatory Commission (FERC) to issue exemptions or licenses to construct, operate and maintain dams, water conduits, reservoirs, and transmission lines to improve navigation and to develop power from streams and other bodies of water over which it has jurisdiction. 16 U.S.C. § 797(e). FERC's jurisdiction extends to all hydropower dams not owned by the federal government that either:

- Occupy federal public lands or federal reservations;

- Are located on navigable streams;
- Use surplus water or water power from a federal government dam; or
- Were constructed after August 26, 1935 and are located on a non-navigable stream that affects the interests of interstate or foreign commerce (including providing power to an interstate power grid).

The Project Site is located within the FERC project boundary for Nevada Irrigation District's (NID) Yuba-Bear Hydroelectric Project (FERC Project No. 2266). The Project is considered maintenance of an existing FERC facility and is therefore authorized by FERC under the existing license.

3.8.2.2 State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act authorized the State Water Board to provide comprehensive protection for California's waters through water allocation and water quality protection. The State Water Board implements the requirement of the Clean Water Act Section 303, indicating that water quality standards have to be set for certain waters by adopting water quality control plans under the Porter-Cologne Act. The Porter-Cologne Act established the responsibilities and authorities of the nine RWQCBs, which include preparing water quality plans for areas in the region, identifying water quality objectives, and issuing NPDES permits and waste discharge requirements. Water quality objectives are defined as limits or levels of water quality constituents and characteristics established for reasonable protection of beneficial uses or prevention of nuisance. The Porter-Cologne Act was later amended to provide the authority delegated from the U.S. Environmental Protection Agency to issue NPDES permits.

Section 303(d) of the Clean Water Act requires that the State Water Board identify surface water bodies within California that do not meet established water quality standards. Once identified, the affected water body is included in the State Water Board's "303(d) Listing of Impaired Water Bodies" and a comprehensive program must then be developed to limit the amount of pollutant discharges into that water body. This program includes the establishment of total maximum daily loads for pollutant discharges into the designated water body. The most recent 303(d) listing for California was approved by the U.S. Environmental Protection Agency in 2010.

California Fish and Game Code

Sections 1600–1616 of the California Fish and Game Code require that the California Department of Fish and Wildlife be notified of activity that will substantially divert or obstruct the natural flow of any river, stream, or lake; substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river,

stream, or lake. If the California Department of Fish and Wildlife determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared that outlines reasonable conditions necessary to protect natural resources threatened by the proposed activity.

Dam Safety Regulations and Inundation Mapping

Responsibility for supervision of dams and reservoirs is assigned to the California Department of Water Resources and delegated to the Division of Safety of Dams (DSOD). The DSOD oversees the construction, enlargement, alteration, repair, maintenance, operation, and removal of dams and reservoirs under the authority of the California Water Code (Division 3, Dams and Reservoirs).

The DSOD has several programs that ensure dam safety. When a new dam is proposed, DSOD engineers and geologists inspect the site and the subsurface to understand the geologic conditions. Once an application for a new dam is submitted, the DSOD reviews the plans and specifications prepared by the owner to ensure that the dam is designed to meet minimum requirements and that the design is appropriate for the known geologic conditions. During construction, the DSOD oversees the construction to ensure the work is being done in accordance with the approved plans and specifications. Following construction, the DSOD inspects each dam on an annual basis to ensure the dam is safe, is performing as intended, and is not developing problems. Roughly a third of these inspections include in-depth instrumentation reviews of the dam surveillance network data. Lastly, the DSOD periodically reviews the stability of dams and their major appurtenances in light of improved design approaches and requirements, as well as new findings regarding earthquake hazards and hydrologic estimates in California.

While there are currently no DSOD-jurisdictional dams in the Project Site, Rollins Dam is located downstream of the Proposed Project.

3.8.2.3 Local

Nevada County General Plan

Greenhorn Creek is in Nevada County. The Nevada County General Plan (County of Nevada 1996) includes the following policies relevant to hydrology, geomorphology, and water quality:

Policy 11.4 Cooperate with State and local agencies in efforts to identify and reduce to acceptable levels all sources of existing and potential point- and non-point source pollution to ground and surface waters, including leaking fuel tanks, discharges from storm drains, auto dismantling and dump sites, sanitary waste systems, parking lots, roadways, logging and mining operations.

Policy 11.7 Through the development and application of Comprehensive Site Development Standards, and project environmental review, establish and enforce minimum building setback lines from perennial streams and significant wetlands that are adequate to protect stream and wetland resource values.

Policy 11.9A Approve only those grading applications and development proposals that are adequately protected from flood hazards and which do not add flood damage potential. This may include the requirement for foundation design which minimizes displacement of flood waters, as well as other mitigation measures.

Policy 11.10 Cooperate with State and Federal agencies and public and quasi-public organizations and agencies in the acquisition, restoration, and maintenance of habitat lands.

Policy 12.4 Require erosion control measures as an element of all County contracts, discretionary projects, and ministerial projects.

Policy 17.22 Aggregate extraction may be allowed in rivers and floodplains provided environmental impacts associated therewith are addressed through the CEQA process.

Policy 17.23 Prepare a comprehensive plan for river and floodplain development that ensures aggregate operations within rivers and floodplains which have the least impact on the environment are developed before more environmentally-sensitive areas are approved and to also ensure that the environmental impacts of proposed aggregate operations within rivers and floodplains may be more readily assessed.

Nevada County Land Use and Development Codes – Floodplain Management

While the Project occurs within a 100-year floodplain, it does not require a Use Permit for work within a floodplain pursuant to Nevada County Land Use and Development Codes (LUDC) Sec. L-II 4.3.10. Because the Project would not result in an increase in water storage capacity, Nevada County considers this type of project a "reservoir maintenance project" which is exempt from the County's Use Permit requirements for activities within a floodplain (pers. comm., Tod Herman, 2018).

3.8.3 Thresholds of Significance

The significance criteria used to evaluate potential Project impacts to hydrology and water quality are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to hydrology and water quality would occur if the Project would:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.
2. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces in a manner which would:
    a. result in substantial erosion or siltation on or off-site.
    b. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off-site.
    c. 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.
    d. impede or redirect flood flows.
4. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
5. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.8.4 Impacts Analysis

Potential impacts of the Project with respect to hydrology and water quality relate to seasonally establishing a haul road, staging/demobilization equipment, stockpiling material, and seasonal excavations/earthmoving within the Work Area (i.e., installation of the sediment barrier, channelizing the creek in the inundation zone, installation of dewatering pipes/channels, conducting sediment removal activities, and transporting material to stockpile areas) (Map 2-2). The Project does not include the addition of impervious surfaces; therefore, hydrology and water issues related to impervious surfaces are not applicable to this Project. Potential impacts resulting from these activities, as well as proposed mitigation measures, are described below.

Impact 3.8-1. The Project would not violate water quality standards or waste discharge requirements; however, it could affect water quality in Greenhorn Creek and downstream in Rollins Reservoir.

Equipment and Fuels. Equipment and fuel in the staging areas, on the haul road, and in the Work Area could result in oil and fuel pollution into Greenhorn Creek and Rollins Reservoir. Although sediment removal would occur in the dry season, fuels, grease and/or oil spills and potentially anomalous rainfall could come into contact with fuels, grease, and/or oils associated with vehicles and equipment and result in contaminated runoff into the Greenhorn Creek and Rollins Reservoir. Inadvertent spills could likewise adversely affect soil and groundwater quality. This is a potentially significant impact to water quality. NID will implement MM-HYD-1 which requires implementing BMPs in accordance with a SWPPP, MM-HYD-2 which requires preparation and implementation of a Water Quality Monitoring Plan, and MM-HAZ-1 through MM-HAZ-7, which collectively ensure proper management of hazardous materials, to ensure that potential effects of the Project on water quality as a result of contamination from equipment and fuels would be **less than significant with mitigation incorporated**.

Turbidity. Installing the sediment barrier in Rollins Reservoir and road crossings across Greenhorn Creek, and implementing activities in the Work Area (channelizing the creek, installation of dewatering pipes or excavation of dewatering channels, sediment removal, and demobilization/ removal of equipment and material at the end of the work season [typically November]) could elevate turbidity in Greenhorn Creek and Rollins Reservoir. Also, dewatering of the existing channel and adjacent sediment and sediment removal activities in the Work Area, particularly drainage of water from anoxic sediment and fluvial transport of the sediment could increase the amount of methylmercury in the Greenhorn Creek and Rollins Reservoir. This is a potentially significant impact to water quality. NID will implement MM-HYD-2 which requires preparation and implementation of a Water Quality Monitoring Plan that will include compliance thresholds and adaptive management to address potential water quality issues should they arise. Therefore, potential direct and indirect effects of the Project on water quality as a result of turbidity would be **less than significant with mitigation incorporated**.

Erosion during the wet season as a result of changes to the topographic structure in the Work Area (due to sediment removal during the dry season) could cause increases in turbidity in Greenhorn Creek and Rollins Reservoir. This is a potentially significant impact to water quality. NID will implement MM-HYD-3 to ensure that temporary roads and temporary road crossings/bridges are removed at the end of each year and ensure that removal of sediment is done in a manner that avoids project-induced channel incision and avulsion upstream of the Work Area (above the high water level of the Rollins Reservoir). Therefore, potential direct and indirect effects of the Project on water quality as a result of turbidity would be **less than significant with mitigation incorporated**.

Mercury and Methylmercury. Although the Project, by removing fine sediment from the Greenhorn Arm of Rollins Reservoir, reduces the total mercury load present in the system, disturbances associated with the proposed sediment removal operations could increase the bioavailability of mercury through transport in the water column and through methylation within standing water bodies[5]. This is a potentially significant impact to water quality.

Monohan (2015) describes the conceptual model that has been developed based on mercury studies in nearby mining projects as follows:

- Mercury is primarily transported bound to particulate fine silts and clays (<0.063 mm) during winter storms.
- Mercury can be transported long distances from source areas and can accumulate in reservoirs where the water velocity slows and transport capacity decreases.
- Mercury methylation typically occurs most efficiently during warm summer months in anoxic zones that establish at the bottoms of reservoirs and/or in the shallow groundwater table.
- Mercury can be methylated when sulfate-reducing and/or iron-reducing bacteria are allowed to develop in low-flow, anoxic conditions.

The Project Description (Chapter 2) includes the following recommendations from Monohan (2015) to minimize the transport and methylation of mercury:

- To minimize mercury transport, the disturbance of silts and clays will be limited in summer and fall months when anoxic zones form in the reservoir. This will be accomplished by sediment skimming in dry conditions, which will minimize the creation of turbid water during operations.
- To minimize Hg-methylating microbes (iron-reducing and/or sulfate-reducing bacteria) and methylation of mercury in dewatering pipes/channels where anoxic zones can occur, water from the active channel will be routed through the dewatering channel/pipes and aerated, as appropriate, to provide a constant flow of oxygenated water through the dewatering channel/pipes.

The Project does not add to the mercury content in the watershed as a whole. On the contrary, by exporting sediment, the Project would actually decrease the total mercury content within the watershed—mercury that might otherwise have been mobilized and discharged into Rollins

[5] In 2019, NID conducted preliminary sediment sampling within the Work Area and found that total Mercury concentrations ranged from.04-0.27 milligram/kilogram (Appendix E9).

Reservoir. The removal of fine sediment that would occur under the Project would likewise decrease the total amount of particulate-bound mercury that would be available for methylation.

In addition, as discussed in the environmental setting, winter/spring flow currently rework the geometry of the river corridor and transport particulate-bound mercury to the Rollins Reservoir. Thus, mercury and sediment is periodically mobilized by flows and transported to Rollins Reservoir under the existing hydrologic regime. As Rollins Reservoir is impaired under Clean Water Act Section 303(d) for mercury, the prevailing standard is for projects to reduce the potential for mercury mobilization and methylation to the maximum extent practicable.

In early 2019, NID conducted sediment sampling and associated laboratory analysis to obtain information on inorganic and organic constituents in near-surface sediment to facilitate planning and permitting (NV5 2019). A total of 12 discreet grab samples were obtained from within the Work Area that were then combined into three composite samples for laboratory analysis. Total elemental mercury observed in the composite samples ranges from 0.4 to 0.27 mg/kg. Refer to Appendix E for the complete sediment characterization report.

The Project will remove sediment in the Work Area below the existing surface potentially into anoxic material/groundwater. Drainage of anoxic groundwater from the excavation site will occur with drainage channels and/or pipes. The Project includes the release of oxygen rich water into the drainage pipes/channels to reduce the potential for methylation. The water quality in Greenhorn Creek upstream of the sediment removal area will be compared to the water quality in the drainage channels downstream of the sediment removal area to determine the degree and extent to which Project operations are affecting mercury levels. Shallow ponding of water will not be allowed in the sediment removal area or in the drainage channel/pipes.

By implementing the Project as described in Section 2.0 and inclusion of MM-HYD-2 and MM-HYD-3, which include preparation and implementation of detailed water quality monitoring, particularly of turbidity and mercury, and by limiting the potential for channel erosion upstream of the Work Area, the potential direct and indirect effects of the Project on water quality would be **less than significant with mitigation incorporated**.

Impact 3.8-2. The Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

The Project does not propose installation or use of a groundwater well, and minor Project-related water demands (e.g., dust control) would be served from NID's existing right to use surface water in the Project Site. Removal of sediment from the Work Area would not cause lowering of the groundwater table. Sediment removal is planned when Rollins Reservoir is typically low. Furthermore, groundwater within Work Area is not relied upon for domestic, municipal, or

agricultural uses. Therefore, effects of the Project on groundwater supply or recharge would be **less than significant**.

The Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces in a manner, which would:

Impact 3.8-3. … result in substantial erosion or siltation on or off-site.

Sediment removal in the Work Area is within the seasonally inundated Greenhorn Arm of Rollins Reservoir. Under existing conditions, high winter/flow transport sediment into the arm and the sediment is deposited in the delta to an elevation consistent with the reservoir elevation. In the early winter if reservoir levels are low, some erosion of the delta from the previous year can occur. The Project will remove sediment from the delta area annually and potentially move the delta area upstream, but the same geomorphic processes will occur with the Project as under existing conditions. Removal of sediment will be guided by a SWPPP (MM-HYD-1) and a Hydrologic Management Plan (MM-HYD-3) which would minimize the potential for excessive erosion (head cutting, incision, and avulsion). Drainage channels and/or pipes, temporary road crossing bridges and/or culverts will be removed seasonally i.e., (prior to the wet season). During the runoff season, high flows will rework the active floodplain/channel in Greenhorn Creek similar to existing conditions. The dry season stream channelization and installation of piping in the Work Area will only modify the flow pattern in the base (low) flow channel, and turbidity monitoring will be conducted (MM-HYD-2) which will ensure that the work will not result in substantial erosion or siltation on or off-site. The Project does not include the addition of impervious surfaces. With implementation of MM-HYD-1, MM-HYD-2 and MM-HYD-3, the impacts of the Project on erosion and siltation would be **less than significant with mitigation incorporated**.

Impact 3.8-4. …substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

The Project will alter the course of Greenhorn Creek by excavating a new pilot channel (parallel to the existing channel) and redirecting surface water into the new channel, but such alteration would remain within the bounds of the existing Greenhorn Creek Valley floor and would not affect the rate or amount water in the creek. During the winter/spring high flow season the Greenhorn Creek Valley floor and channel will be reworked (i.e., by natural processes) similar to the existing condition (also see MM-HYD-1). The Project Site and Work Area are wholly confined within the steep Greenhorn Creek canyon walls, and, therefore, there would be no increased possibility of flooding on or off-site. The storage volume of Rollins Reservoir would be increased slightly by removal of sediment from the Greenhorn Arm of the reservoir. The Project would have **no impact** on flooding on or off-site.

Impact 3.8-5. … 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.

The Project is located along an unimpaired reach of the Greenhorn Creek that flows into Rollins Reservoir and is not served by a municipal storm drain system. Rollins Reservoir is a part of NID's Yuba-Bear River Project, which among other things provides water supply functions. One of the Project's main objectives is to restore and maintain storage capacity within Rollins Reservoir. By removing sediment from within the seasonal inundation zone of Rollins Reservoir, the Project increases the reservoir's storage capacity. The Project would not create or contribute to runoff to the system because operations would occur in the dry season, and because it is already located in the context of an active river channel. Finally, although excavated sediment would be sorted onsite, there would be no onsite washing of excavated materials, nor would there be industrial discharges of process water. For these reasons, the Proposed Project would have **no impact** with respect to this topic.

Impact 3.8-6. …impede or redirect flood flows.

Although earthmoving during the gravel removal operations would leave depressions and/or other topographic anomalies within the floodplain of the Greenhorn Creek, these features would not represent impediments to flow or substantially redirect 100-year flood flows. Instead, a 100-year flood flow would rework and replenish such features. Because the Project would not leave structures and/or anchored objects and equipment in the 100-year floodplain, the impact would be **less than significant**.

Impact 3.8-7. The Project would not result in increased risk of release of pollutants resulting from inundation by seiche, tsunami, or mudflow.

There is no risk of a tsunami on the Project vicinity. Although the Work Area could conceivably be affected by a seiche on the Rollins Reservoir or the Project Site could be affected by a mudflow from the adjacent bedrock slopes, the Project would do nothing to increase exposure of the public or off-site properties to such hazards. Therefore, the Project would have **no impact** relating to inundation by seiche, tsunami, or mudflow.

Impact 3.8-8. The Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Water quality in Greenhorn Creek and Rollins Reservoir is managed by the Central Valley RWQCB under the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan). As described under Impact 3.8-1, the Project will incorporate a number of mitigation measures to ensure consistency with Basin Plan standards. These include MM-HYD-1 which

requires implementing BMPs in accordance with a SWPPP, MM-HYD-2 which requires preparation and implementation of a Water Quality Monitoring Plan in consultation with the RWQCB, and MM-HAZ-1 through MM-HAZ-7, which collectively ensure proper management of hazardous materials, to ensure that potential effects of the Project on water quality as a result of contamination from equipment and fuels. Therefore, this impact would be **less than significant with implementation of MM-HYD-1, MM-HYD-2, and MM-HAZ-1 through MM-HAZ-5**.

As described under Impact 3.8-2, the Project would not significantly affect groundwater. In addition, there are no current plans for management of groundwater in the Project vicinity. Therefore, there is **no impact**.

3.8.5 Mitigation Measures

MM-HYD-1 **Stormwater Pollution Prevention Plan**. Operator shall develop and implement a stormwater pollution prevention plan (SWPPP) in accordance with State Water Resources Control Board (State Water Board) and Central Valley RWQCB (RWQCB) requirements. The SWPPP shall specify the location, type, and maintenance requirements for BMPs necessary to prevent stormwater runoff from carrying construction-related pollutants. BMPs shall be implemented to address potential release of fuels, oil, and/or lubricants from operational vehicles and equipment (e.g., drip pans, secondary containment, washing stations), as well as release of fine sediment from material stockpiles (e.g., sediment barriers, soil binders). The SWPPP shall be developed and implemented by a Construction General Permit Qualified SWPPP Practitioner (QSP) / Qualified SWPPP Developer (QSD) and submitted to the RWQCB as part of obtaining regulatory approval for the proposed activities (i.e., the Industrial General Permit).

MM-HYD-2 **Water Quality Monitoring Plan**. NID will prepare and implement a Water Quality Monitoring Plan (WQMP) for the Project. The WQMP will include monitoring water quality (baseline and Project conditions) in the vicinity of the Project during implementation (setup through demobilization). The WQMP will include compliance thresholds and adaptive management to address potential water quality issues should any arise. The WQMP would be implemented in any year, which sediment removal activities occur. The WQMP will include water quality monitoring for the following constituents:

- Water Temperature
- Dissolved Oxygen (DO)
- Turbidity

- Total Dissolved Solids (TDS)
- Total Suspended Solids (TSS)
- Total Mercury
- Methylmercury

To fully document baseline and Project conditions, NID will monitor water quality in Greenhorn Creek, Greenhorn Arm of Rollins Reservoir, and the main body of Rollins Reservoir. Baseline condition monitoring will be conducted prior to the initial sediment removal. Water quality monitoring compliance thresholds will be established based on consultation with the RWQCB and California Department of Fish and Wildlife. Monitoring reports will be developed and provided to agencies during Project implementation. Sediment removal will be suspended and agencies will be immediately notified (within 24 hours) if any constituents exceed thresholds developed through agency consultation with consideration of pre-project background levels.

MM-HYD-3 **Hydrologic Management Plan**. NID will prepare and implement a Hydrologic Management Plan (HMP) for the Project. The HMP will include the following elements:

- *Seasonal demobilization procedures* shall include, at a minimum, removal of all operational equipment located within the limits of the 100-year flood, including temporary road crossings (bridges and culverts) and dewatering pipes.

- *Annual visual incision monitoring and photo documentation* shall be conducted upstream of the Work Area to ensure excessive project-induced channel incision (deepening of the channel from erosion) and avulsion (abandonment of the channel and formation of a new channel) is not occurring. If excessive channel incision or avulsion is occurring as a result of Project activities, then grade control measures or modification of the sediment extraction in the Work Area will be implemented.

3.8.6 Level of Significance After Mitigation

Implementation of MM-HYD-1 through MM-HYD-3, as well as MM-HAZ-1 through MM-HAZ-7, would reduce all potential impacts to **less than significant**.

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3.9 LAND USE AND PLANNING

This section describes the existing land use designations, as well as the zoning and planning setting of the Project vicinity, identifies regulatory requirements, evaluates consistency of the Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project) with applicable plans and policies, and evaluates any land use incompatibility with adjacent uses. Plan consistency and land use incompatibility are generally not in and of themselves environmental effects, but are related to the environmental analysis and are required to be evaluated under Section 15125 of the California Environmental Quality Act (CEQA) Guidelines.

3.9.1 Existing Conditions

3.9.1.1 Project Site

The Project site is located in unincorporated Nevada County in the foothills of the Sierra Nevada. The Project site is located within the Federal Energy Regulatory Commission (FERC) project boundary for Nevada Irrigation District's (NID) Yuba-Bear Hydroelectric Project (FERC Project No. 2266). Land within the Project site boundary is primarily owned by NID with a small portion (3.2 acres within the reservoir inundation area) owned by the Bureau of Land Management (BLM) (Map 3.9-1).

The Project is a reservoir maintenance project within the FERC Project boundary. The Project is considered maintenance of an existing FERC facility and is therefore authorized by FERC under the existing license.

The Project site is located approximately 6 miles north of the City of Colfax and 7 miles east of the City of Grass Valley (Map 2-1). Elevation of the approximately 108-acre Project site ranges from 2,100 feet above mean sea level (msl) to 2,400 feet msl. The Project site consists of the Greenhorn Arm of Rollins Reservoir surrounded by mixed coniferous forest with some disturbed areas. Scattered single-family rural residences are located directly adjacent to the Project site.

3.9.1.2 General Plan Land Use Designations

The Nevada County General Plan (General Plan) (Nevada County 1996) identifies land use designations for the Project site and surrounding area. The Project site is designated as Water Area (WA) and Rural (RUR-10), and lands surrounding the Project site are designated Estate (EST) and Rural (RUR-10 and RUR-20). According to the General Plan, the land use designations are defined as follows:

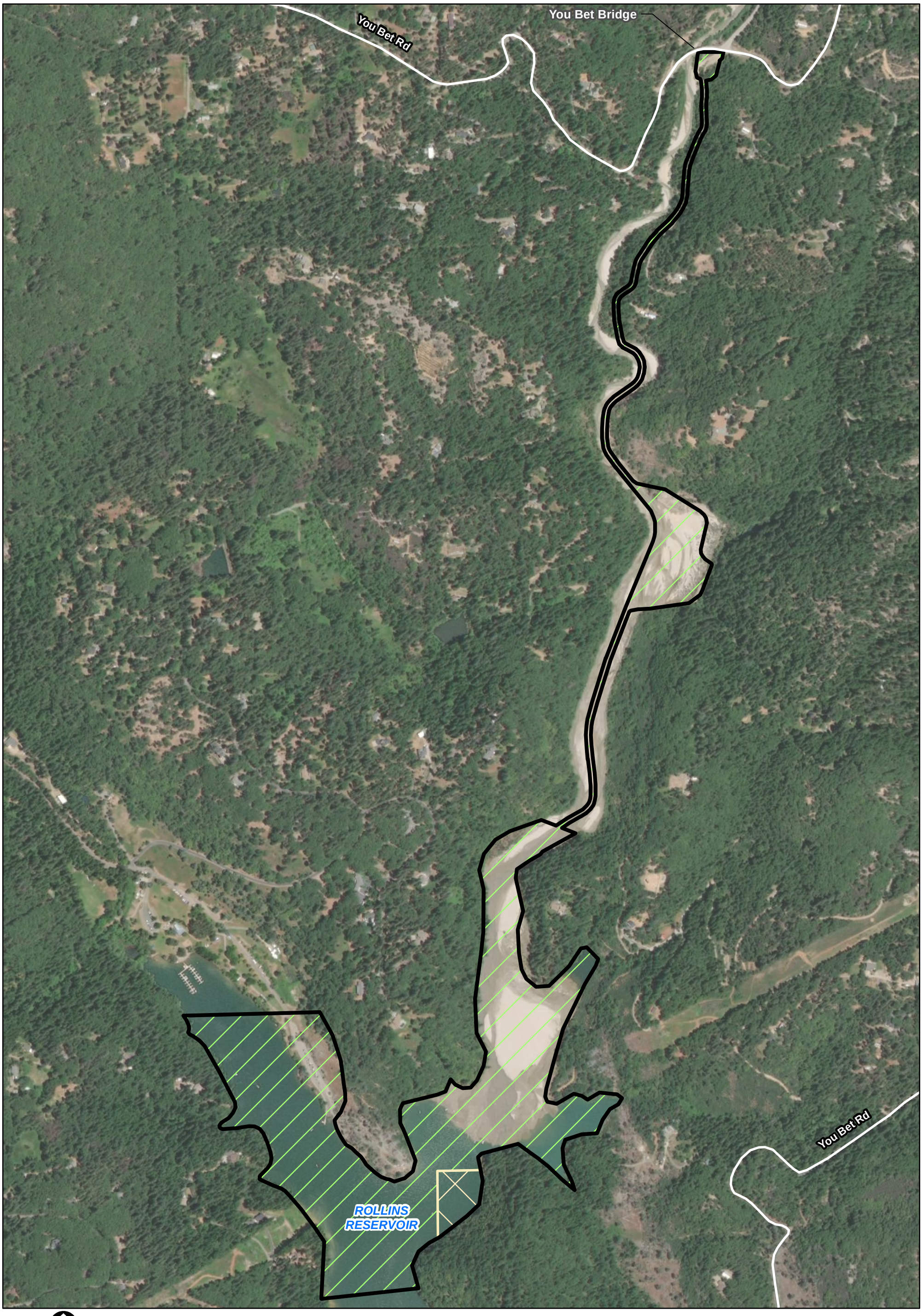
- **Water Area (WA).** This designation is intended to recognize the importance of large bodies of water to the visual environment of the County, and their importance as a source of water based recreation.

- **Estate (EST).** This designation is intended to provide for low density residential development at a minimum lot size of 3 acres per dwelling unit in areas which are essentially rural in character, but are adjacent to community boundaries or near *Community Regions* and therefore are more accessible to shopping, employment and services. In keeping with the rural character, agricultural operations and natural resource related uses, including the production of timber, are also appropriate in this designation.
- **Rural (RUR).** These designations are intended to provide for development of compatible uses within a rural setting. Such uses may include rural residential at maximum densities ranging from 5 to 160 acres per dwelling (depending upon the specific development pattern and character of an area; availability of public facilities and services; and environmental constraints), agricultural operations and supporting agricultural production, natural resource production and management, and low-intensity recreation. The RUR-10 designations includes a 10-acre minimum parcel size and RUR-20 includes a 20-acre minimum parcel size.

3.9.1.3 Zoning Districts

The Nevada County Zoning Ordinance (Chapter II of the Nevada County Land Use and Development Code) (Nevada County 2007) identifies zoning districts for the Project site and surrounding area. The Project site is zoned as Public-Mineral Extraction (P-ME) Combining District, Public (P), and General Agricultural (AG-10), and lands surrounding the Project site are zoned Residential Agricultural (RA) and General Agricultural (AG-10 and AG-20). According to the Nevada County Zoning Ordinance, the zoning codes are defined as follows:

- **Public-Mineral Extraction (P-ME)**. The purpose of this District is to allow for surface mining and to provide for public awareness of the potential for surface mining to occur where adequate information indicates that significant mineral deposits are likely present. This District shall be used only on those lands that are within any of the compatible Nevada County General Plan designations and which are not in a residential zone.
- **Public (P).** The P District provides for areas occupied by Federal, State and local government agencies, or by a private entity under contract, agreement, or franchise with a governmental agency if the use is a service or function normally provided by the agency entering into a contract or agreement, or issuing a franchise.



Projection: UTM Zone 10
Datum: NAD 83

0 0.25 0.5 Miles

Project Site Boundary

Land Jurisdictions

Bureau of Land Management

Nevada Irrigation District

Cardno

Greenhorn Sediment Removal at Rollins Reservoir Project
Nevada County, CA

Map 3.9-1

Land Jurisdictions within the Project Area

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- **Residential Agricultural (RA).** The RA District establishes provisions for low density single-family dwellings, as well as other dwelling unit types in keeping with the rural character of the area, at densities equivalent to 1.5-acre minimum parcel size, or 3-acre minimum parcel size where neither a public water nor public sewer system is available. Within the Residential and Estate General Plan designations, the single-family dwelling is of primary importance and agricultural uses are secondary. Within Rural General Plan designations, agricultural operations and natural resource related uses and residential uses are of equal importance.
- **General Agricultural (AG).** The AG District provides areas for farming, ranching, agricultural support facilities and services, low-intensity uses, and open space. It is consistent with all agricultural-oriented General Plan land use designations, as well as those designations that allow for more intensive uses. Agricultural uses are of primary importance and all other uses are secondary.

3.9.2 Relevant Plans, Policies, and Ordinances

3.9.2.1 Federal

The Project site boundary includes a 3.2-acre parcel within the Work Area that is under the jurisdiction of BLM. This parcel is within the FERC Project boundary for the Yuba-Bear Hydroelectric Project (Map 3.9-1). The BLM manages these lands in accordance with the Sierra Resource Management Plan (SRMP) (BLM 2007) with specific emphasis on establishing a balance between environmental protection with recreation and consumptive uses. The BLM parcel within the Greenhorn Arm is not located within any BLM specially-designated areas.

3.9.2.2 State

There are no relevant state plans or policies that would be applicable to the Project.

3.9.2.3 Local

Nevada County General Plan

Applicable goals, policies, and programs from the General Plan are included herein. The General Plan is the long-term policy guide for the physical, economic, and environmental future of the County. It includes goals, objectives, policies, and implementation measures, which are based on assessments of current and future needs of Nevada County and available resources within the County.

Land Use Element

Policy 1.5.3 The adopted Comprehensive Site Development Standards., contained in the Land Use and Development Code (Chapter II, Article 4), were established and are implemented as directed by Action Policy 1.17 of the 1995 General Plan. These standards are used during the "project site review process" to provide a consistent approach for addressing the presence of sensitive environmental features and/or natural constraints, clustering and provisions of open space as a part of development, the potential for land use conflicts between uses, and the potential for public health hazards.

Applicable to all development projects in the County, the Comprehensive Site Development Standards have been designed to be protective of the County's unique character, providing guidance for:

a. Protection of environmentally sensitive resources;

b. Provision of open space as part of site development;

c. Prevention and reduction of fire hazards;

d. Maintenance and enhancement of vegetation and landscaping;

e. Prevention and reduction of flood hazards;

f. Transitions between uses and multiple-use site development;

g. Community design;

h. Buffering and screening to mitigate adverse effects;

i. Incentives to provide for access to public resources and open space; and

j. Protection of important agricultural, mineral, and timber resources.

Mineral Management Element – Surface Mining

Policy 17.22 Aggregate extraction may be allowed in rivers and floodplains provided environmental impacts associated therewith are addressed through the CEQA process.

Policy 17.23 Prepare a comprehensive plan for river and flood plain development that ensures aggregate operations within rivers and floodplains which have the least impact on the environment are developed before more environmentally- sensitive areas are approved and to also ensure that the environmental impacts of proposed aggregate operations within rivers and floodplains may be more readily assessed.

3.9.2.4 Nevada County Zoning Ordinance

The Nevada County Zoning Ordinance (Chapter II of the Land Use and Development Code) provides specific development and land use standards for all unincorporated areas of the County with the intent of implementing and ensuring consistency with the goals, objectives, and policies of the Nevada County General Plan. The Zoning Ordinance sets forth zoning districts for the unincorporated areas of the County, with regulations for each district governing the uses of land and structures and Comprehensive Site Development Standards.

3.9.3 Thresholds of Significance

3.9.3.1 Methods of Analysis

Existing land uses in the Project vicinity were identified based on information provided by Nevada County, BLM, and a review of aerial maps and other applicable information. Planned land uses for the Project site were identified based on information provided by the Project applicant. The land use evaluation is based on a qualitative comparison of existing and proposed uses on the site and their compatibility with existing land uses and planned land uses as defined in the General Plan, as well as other applicable local environmental and planning documents.

Implementation of the Proposed Project would not result in a change in land use as compared to existing conditions, and would stay consistent with the underlying land use designations and zoning. The General Plan provides the long-term objectives, principles, and standards for development. All development proposals must be generally consistent with the overall land use guidance provided in the General Plan. More detailed regulation and land use control are applied through County zoning requirements, as well as through other County regulations and ordinances. The Project's consistency with applicable ordinances, as well as specific land use implications associated with implementation of the Project, are discussed in this section and in other technical sections of this EIR.

The significance criteria used to evaluate the Project impacts related to land use and planning are based on Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.). According to Appendix G, a significant impact related to land use and planning would occur if the Project would:

1. Physically divide an established community.
2. Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

3.9.4 Impacts Analysis

Impact 3.9-1. The Proposed Project will not physically divide an established community.

Division of an established community commonly occurs as a result of development of physical features that constitute a barrier to easy and frequent travel between two or more constituent parts of a community. For example, a large freeway structure with few crossings could effectively split a community.

The Proposed Project includes sediment removal in the Greenhorn Arm of Rollins Reservoir. There are no public roadways or other public travel corridors within the Project site. The Project will not result in the establishment of new public roadways, bridges, or other infrastructure that would alter the physical connectivity in the Project vicinity. Further, the Project is located directly adjacent to the Hansen Bros. Enterprise's gravel extraction operation and the surrounding area is characterized by rural residential and recreational uses and is not part of an established community. Therefore, implementation of the Proposed Project would not create a barrier to travel between or to parts of a community and **no impact** would occur.

Impact 3.9-2. The Proposed Project would not cause significant environmental impact due to a conflict with an applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

The Proposed Project is located in unincorporated Nevada County on lands owned by NID and BLM. The Project complies with Nevada County's General Plan and Zoning Ordinance, and with the BLM's SRMP.

As detailed in Chapter 2, Project Description, the ultimate goal of the Project is to make progress in restoration of the historic water storage capacity in the Greenhorn Arm of Rollins Reservoir and prevent further migration of suspended sediment from this arm into the main reservoir. The Project is designed to provide benefits related to water storage capacity and recreation. The design of the Project also considers the need to minimize impacts to water quality and to protect foothill yellow-legged frog (*Rana boylii*). All work in the reservoir would take place when water levels are low to minimize impacts to fish and other aquatic species.

The Project is consistent with the existing land use designations and zoning districts identified in the Nevada County General Plan and Zoning Ordinance. The Project would not result in a change to existing land uses or zoning. Further, before the start of construction all applicable resource agency permits will be obtained, and all conditions of the permits implemented as part of the Project. Therefore, impacts would be considered **less than significant**.

3.9.5 Mitigation Measures

No significant impacts would occur; therefore, no mitigation is required.

3.9.6 Level of Significance After Mitigation

Impacts related to land use and planning as a result of the Proposed Project would be **less than significant** without mitigation.

3.9.7 References

BLM (U.S. Bureau of Land Management). 2007. Sierra Resource Management Plan and Record of Decision. Folsom Field Office, California. December 2007.

Nevada County. 1996. Nevada County General Plan – Land Use Element. Adopted 1996, Land Use Element updated 2016. Nevada City, California: Nevada County Planning Department.

Nevada County. 2007. Zoning Ordinance. Nevada City, California: Nevada County Planning Department: http://qcode.us/codes/nevadacounty/view.php?topic=3-ii&frames=on

Nevada County. 2017. Nevada County Website, My Neighborhood Interactive GIS Map. Accessed March 2017: https://www.mynevadacounty.com/580/My-Neighborhood-Map.

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3.10 NOISE

This section evaluates the potential noise impacts of the Proposed Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project), describes the existing noise environment within the Project Site, and identifies noise levels expected to be generated by implementation of the Proposed Project. Receptors that may potentially be affected by noise are identified, as well as the criteria used to evaluate the effects of Project-generated noise on the existing noise environment. The discussion also describes the fundamentals of acoustics, the results of sound level measurements, and acoustical calculations.

Comments received in response to the Notice of Preparation (NOP) for this Environmental Impact Report (EIR) raised concerns regarding noise from sediment removal activities and trucks and vehicles accessing the Work Area and Staging Areas. Concerns with Project-generated noise are addressed in this section. Copies of the NOP and the comment letters received in response to the NOP are included in Appendix A.

Preparation of this section is based on the *Environmental Noise Assessment, Greenhorn Sediment Removal at Rollins Reservoir Project*, prepared by Bollard Acoustical Consultants Inc. (BAC), March 2019. A copy of this report is included in Appendix F.

3.10.1 Existing Conditions

3.10.1.1 Existing Noise Environment in the Project Vicinity

The noise environment surrounding the Project Site is very similar to the noise existing environment described in Nevada Irrigation District's (NID) recent Bear River Sediment Removal at Rollins Reservoir Project (Bear River Project). Both projects are located in the vicinity of mining operations with land uses sensitive to noise in relatively close proximity. For the Bear River Project, a continuous noise level measurement survey was conducted at two locations to quantify ambient noise levels in the immediate project vicinity. The noise measurement locations were selected to be generally representative of the noise exposure received at the residences located nearest to the project operations. The ambient noise measurement data revealed that existing ambient noise levels are fairly low, with day-night average sound level (L_{dn}) values ranging from 45 to 48 A-weighted decibels (dBA) over the monitoring period (NID 2015), with the main noise source being nature (e.g., wind in trees, birds, etc.).

Existing Land Uses in the Project Vicinity

The Project Site is located in Nevada County and is approximately 108 acres in size, including the sediment removal area, three staging areas, and the instream haul/access road. Sediment removal operations would occur in a 49.7-acre area (Work Area), downstream of the Hansen Bros. Enterprises' lease boundary. The Staging Area for installation of the sediment barrier is located

within the Greenhorn Campground Boat Launch parking area (refer to Map 2-3). Project haul trucks would use roads in both Nevada and Placer counties.

Surrounding the Project Site are numerous rural residences. As shown on Map 3.10-1, 26 residential locations were identified as potential sensitive receptors in the immediate Project vicinity. Each of the 26 receptor locations was assigned a site identification number. A summary of the identified sensitive receptor locations is provided in Table 3.10-1. Although further from the Project Site, users of the Greenhorn Campground would also be considered sensitive receptors. As a worst-case, campers would experience Project noise levels similar to those identified for residence 19, which is located adjacent to the Greenhorn Campground Boat Launch parking area.

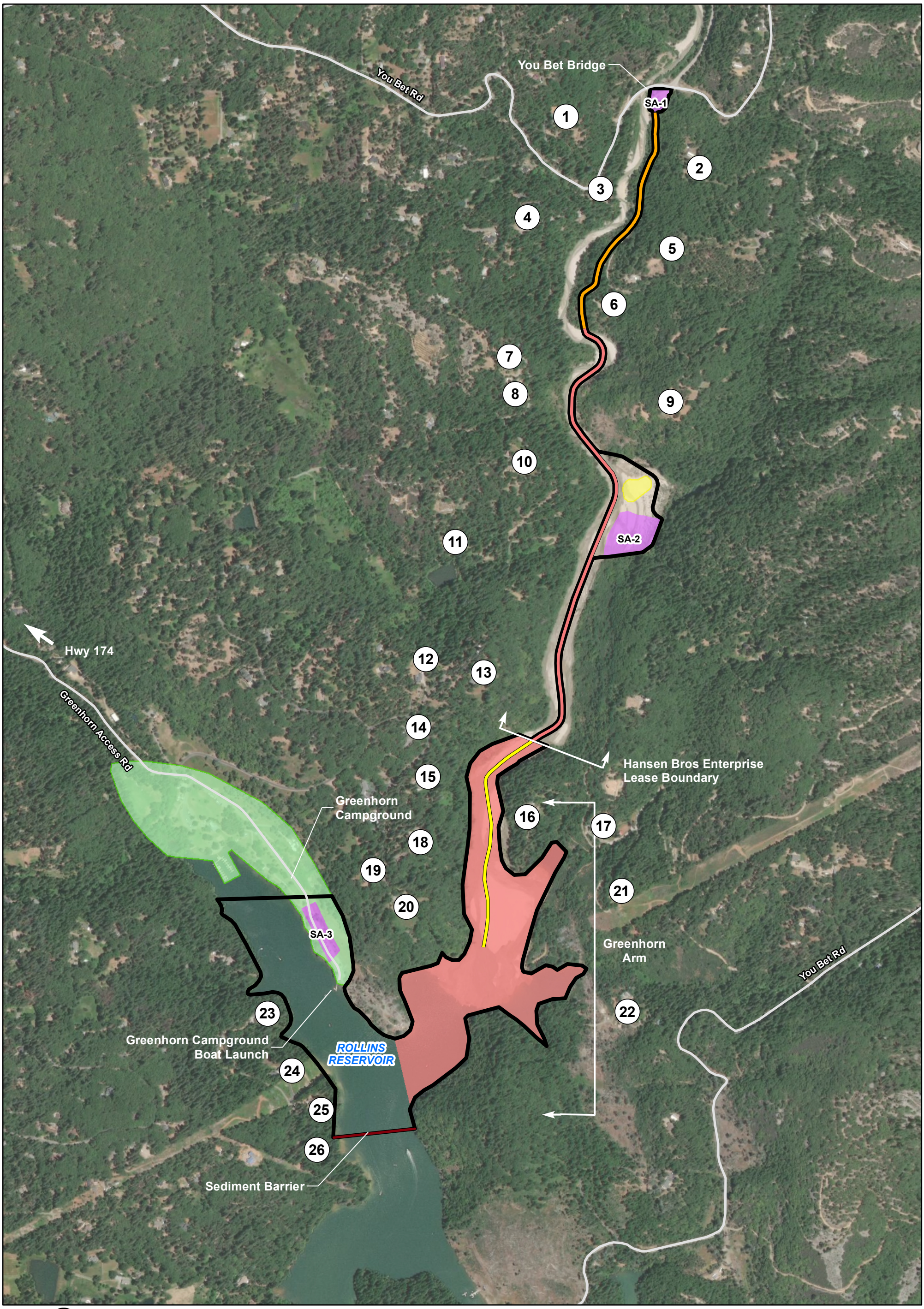
The distances from noise-generating activities to the nearest residences were scaled using aerial imagery and the Project Site plans. Table 3.10-2, shows the closest distances from each of the activity areas to each of the residential receptor locations.

3.10.1.2 Background on Noise and Acoustical Terminology

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called hertz.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. The decibel (dB) scale was devised to compress this wide range of pressures into a more manageable range. The decibel scale uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness.

The perceived loudness of sound is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of Environmental Noise Assessment. All noise levels reported in this section are in terms of A-weighted levels. Map 3.10-1, illustrates common noise levels associated with various sources and Figure 3.10-1 defines common acoustical terms. An increase of 3 dBA is barely perceptible to the human ear. An increase of 10 dBA represents a doubling of perceived loudness.



Projection: UTM Zone 10
Datum: NAD 83

0 500 1,000 2,000 Feet

USGS 7.5' Quad: Chicago Park, CA

T 15N, R 09E, Sections 2-3, 10-11

- Project Site Boundary
- Existing Haul Road (upland)
- Existing Haul Road (floodplain)
- New Haul Road
- # Receiver Locations
- Campground
- Sediment Removal Area (Work Area)
- Staging Area
- Stockpile Area

Cardno

Greenhorn Sediment Removal at Rollins Reservoir Project
Nevada County, CA

Map 3.10-1

Project Area and Nearest Residential Receiver Locations

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Table 3.10-1
Nearest Noise-Sensitive Receiver Locations

Residence[1]	Assessor Parcel Number	Address
1	12-710-53	16148 You Bet Road
2	12-730-23	14000 Arrowhead Mine Road
3	12-740-48	16169 You Bet Road
4	12-740-40	14101 Fifield Road
5	12-730-48	14300 Dandee Hill Lane
6	12-730-21	16447 You Bet Road
7	12-750-50	14377 Fifield Road
8	12-750-51	14455 Fifield Road
9	28-150-65	15300 You Win Court
10	12-750-52	14641 Fifield Road
11	12-641-24	15586 Frolic Meadow
12	28-410-20	13822 Marie Lane
13	28-410-23	13801 Marie Lane
14	28-410-25	14000 Frederick Way
15	28-410-27	14097 Frederick Way
16	28-150-64	15111 You Win Court
17	28-150-65	15300 You Win Court
18	28-410-28	14203 Frederick Way
19	28-410-37	14278 Frederick Way
20	28-410-33	14325 Frederick Way
21	28-150-44	15263 You Win Court
22	28-150-35	21119 You Bet Road
23	28-440-02	17615 Rollins View Drive
24	28-440-03	17720 Rollins View Drive
25	28-440-12	17841 Rollins View Drive
26	28-440-14	17915 Rollins View Drive

Source: BAC 2019
Notes: Receiver locations identified on Map 3.10-1.

Table 3.10-2
Distances from Nearest Residences to Noise-Generating Activity Areas

Residence #	Distances (feet)								
	Sediment Barrier			Sediment Removal Work Area	Stockpile Area	Staging Areas			Haul Route
	Initial	Intermediate	Final			SA-1	SA-2	SA-3	
1	9,500	8,830	8,000	5,900	3,300	550	3,800	7,800	850
2	9,300	8,740	7,775	5,600	2,800	800	3,350	7,900	400
3	8,840	8,250	7,350	5,200	2,600	800	3,000	7,300	400
4	8,400	7,850	7,000	4,850	2,450	1,400	2,800	6,800	800
5	8,450	7,830	6,900	4,800	2,000	1,300	2,500	7,150	500
6	7,800	7,200	6,300	4,200	1,480	1,850	1,900	6,500	100
7	7,100	6,500	5,650	3,550	1,500	2,600	1,700	5,500	600
8	6,850	6,300	5,400	3,300	1,330	2,800	1,450	5,200	550
9	6,950	6,500	5,500	3,350	600	2,800	1,000	5,800	700
10	6,000	5,600	4,700	2,550	1,050	3,550	1,000	4,600	750
11	5,250	4,800	3,900	1,950	1,750	4,500	1,400	3,750	n/a
12	4,000	3,400	2,700	1,000	2,500	5,700	2,000	2,500	n/a
13	4,050	3,450	2,750	700	2,100	5,600	1,650	2,700	n/a
14	3,450	2,850	2,150	600	3,000	6,250	2,500	2,000	n/a
15	3,000	2,500	1,700	450	3,250	6,600	2,700	1,700	n/a
16	3,050	2,550	1,750	400	2,950	6,600	2,500	2,300	n/a
17	3,200	2,750	1,800	500	3,000	6,700	2,600	2,700	n/a
18	2,500	2,000	1,200	450	3,650	7,000	3,150	1,200	n/a
19	2,150	1,600	1,150	850	4,200	7,600	3,750	650	n/a
20	1,900	1,300	750	700	4,300	7,700	3,800	750	n/a
21	2,800	2,600	1,500	850	3,650	7,500	3,300	2,700	n/a
22	2,200	2,000	1,250	700	4,800	8,500	4,300	2,800	n/a
23	1,100	1,350	2,000	1,400	6,000	9,300	5,500	950	n/a
24	700	1,100	2,000	1,200	6,200	9,500	5,800	1,200	n/a
25	300	950	1,900	900	6,300	9,800	5,800	1,300	n/a
26	550	1,200	2,250	1,000	6,800	10,300	6,300	1,800	n/a

Source: BAC 2019; Google Earth aerial imagery; and Project Site plans

Figure 3.10-1
Acoustical Terminology

Acoustics	The physics of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human auditory response.
Decibel or dB	Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 – 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Impulsive Noise	Sound of short duration, usually less than one second with an abrupt onset and rapid decay.
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
L_{eq}	Equivalent or energy-averaged sound level.
L_{max}	The highest root-mean square (RMS) sound level measured over a given period of time.
Loudness Ratio	A subjective term for the sensation of the magnitude of perceived sound.
Masking	The amount (or the process) by which the threshold of audibility for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the Maximum level, which is the highest RMS level.
RT_{60}	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
SEL	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.
Threshhold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshhold of Pain	Approximately 120 dB above the threshold of hearing.

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Acoustical Consultants

3.10.2 Relevant Plan, Policies and Ordinances

3.10.2.1 Federal and State

There are no federal or state noise criteria that would be directly applicable to this Project.

3.10.2.2 Local

Nevada County General Plan – Noise Element

The Nevada County General Plan Noise Element contains the following policies that would be applicable to this Project (Nevada County 1996):

Policy 9.1 The following noise standards (Table 3.10-3), as performance standards and land use compatibility standards, shall apply to all discretionary and ministerial Projects excluding permitted residential (including tentative maps) land uses.

Table 3.10-3
Noise Exposure Limits, Nevada County General Plan – Noise Element

Land Use Category	Time Period	L_{eq} dBA	L_{max} dBA
Rural	7 a.m. – 7 p.m.	55	75
	7 p.m. – 10 p.m.	50	65
	10 p.m. – 7 a.m.	40	55
Residential and Public	7 a.m. – 7 p.m.	55	75
	7 p.m. – 10 p.m.	50	65
	10 p.m. – 7 a.m.	45	60
Commercial and Recreation	7 a.m. – 7 p.m.	70	90
	7 p.m. – 7 a.m.	65	75
Business Park	7 a.m. – 7 p.m.	65	85
	7 p.m. - 7 a.m.	60	70
Industrial	Anytime	80	80

Source: Nevada County 1996.
Notes:
dBA = A-weighted decibels
Leq = equivalent sound level
Lmax = maximum sound level

Where two different zoning districts abut, the standard applicable to the lower, or more restrictive, district plus 5 dBA shall apply.
The above standards shall be measured only on property containing a noise-sensitive land use as defined in Policy 9.8 and may be measured anywhere on the property containing said land use.
If the measured ambient level exceeds that permitted, then the allowable noise exposure standard shall be set at 5dB above the ambient.
Because of the unique nature of sound, the County reserves the right to provide for a more restrictive standard than shown in this table. The maximum adjustment shall be limited to no less than the current ambient noise levels and shall not exceed the standards of this policy or as they may be further adjusted by Policy 9.lb.
The above standards shall not apply to those activities associated with the actual construction of a project or to those projects associated with the provision of emergency services or functions.

Policy 9.9 Limit future noise-generating land use to those location of the County where their impacts on noise-sensitive land uses will be minimized, consistent with the standards found in Policy 9.1.

Policy 9.10 Require the preparation of a comprehensive noise study for all land use Projects determined to have a potential to create noise levels inconsistent with those standards found in Policy 9.1, and in accordance with the methodology identified in the Noise Element Manual contained in General Plan Volume 2, Section 3 – Noise Analysis Appendix A.

Nevada County Code

Title 3, Chapter II, Article 4, Division 4.1.7 of the Nevada County Code regulates noise. The following specific provisions of the Nevada County Noise Code would be applicable to this Project.

> ***D. Noise Standards.*** *All land use Projects requiring a Development Permit or a Use Permit shall comply with the noise standards provided herein. Permitted residential land uses, including parcel and tentative maps, are not subject to the standards contained in Table L-II 4.1.7 of the County Code.*

Because County Code Table L-II 4.1.7 is identical to the Nevada County General Plan Noise Element standards shown in Table 3.10-3 it is not reproduced here.

Placer County General Plan – Noise Element

The Placer County General Plan Noise Element contains the following policies that would be applicable to noise generated by hauling of sediments off-site on roads in Placer County (Placer County 2013). Note that all noise-sensitive receivers listed in Table 3.10-1 identified for this Project are located in Nevada County.

Policy 9.A.9 Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 3.10-4 or the performance standards in Table 3.10-4 at outdoor activity areas or interior spaces of existing noise-sensitive land uses.

Table 3.10-4
Maximum Allowable Noise Exposure Transportation Noise Sources

Noise-Sensitive Land Uses	Outdoor Activity Areas[1] L_{dn}/CNEL, dB	Interior Spaces	
		L_{dn}/CNEL, dB	L_{eq}, dB[2]
Residential	60 [3]	45	—
Transient lodging	60 [3]	45	—
Hospitals, nursing homes	60 [3]	45	—
Theaters, auditoriums, music halls	—	—	35
Churches, meeting halls	60 [3]	—	40
Office buildings	—	—	45
Schools, libraries, museums	—	—	45
Playgrounds, neighborhood parks	70	—	—

Source: Placer County 2013.
Notes:
CNEL = community noise equivalent level
dBA = A-weighted decibels
L_{dn} = average day-night sound level
L_{eq} = equivalent sound level
1 Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
2 L_{eq} as determined for a typical worst-case hour during periods of use.
3 Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

3.10.3 Thresholds of Significance

3.10.3.1 Methods of Analysis

There are four distinct noise-generating activity areas of the Project:

- **Sediment Barrier**: Install a sediment barrier, consisting of interlocking steel sheet piles, from a barge to prevent further migration of sediment into Rollins Reservoir. The location of the sediment barrier may change as sediment is removed over the years and would eventually move from the main body of the reservoir into the Greenhorn Arm. It is assumed that the sediment barrier would move three times during implementation of the Project (see Map 3.10-1).
- **Work Area**: Use of heavy equipment to establish the access/haul road to the Work Area and sediment removal activities within the Work Area including: Channelization of the creek within the inundation zone; installation of dewatering pipes or excavation of dewatering channels and conducting sediment removal. A 10-horsepower (HP) diesel generator would be used to power the valve box and aeration system.

- **Stockpile Area**: Stockpiling and sorting of material for transport off-site to an approved processing center for disposal, or temporarily stockpiling at the Project Site for commercial sale and/or use in a local mine reclamation project. A 40-HP diesel generator would be used to provide power for processing of sediments in the Stockpile Area.
- **Haul Truck Traffic**:
  - Haul truck traffic within the Project Site. Hauling of material from the Stockpile Area to You Bet Road.
  - Haul truck traffic outside the Project Site. Off-site hauling of sediments that meets appropriate standards as follows:
    - Distribution of approximately 30% of material to Hansen Bros. Enterprises for processing at the local plant located across You Bet Road approximately 1.25 miles north of the Project (see Map 2-2);
    - Distribution of approximately 30% of material for local sales in Nevada County via Highway 174;
    - Distribution of approximately 10% of material for use in reclamation of one or more mining sites within 10 miles of the Project (in Nevada or Placer counties); or
    - Distribution of approximately 30% of material via Interstate 80 (I-80) for sales outside of Nevada County (i.e., in Placer or surrounding counties).

The Project Description (Section 2.0) provides a list of heavy equipment, vehicles, and machinery that will be used at the four noise-generating activity areas. Mobile equipment is required to be equipped with backup alarms for safety on the job site. Reference noise level data for noise-generating activities of the Project were obtained from BAC (2019) data, the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM), and from published acoustical literature. Reference sound levels were adjusted based on either the estimated duration of the hours in which the equipment would be operating (for stationary noise sources), or the number of trips per hour resulting from mobile equipment being moved. The reference noise level data is provided in Table 3.10-5.

The Project would use heavy trucks for transport of excavated gravel material from the Project Site to various markets. For the purposes of the noise analysis, it is assumed there would be 6 operating days per week during a 4-month period (August through November). A typical work day would begin at 7:00 a.m. and end at 7:00 p.m. Therefore, as shown Table 3.12-3 (in Section 3.12, Transportation) the maximum number of truck trips generated on the haul road under the 50,000 tons/year scenario would be approximately 94 per day, or 8 per hour on average. Under the 200,000 tons/sixth year scenario the maximum would be approximately 302 per day, or 25 per hour on average.

Table 3.10-5
Reference Noise Levels for Construction and Processing Equipment

Proposed Equipment	Activity / Area Used	L_{max}, dB @ 50 ft.	L_{eq}, dB @ 50 ft.
Loaders	Sediment Removal	82	76
Excavators	Sediment Removal	81	78
Backhoes	Sediment Removal	81	78
Scrapers	Sediment Removal	89	86
Bulldozers	Construction	85	80
Rollers	Construction	80	75
Delivery Truck	Haul Road	79	57
Dump Truck/Yukes	Sediment Removal	82	73
Sweeper Truck	Haul Road	74	55
Water Truck	Haul Road	86	62
Grizzly	Stockpile Area	90	94
Barge	Sediment Barrier	66	65
Pile Driver	Sediment Barrier	96	91
Chainsaw	Construction	89	80
Diesel Generator – 10 HP	Valve Box/Pond Area	61	61
Diesel Generator – 40 HP	Stockpile Area/Staging Area 2	62	62

Source: BAC 2019
Notes:
dB = decibel
HP = horsepower
Leq = equivalent sound level
Lmax = maximum sound level

Noise Level Prediction Methodology

The reference noise levels shown in Table 3.10-5 were projected to the nearest residences shown in Table 3.10-2 assuming spherical spreading of sound from the source to the receiver (i.e., 6 dB decrease for each doubling of distance from the noise source). An additional offset for atmospheric absorption of -1.5 dB per thousand feet was applied to the computations. Finally, adjustments for shielding of the sensitive receptors from view of the noise sources by intervening topography were also applied, where applicable. No offsets were applied in cases where the sensitive receptor would have an unimpeded view of the noise-generating activities. In cases where intervening topography would provide moderate shielding of the Project noise sources, a -5 dB offset was applied, and a -10 dB offset was applied when substantial shielding by intervening topography would result between the noise source and sensitive receptor.

The noise level predictions were prepared for each of the four noise-generating activity areas relative to each of the 26 receptor locations. For the sediment barrier installation and removal activities, noise levels were calculated for initial, intermediate, and final barrier locations.

The significance criteria used to evaluate the Project impacts related to noise are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.). According to Appendix G, a significant impact related to noise would occur if the Project would:

1. Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
2. Generate excessive groundborne vibration or groundborne noise levels.

3.10.4 Impacts Analysis

Impact 3.10-1. The Proposed Project would generate a substantial temporary increase in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

The Project would remove 50,000 tons of silt, sand, and aggregate during a typical year. It is assumed the maximum amount of material removed over a 6-year period would be 200,000 tons. Dry sediment would be excavated in the Work Area using heavy excavating and earthmoving equipment (e.g., scrapers, trackhoes, backhoes, excavators, and/or front end loaders). Excavation would continue until the level of creek bed surface is lowered to the top of the dewatering pipe/channel. Excavated material would be transported to the Stockpile Area adjacent to Staging Area 2 (SA-2) via the streambed access/haul road and then transported to SA-1 adjacent to Greenhorn Creek crossing for use and/or processing via You Bet Road and to Hansen Bros. Enterprises.

In addition, the Project would involve installation of a sediment barrier utilizing a barge within Rollins Reservoir. Stockpiling of equipment, fuel storage and a personnel trailer would be at SA-3 located within Greenhorn Campground Boat Launch parking area. Installation of the sediment barrier would take approximately 2 weeks, and would be moved approximately three times during the Project (initial, intermediate, and final locations).

The existing ambient noise levels in the general Project vicinity range from approximately 45 to 50 dBA L_{dn}, 40 to 45 dBA L_{eq}, and 70 to 80 dBA L_{max}. All receptors potentially sensitive to Project noise are Nevada County residents. Nevada County applies 55 dBA L_{eq} and 75 dBA L_{max} daytime noise standards to residential land uses affected by non-transportation noise sources.

Sediment Barrier

Tables 3.10-6 through 3.10-8 contain the noise level prediction results for the three sediment barrier locations. These include the initial location, intermediate location, and final location.

Initial Location

As shown on Table 3.10-6, on-site Project noise sources are predicted to generate *average* (L_{eq}) noise levels ranging from 21 to 75 dBA L_{eq} at the nearest residences to the proposed initial sediment barrier installation location. Nevada County applies 55 dBA L_{eq} and 75 dBA L_{max} daytime noise standards. Therefore, on-site noise sources are predicted to exceed average daytime noise standards at six residences (residence numbers 19, 20, 23, 24, 25, and 26) and at nearby campsites.

On-site Project noise sources are predicted to generate *maximum* (L_{max}) noise levels ranging from 26 to 80 dBA L_{max} at the nearest residences to the initial sediment barrier installation location. Therefore, on-site noise sources are predicted to exceed maximum daytime noise standards at one residence (residence number 25).

Table 3.10-6
Predicted Noise Levels at Nearest Residences, Sediment Barrier Installation / Removal – Initial Location

Residence #	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Levels, dB	
				L_{eq}	L_{max}
1	16148 You Bet Rd.	8,830	-10	21	26
2	14000 Arrowhead Mine Rd.	8,740	-10	22	27
3	16169 You Bet Rd.	8,250	-10	23	28
4	14101 Fifield Rd.	7,850	-10	24	29
5	14300 Dandee Hill Lane	7,830	-10	24	29
6	16447 You Bet Rd.	7,200	-10	26	30
7	14377 Fifield Rd.	6,500	-10	28	32
8	14455 Fifield Rd.	6,300	-10	28	33
9	15300 You Win Court	6,500	-10	28	33
10	14641 Fifield Rd.	5,600	-10	31	35
11	15586 Frolic Meadow	4,800	-10	33	38
12	13822 Marie Lane	3,400	-10	37	42
13	13801 Marie Lane	3,450	-10	37	42
14	14000 Frederick Way	2,850	-10	39	44
15	14097 Frederick Way	2,500	-10	41	46
16	15111 You Win Court	2,550	-5	46	51
17	15300 You Win Court	2,750	0	50	55
18	14203 Frederick Way	2,000	-5	49	53
19	14278 Frederick Way	1,600	-5	55	60
20	14325 Frederick Way	1,300	0	57	62
21	15263 You Win Court	2,600	-5	47	52
22	21119 You Bet Rd.	2,000	-5	50	55
23	17615 Rollins View Drive	1,350	0	63	68

Residence #	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Levels, dB	
				L_{eq}	L_{max}
24	17720 Rollins View Drive	1,100	0	67	72
25	17841 Rollins View Drive	950	0	75	80
26	17915 Rollins View Drive	1,200	0	70	74

Source: BAC 2019
Notes:
dB = decibel
Leq = equivalent sound level
Lmax = maximum sound level

Intermediate Location

As shown Table 3.10-7, on-site Project noise sources are predicted to generate average noise levels ranging from 23 to 64 dBA L_{eq} at the nearest residences to the proposed intermediate sediment barrier installation location. Therefore, on-site noise sources are predicted to exceed average daytime noise standards at five residences (residence numbers 20, 23, 24, 25, and 26).

On-site project noise sources are predicted to generate maximum noise levels ranging from 28 to 69 dBA L_{max} at the nearest residences to the initial sediment barrier installation location. Therefore, on-site noise sources are not predicted to exceed maximum daytime noise standards.

Table 3.10-7
Predicted Noise Levels at Nearest Residences, Sediment Barrier Installation / Removal – Intermediate Location

Residence #	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Levels, dB	
				L_{eq}	L_{max}
1	16148 You Bet Rd.	8,830	-10	23	28
2	14000 Arrowhead Mine Rd.	8,740	-10	23	28
3	16169 You Bet Rd.	8,250	-10	25	29
4	14101 Fifield Rd.	7,850	-10	26	30
5	14300 Dandee Hill Lane	7,830	-10	26	30
6	16447 You Bet Rd.	7,200	-10	27	32
7	14377 Fifield Rd.	6,500	-10	29	34
8	14455 Fifield Rd.	6,300	-10	30	35
9	15300 You Win Court	6,500	-10	29	34
10	14641 Fifield Rd.	5,600	-10	32	37
11	15586 Frolic Meadow	4,800	-10	34	39
12	13822 Marie Lane	3,400	-10	39	44
13	13801 Marie Lane	3,450	-10	39	44
14	14000 Frederick Way	2,850	-10	42	47
15	14097 Frederick Way	2,500	-10	44	48
16	15111 You Win Court	2,550	-5	48	53

Residence #	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Levels, dB	
				L_{eq}	L_{max}
17	15300 You Win Court	2,750	0	52	57
18	14203 Frederick Way	2,000	-5	51	56
19	14278 Frederick Way	1,600	-5	54	58
20	14325 Frederick Way	1,300	0	61	66
21	15263 You Win Court	2,600	-5	48	53
22	21119 You Bet Rd.	2,000	-5	51	56
23	17615 Rollins View Drive	1,350	0	61	65
24	17720 Rollins View Drive	1,100	0	63	68
25	17841 Rollins View Drive	950	0	64	69
26	17915 Rollins View Drive	1,200	0	62	67

Source: BAC 2019
Notes:
dB = decibel
Leq = equivalent sound level
Lmax = maximum sound level

Final Location

As shown Table 3.10-8, on-site Project noise sources are predicted to generate average noise levels ranging from 25 to 67 dBA L_{eq} at the nearest residences to the proposed final sediment barrier installation location. Therefore, on-site noise sources are predicted to exceed average daytime noise standards at five residences (residence numbers 17, 18, 20, 22, and 25).

On-site project noise sources are predicted to generate maximum noise levels ranging from 30 to 62 dBA L_{max} at the nearest residences. Therefore, on-site noise sources are not predicted to exceed maximum daytime noise standards.

Table 3.10-8
Predicted Noise Levels at Nearest Residences, Sediment Barrier Installation / Removal – Final Location

Residence #	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Levels, dB	
				L_{eq}	L_{max}
1	16148 You Bet Rd.	8,000	-10	25	30
2	14000 Arrowhead Mine Rd.	7,775	-10	26	31
3	16169 You Bet Rd.	7,350	-10	27	32
4	14101 Fifield Rd.	7,000	-10	28	33
5	14300 Dandee Hill Lane	6,900	-10	28	33
6	16447 You Bet Rd.	6,300	-10	30	35
7	14377 Fifield Rd.	5,650	-10	32	36
8	14455 Fifield Rd.	5,400	-10	32	37
9	15300 You Win Court	5,500	-10	32	37

Residence #	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Levels, dB	
				L_{eq}	L_{max}
10	14641 Fifield Rd.	4,700	-10	35	39
11	15586 Frolic Meadow	3,900	-10	38	42
12	13822 Marie Lane	2,700	-10	43	47
13	13801 Marie Lane	2,750	-10	42	47
14	14000 Frederick Way	2,150	-10	45	50
15	14097 Frederick Way	1,700	-10	48	53
16	15111 You Win Court	1,750	-5	53	57
17	15300 You Win Court	1,800	0	57	62
18	14203 Frederick Way	1,200	-5	57	62
19	14278 Frederick Way	1,150	-10	52	57
20	14325 Frederick Way	750	0	67	71
21	15263 You Win Court	1,500	-5	54	59
22	21119 You Bet Rd.	1,250	-5	56	61
23	17615 Rollins View Drive	2,000	-5	51	56
24	17720 Rollins View Drive	2,000	-5	51	56
25	17841 Rollins View Drive	1,900	0	57	62
26	17915 Rollins View Drive	2,250	0	55	60

Source: BAC 2019
Notes:
dB = decibel
Leq = equivalent sound level
Lmax = maximum sound level

Stockpile Area

Table 3.10-9 contains the predicted noise levels at the Stockpile Area, which is adjacent to SA-2. Project noise sources are predicted to generate average noise levels ranging from 22 to 62 dBA L_{eq} at the nearest residences. Therefore, on-site noise sources are predicted to exceed average daytime noise standards at two residences (residence numbers 9 and 10).

Maximum noise levels at the Stockpile Area would range from 27 to 68 dBA L_{max} at the nearest residences. Therefore, on-site noise sources are not predicted to exceed maximum daytime noise standards.

Table 3.10-9
Predicted Noise Levels at Nearest Residences, Stockpile Area Activities

Residence #	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Levels, dB	
				L_{eq}	L_{max}
1	16148 You Bet Rd.	3,300	-10	33	39
2	14000 Arrowhead Mine Rd.	2,800	-10	35	41
3	16169 You Bet Rd.	2,600	-10	36	42
4	14101 Fifield Rd.	2,450	-10	37	43
5	14300 Dandee Hill Lane	2,000	-10	40	45
6	16447 You Bet Rd.	1,480	-10	43	48
7	14377 Fifield Rd.	1,500	0	53	58
8	14455 Fifield Rd.	1,330	0	54	60
9	15300 You Win Court	600	0	62	68
10	14641 Fifield Rd.	1,050	0	57	62
11	15586 Frolic Meadow	1,750	-5	46	51
12	13822 Marie Lane	2,500	-10	37	42
13	13801 Marie Lane	2,100	0	49	54
14	14000 Frederick Way	3,000	-10	35	40
15	14097 Frederick Way	3,250	-10	33	39
16	15111 You Win Court	2,950	-10	35	40
17	15300 You Win Court	3,000	-10	35	40
18	14203 Frederick Way	3,650	-10	32	37
19	14278 Frederick Way	4,200	-10	30	35
20	14325 Frederick Way	4,300	-10	29	35
21	15263 You Win Court	3,650	-10	32	37
22	21119 You Bet Rd.	4,800	-10	28	33
23	17615 Rollins View Drive	6,000	-10	24	29
24	17720 Rollins View Drive	6,200	-10	23	29
25	17841 Rollins View Drive	6,300	-10	23	29
26	17915 Rollins View Drive	6,800	-10	22	27

Source: BAC 2019
Notes:
dB = decibel
Leq = equivalent sound level
Lmax = maximum sound level

Work Area

Table 3.10-10 contains the predicted noise levels for the sediment removal activities within the Work Area. Project noise sources are predicted to generate average noise levels ranging from 28 to 70 dBA L_{eq} at the nearest residences. Therefore, on-site noise sources are predicted to exceed average daytime noise standards at 14 residences (residence numbers 12-18 and 20-26).

Maximum noise levels at the Work Area would range from 24 to 64 dBA L_{max} at the nearest residences. Therefore, on-site noise sources are not predicted to exceed maximum daytime noise standards.

Table 3.10-10
Predicted Noise Levels at Nearest Residences, Work Area Activities

Residence #	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Levels, dB	
				L_{eq}	L_{max}
1	16148 You Bet Rd.	5,900	-10	28	24
2	14000 Arrowhead Mine Rd.	5,600	-10	29	25
3	16169 You Bet Rd.	5,200	-10	30	26
4	14101 Fifield Rd.	4,850	-10	31	27
5	14300 Dandee Hill Lane	4,800	-10	32	27
6	16447 You Bet Rd.	4,200	-10	34	29
7	14377 Fifield Rd.	3,550	-10	36	32
8	14455 Fifield Rd.	3,300	-10	37	33
9	15300 You Win Court	3,350	-10	37	32
10	14641 Fifield Rd.	2,550	-10	40	36
11	15586 Frolic Meadow	1,950	-10	44	39
12	13822 Marie Lane	1,000	-5	56	51
13	13801 Marie Lane	700	0	64	60
14	14000 Frederick Way	600	0	66	62
15	14097 Frederick Way	450	0	69	64
16	15111 You Win Court	400	0	70	65
17	15300 You Win Court	500	0	68	63
18	14203 Frederick Way	450	0	69	64
19	14278 Frederick Way	850	-10	52	48
20	14325 Frederick Way	700	0	64	60
21	15263 You Win Court	850	0	62	58
22	21119 You Bet Rd.	700	0	64	60
23	17615 Rollins View Drive	1,400	0	57	53
24	17720 Rollins View Drive	1,200	0	59	55
25	17841 Rollins View Drive	900	0	62	58
26	17915 Rollins View Drive	1,000	0	61	56

Source: BAC 2019
Notes:
dB = decibel
Leq = equivalent sound level
Lmax = maximum sound level

Haul Truck Traffic Within Project Site

Table 3.10-11 contains the predicted noise levels for residences exposed to haul truck noise between the Stockpile Area and You Bet Road. Project noise sources are predicted to generate average noise levels ranging from 38 to 58 dBA L_{eq} at the nearest residences. Therefore, on-site noise sources are predicted to exceed average daytime noise standards at one residence (residence number 6).

Maximum noise levels would range from 60 to 80 dBA L_{max} at the nearest residences. Therefore, on-site noise sources are predicted to exceed maximum daytime noise standards at one residence (residence number 6).

Table 3.10-11
Predicted Noise Levels at Nearest Residences, Haul Route
(Between Stockpile Area and You Bet Road)

Residence #	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Levels, dB	
				L_{eq}	L_{max}
1	16148 You Bet Rd.	850	0	38	60
2	14000 Arrowhead Mine Rd.	400	0	45	67
3	16169 You Bet Rd.	400	0	45	67
4	14101 Fifield Rd.	800	0	39	61
5	14300 Dandee Hill Lane	500	-5	38	60
6	16447 You Bet Rd.	100	0	58	80
7	14377 Fifield Rd.	600	0	41	64
8	14455 Fifield Rd.	550	0	42	64
9	15300 You Win Court	700	0	40	62
10	14641 Fifield Rd.	750	0	39	61

Source: BAC 2019
Notes:
dB = decibel
Leq = equivalent sound level
Lmax = maximum sound level

Haul Truck Traffic Outside Project Site

Off-site traffic noise levels generated by Project haul truck traffic on the route between the SA-1 and I-80 are predicted to be 35 dBA L_{dn} at the nearest residence to the haul road. Both Placer and Nevada Counties apply a 60 dBA L_{dn} standard to the exterior areas of residences affected by transportation noise sources. Therefore, Project-generated traffic would not exceed acceptable levels of transportation noise for either Placer or Nevada County.

Worst-Case Combined Project Activities

Table 3.10-12 shows the worst-case combined noise exposure from all activities at each residence. For the calculation of the combined levels, the highest noise levels from installation/removal at each of the three sediment barrier locations were used. Project noise sources are predicted to generate average noise levels ranging from 40 to 75 dBA L_{eq} at the nearest residences. Therefore, on-site noise sources are predicted to exceed average daytime noise standards at 18 residences (residence numbers 6, 9, 10, and 12 to 26).

Maximum noise levels would range from 51 to 80 dBA L_{max} at the nearest residences. Therefore, on-site noise sources are predicted to exceed maximum daytime noise standards at two residences (residence numbers 6 and 25).

Table 3.10-12
Predicted Noise Levels at Nearest Residences, Worst-Case Noise Generation of All Sources Combined

Residence #	Address	Predicted Noise Levels, dB	
		L_{eq}	L_{max}
1	16148 You Bet Rd.	40	60
2	14000 Arrowhead Mine Rd.	46	67
3	16169 You Bet Rd.	46	67
4	14101 Fifield Rd.	42	61
5	14300 Dandee Hill Lane	42	60
6	16447 You Bet Rd.	58	80
7	14377 Fifield Rd.	53	64
8	14455 Fifield Rd.	55	64
9	15300 You Win Court	62	68
10	14641 Fifield Rd.	57	62
11	15586 Frolic Meadow	48	51
12	13822 Marie Lane	56	51
13	13801 Marie Lane	65	60
14	14000 Frederick Way	66	62
15	14097 Frederick Way	69	64
16	15111 You Win Court	70	65
17	15300 You Win Court	68	63
18	14203 Frederick Way	69	64
19	14278 Frederick Way	57	60
20	14325 Frederick Way	69	71
21	15263 You Win Court	63	59
22	21119 You Bet Rd.	65	61
23	17615 Rollins View Drive	64	68

Residence #	Address	Predicted Noise Levels, dB	
		L_{eq}	L_{max}
24	17720 Rollins View Drive	68	72
25	17841 Rollins View Drive	75	80
26	17915 Rollins View Drive	70	74

Source: BAC 2019
Notes:
dB = decibel
Leq = equivalent sound level
Lmax = maximum sound level

Conclusion

The Proposed Project would exceed the Nevada County daytime average noise level standard of 55 dBA L_{eq} and the daytime maximum noise level standard of 75 dBA L_{max} at several residences adjacent to the Project Site. To reduce these impacts, NID will implement mitigation measures MM-NOI-1 through MM-NOI-5. These measures include: (1) when purchasing or replacing equipment, NID will use the latest, and least intrusive, backup warning devices available; and diesel generators will be equipped with silencers; (2) the Stockpile Area shall be designed to minimize the need for haul trucks to back up for loading and exiting; (3) signs shall be posted to limit horn use unless required for employee and public safety; (4) noise minimization shall be a standard topic at operations meetings; and (5) limiting construction hours. Due to the nature of the Project, with heavy equipment mobilizing within the Work Area and Staging Areas 6 days per week, the lack of setback areas that could minimize Project-generated noise, and because sensitive receptors are elevated above the Work Area and would therefore not benefit from shielding noise sources, the impact of exposure of persons to or generation of noise levels in excess of local standards would be considered **significant and unavoidable with mitigation incorporated**.

Impact 3.10-2. The Proposed Project would not generate excessive groundborne vibration or groundborne noise levels.

The Proposed Project includes pile driving to install the sediment barrier within the reservoir bed and use of heavy construction equipment throughout the Project Site that could create groundborne vibration at adjacent sensitive receptors. With the exception of blasting or heavy tracked construction equipment, vibration levels at 50 feet for a typical truck are less than "barely perceptible" at 0.05 peak particle velocity (PPV). Based on the Federal Transit Administration *Transit Noise and Vibration Impact Assessment* (FTA 2006), vibration levels of other typical construction equipment such as bulldozers, drilling, and jackhammers, which would be used at the Project Site, fall below 0.089 PPV at 25 feet. These levels are considered barely perceptible.

Because groundborne vibration dissipates very rapidly with distance, and the nearest residences to the sediment barrier installation areas are 300 to 1,900 feet away, vibration levels associated with the Project would be imperceptible. Therefore, impacts related to groundborne vibration would be **less than significant**.

3.10.5 Mitigation Measures

The following mitigation measures will be implemented as part of the Project to reduce impacts from Project-generated noise.

MM-NOI-1 When purchasing or replacing equipment, NID will use backup warning devices available per current standards. To the extent feasible, the Project Site will be designed to minimize the need to operate mobile machinery in reverse causing backup warning alarms to activate. In addition, diesel generators would be equipped with silencers.

MM-NOI-2 The stockpile shall be designed to minimize the need for haul trucks to back up for loading and exiting.

MM-NOI-3 Signs shall be posted to limit horn use unless required for employee and public safety.

MM-NOI-4 Noise minimization shall be a standard topic at operations meetings.

MM-NOI-5 Construction activities shall be limited to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday. On Sundays and Federal holidays, no noise-generating construction activities shall be permitted.

3.10.6 Level of Significance After Mitigation

Implementation of MM-NOI-1 through MM-NOI-5 will reduce construction noise impacts, however, due to the nature of the Project, with heavy equipment mobilizing within the Work Area and Staging Areas 6 days per week, the lack of setback areas that could minimize Project-generated noise, and because sensitive receptors are elevated above the Work Area and would therefore not benefit from shielding noise sources, the impact of exposure of persons to or generation of noise levels in excess of local standards would be considered **significant and unavoidable with mitigation incorporated**.

3.10.7 References

BAC (Bollard Acoustical Consultants, Inc.) 2019. Environmental Noise Assessment, Greenhorn Sediment Removal at Rollins Reservoir. March 2019.

Caltrans (California Department of Transportation). 2017. Loudness Comparison Chart. Found at: http://www.dot.ca.gov/dist2/Projects/sixer/loud.pdf. Accessed on August 31, 2017.

FTA (U.S. Federal Transit Administration, Office of Planning and Environment). 2006. Transit Noise and Vibration Impact Assessment. May 2006.

Nevada County. 1996. Nevada County General Plan – Noise Element. Adopted 1996, Noise Element updated 2014. Nevada City, California: Nevada County Planning Department.

NID (Nevada Irrigation District). 2015. Draft Environmental Impact Report for the Bear River Sediment Removal at Rollins Reservoir. May 2015.

Placer County. 2013. Placer County General Plan – Noise Element.

3.11 RECREATION

This section describes the existing recreation setting of the Project Site and vicinity, evaluates potential impacts, and identifies mitigation measures related to implementation of the Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project).

3.11.1 Existing Conditions

The Project Site is located on the Greenhorn Arm of Rollins Reservoir, on the west slope of the Sierra Nevada at an elevation of approximately 2,170 feet above mean sea level (msl). The Project Site is situated in a relatively rural area of Nevada County. The closest communities to the Project Site are the small towns of Colfax, Shady Glen, and Chicago Park. The largest city near the Project is Sacramento, with an estimated population of 495,234 (U.S. Census Bureau 2016).

Interstate 80 provides the primary vehicle access in the vicinity of the Project, connecting the Sacramento and surrounding metropolitan area in the Central Valley to the smaller foothill and mountain communities to the east, including Auburn, and the dense forests, reservoirs, and mountainous terrain that characterize the Sierra Nevada (Map 2-1). From Interstate 80, Rollins Reservoir is accessible via Colfax Highway (174) and Rollins Lake Road. The Project Site can be reached by taking Colfax Highway (174) to You Bet Road which provides the primary access to the Greenhorn Arm of Rollins Reservoir. Staging Area 3 (SA-3) can be reached by taking Colfax Highway (174) to the Greenhorn Access Road to the Greenhorn Campground Boat Launch parking area (Map 2-3).

The Project Site is located on private land owned by Nevada Irrigation District (NID) and a small portion of Bureau of Land Management (BLM) land. Nearly all of the area surrounding Rollins Reservoir is privately owned. Individual residences and small groups of houses are scattered throughout the heavily forested areas that encompass the Greenhorn Arm of the reservoir. The area to the west of the reservoir, along Colfax Highway (Road 174) is more densely populated. The reservoir is an important recreation resource for these local communities in particular, and the region in general.

Rollins Reservoir is situated in a region with numerous reservoirs, including the Sugar Pine Reservoir and Scotts Flat Lake, both located within one hour of the Project Site (Map 2-1). Three larger reservoirs, New Bullard's Bar Reservoir, Folsom Lake, and Lake Oroville are located within two hours of the Project Site. All of these reservoirs are situated in settings that are similar to Rollins Reservoir and offer a variety of recreation opportunities, including camping, picnicking, boating, and fishing. Additionally, the Tahoe National Forest (TNF) is located east, southeast, and northeast of the Project Site (Map 2-1). Almost any outdoor recreation activity associated with mountain, river, and/or lake environments is available in the TNF.

3.11.1.1 Recreation Resources at Rollins Reservoir

This section describes the existing recreation facilities at Rollins Reservoir and provides estimates of recreation use and facility utilization. Unless otherwise noted, all information provided in this section is based on data collected during the relicensing of the Yuba-Bear Hydroelectric Project (FERC Project No. 2266) and reported in Technical Memorandum 8-2b, Recreational Use and Visitor Survey (NID 2011). The data documented in this memorandum is based on field studies conducted in 2009.

A wide range of recreation activities are available at Rollins Reservoir including camping, picnicking, beach swimming, motorized and non-motorized boating, and fishing. These activities are supported by various developed facilities located around the perimeter of the reservoir including campgrounds, day-use areas, boat launches, marinas/slips, fueling stations, general stores, restaurants, and parking areas. As shown on Map 2-3, the developed recreation facilities are consolidated into four "recreation areas", each with a campground, a boat ramp, a marina, and other support facilities. Each of these areas is described later in this section.

In 2009 estimated recreation use at Rollins Reservoir during the peak recreation season (Memorial Day through Labor Day), was 115,456 recreation-days. A recreation-day is defined as a visit by a person for recreation purposes during any portion of a 24-hour period. The 2009 data indicated that the majority of visitation at Rollins Reservoir is associated with overnight stays (78%). About 22% of visitation is attributed to day-use. Most day-use visitation is from Placer, Nevada, and Sacramento counties. Approximately 28% of visitation originates from either Placer or Nevada counties. Sacramento county overnight trip-origins account for 34% of visitation.

Camping is only permitted at four developed campground facilities, referred to as Orchard Springs Campground, Greenhorn Campground, Peninsula Campground and Long Ravine Campground. These campgrounds offer a variety of camping opportunities (tents, Recreational Vehicles, trailers). The Orchard Springs, Greenhorn, and Long Ravine campgrounds could be considered "high-density" camping. Space at these facilities is minimal as is screening between campsites, and some sites are grouped together in tight areas. The Peninsula Campground offers a relatively lower density camping experience. The campsites at this campground are situated in a more densely forested setting with screening between sites. With the exception of Peninsula Campground, the campgrounds are open year-round. Combined, the four campgrounds include a total of 348 campsites. In 2009, the combined seasonal occupancy of the four developed campgrounds at Rollins Reservoir was 65% of capacity.

Both motorized and non-motorized boating are popular at Rollins Reservoir. The maximum on-water speed limit is 50 miles per hour (mph) during the daytime and 10 mph at night. At designated launch and mooring areas, and fishing areas, the speed limit is 5 mph. Motorized watercraft are prohibited in designated swimming areas.

The developed recreation facilities at Rollins Reservoir, and associated use, are described in more detail in the following subsections.

Orchard Springs Recreation Area

The facilities that comprise the Orchard Springs Recreation Area are located on the southeast end of the reservoir, immediately northeast of the dam (Map 2-3). This area includes a campground, a resort, a store, a boat launch, boat slips, and two swim beaches.

Shoreline use occurs at the swim beaches and the most common shoreline activities are picnicking/sunbathing. During 2009, the highest level of shoreline use occurred during holiday days, followed by weekend days. The most common types of water craft in this area are ski boats, fishing boats, and jet skis/personal water craft (PWC).

The campground includes a total of 101 camp sites. In 2009, the highest occupancy occurred in July when average facility occupancy was 41% of capacity. As expected, the highest recreation use occurs on holidays and weekends. In 2009, occupancy on holidays averaged 85% of facility capacity. During weekend days, occupancy averaged 62% of facility capacity.

Peninsula Recreation Area

This area is located at the end of the peninsula that separates the Bear River Arm from the main body of Rollins Reservoir (Map 2-3). The Peninsula Recreation Area includes a campground, boat launching facility, three camping cabins, a swimming beach (with volleyball court and horseshoe pit), and toilet buildings with hot showers. In addition, the campground offers a general store and boat rentals.

Parking is available at the boat launch facility for day-use visitation and for overflow campground parking. The boat launch parking area has a 50 vehicles at one time (VAOT) capacity and is paved with designated spaces. The number of vehicles using the parking area is highest during weekends and holidays.

The most common shoreline activities at the Peninsula Recreation Area are picnicking/sunbathing and swimming. The highest level of shoreline use occurs during weekend days, followed by holiday days. The most common types of watercraft observed in this area are ski boats and jet skis/PWCs.

Camping opportunities at the Peninsula Recreation Area include tents and RV sites. The campground includes a total of 83 camp sites, organized in three loops. In 2009, average facility occupancy was 62.7% of capacity. In 2009, the highest recreation use occurred on holidays and weekends. In 2009, occupancy on holidays averaged 100% of facility capacity. During weekend days, occupancy averaged 90% of facility capacity.

Long Ravine Recreation Area

This area is located at the south east end of the reservoir and includes a campground with sites for RV and tent camping, group camp sites, a dump station, a marina with a boat ramp, a floating gas dock/pump, boat slips and boat rentals, a swim platform and slide, and a large beach (Map 2-3). In addition, this area includes a general store and restaurant.

Parking at the Long Ravine Recreation Area is available at the boat launch facility. This parking area includes upper and lower sections, both paved with designated spaces. The total capacity of the parking area is 72 VAOT. Overflow parking is accommodated along the side of the access road and exterior of the parking area. The number of vehicles using the parking area is highest during weekends and holidays.

Visitors may use the shoreline at two locations in the Long Ravine Recreation Area: at the swim beach and near the shoreline campsites adjacent to the boat launch facility. At both of these locations the most common activities are picnicking/sunbathing and swimming and the highest use levels are during weekend days and holiday days. The most common types of water craft observed in this area are ski boats, jet skis/PWCs, and fishing boats.

The campground includes a total of 85 campsites organized in two loops. The campground includes shoreline campsites, adjacent to the boat launch, where visitors have access to the shoreline. As with the other campgrounds, recreation use is the highest on weekends, with an average of 100% facility utilization reported in 2009, followed by weekend days, with a an average facility capacity utilization of 95%.

Greenhorn Recreation Area

This area is located in a cove west of the Greenhorn Arm of Rollins Reservoir. A topographic high separates the cove from the Greenhorn Arm of the reservoir (Map 2-3). This area includes a campground, a general store and arcade, flush toilet buildings, a picnic area with three picnic units, a marina, a swimming beach, and a volleyball court. A boat launch facility with a parking area, paved boat launch, and single dock is located on the east shore of the cove, approximately 700 feet from the resort. A paved access road provides access to the parking area and boat launch. An unpaved parking area is located just beyond the paved parking area and is available for overflow use. Representative photographs of the Greenhorn Recreation Area are provided in Photos 3.11-1 through 3.11-4 at the end of this section.

Three separate parking areas and overflow parking are available at the Greenhorn Recreation Area, as follows:

- **Boat Launch Parking Area.** This parking area is located immediately adjacent to the boat launch. This parking area is paved with designated spaces and has a capacity of 68 VAOT. Under the Proposed Project, this parking area will be used as SA-3 (Map 2-2).

- **Swim Beach and Picnic Area Parking.** The swim beach and picnic area has a gravel parking area with a capacity of about 35 VAOT, although none of the parking spaces are designated. When capacity is reached at this parking area vehicles are allowed to park on the grass beyond the parking area.
- **Overflow Parking Area.** This parking area is located off of the main access road, prior to the boat launch. The overflow parking area is an undeveloped gravel parking area without marked spaces with a capacity of about 40 VAOT. When the capacity of this designated overflow parking area is reached vehicles are allowed to park alongside the main access road.

As expected, use of these parking areas is highest during holidays, followed by weekends.

In 2009, the most commonly observed shoreline activities in the Greenhorn Area were picnicking/sunbathing. Correlating with parking use, shoreline use was highest during holiday days, followed by weekend days. In 2009, the most common types of water craft observed in the Greenhorn Recreation Area were ski boats and jet skis/PWCs.

The campground includes a total of 79 campsites, organized in two loops. In 2009, average facility occupancy was 59.2% of capacity. In 2009, the highest recreation use occurred on holidays and weekends. In 2009, occupancy on holidays averaged 100% of facility capacity. During weekend days, occupancy averaged 90% of facility capacity.

3.11.2 Relevant Plans, Policies, and Ordinances

3.11.2.1 Federal

The Project Site boundary includes a 3.2-acre parcel within the Work Area that is under the jurisdiction of BLM. This parcel is within the FERC Project boundary for the Yuba-Bear Hydroelectric Project (Map 3.8-1). The BLM manages these lands in accordance with the Sierra Resource Management Plan (SRMP) (BLM 2007) with specific emphasis on establishing a balance between environmental protection with recreation and consumptive uses. The BLM parcel within the Greenhorn Arm is not located within any BLM specially-designated areas.

3.11.2.2 State

The California Department of Recreation (CDPR) has developed a statewide master plan for recreation referred to as the Statewide Comprehensive Outdoor Recreation Plan (SCORP). According to the CDPR, “the SCORP serves as a statewide master plan for state and local parks and outdoor recreational open space areas. The SCORP also offers policy guidance to all outdoor recreation providers, including federal, state, local, and special district agencies throughout California” (CDPR 2015). The Project Site lies within CDPR’s Sierra Planning Area. The SCORP does not contain objectives or policies specific to Rollins Reservoir.

3.11.2.3 Local

The Project Site is located in Nevada County. Therefore, activities associated with the Project must be consistent with the objectives and policies outlined in the Nevada County General Plan and related county ordinances. The General Plan provides the County with a framework to guide and manage growth and future development within the County (Nevada County 2014). Pertinent recreation-related objectives and policies that are outlined in the Recreation Element of the General Plan and outlined below. Note that the Recreation Element of the Nevada County General Plan does not include any objectives or policies specific to Rollins Reservoir.

Objective 5.7. Preserve and encourage water based recreational opportunities.

Policy 5.18. Cooperate with other public agencies to provide public access to the lakes and impoundments in the County, consistent with their ability to support water based recreation.

Policy 5.19. Cooperate with other public and private agencies to provide public access to the rivers in the County, with emphasis at road and highway bridges so as to assure access for police and emergency vehicles.

Policy 5.20. Encourage proper operation and environmental standards for private facilities on lakes, impoundments, and rivers.

Objective 5.9. Provide for recreational opportunities for visitors while preserving rural character.

Policy 5.22. Encourage the development of private recreation facilities within the Recreation land use designation of the General Plan, including food services, motels/hotels, resorts, day camps, and overnight camps.

Policy 5.23. Allow the development of limited recreational uses in Rural and Forest land use designations.

3.11.3 Thresholds of Significance

The significance criteria used to evaluate potential Project-related impacts to recreation are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.). Appendix G, a significant impact related to recreation would occur if the Project would:

1. 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.
2. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

3.11.4 Impacts Analysis

As explained in the Project Description (Section 2.0), the Proposed Project involves the removal of sediment from the Greenhorn Arm of Rollins Reservoir primarily to: (1) restore and/or maintain the water storage capacity of Rollins Reservoir; and (2) restore recreational opportunities in the Greenhorn Arm of Rollins Reservoir. Sediment continually migrates into Rollins Reservoir via Greenhorn Creek. Therefore, to maintain water storage capacity, sediment removal activities will occur annually. In general, sediment removal activities will occur from July through November, depending upon reservoir water surface elevation (WSE) and flows in Greenhorn Creek.

The Proposed Project activities will be scheduled to occur when flows in Greenhorn Creek recede to base levels and when the WSE in Rollins Reservoir is low as part of normal reservoir operations. Project operations will not be modified as part of the Proposed Project. Therefore, the WSE in Rollins Reservoir will be similar to historic conditions and the same reservoir-based recreation opportunities that have been available in the past (i.e., motorized and non-motorized boating, fishing, water play) will continue to be available during and after the Project is implemented. Therefore, implementation of the Proposed Project will have a **less-than-significant** impact on the availability and variety of reservoir-based recreation opportunities. Furthermore, implementation of the Proposed Project will benefit reservoir-based recreation opportunities by improving water depth and fish habitat in the Greenhorn Arm of Rollins Reservoir over time.

Project activities will occur in the immediate vicinity of the Greenhorn Recreation Area (Map 2-2). Therefore, as discussed below, the Project could potentially affect recreation visitors using this area. Some of these visitors could be displaced to other facilities on the reservoir. Recognizing this possibility, the Project includes the following public notification requirements that are designed to help minimize potential effects to recreation visitors and minimize displacement.

- NID will keep the Rollins Reservoir campground concessionaire apprised of construction-related activities in the Greenhorn Arm so that information can be disseminated the public via the NID website (www.nidwater.com).
- NID will provide the concessionaries annual notification of the Project schedule and activities in a format that can be posted on site at the reservation window, at information boards within the campgrounds, and at boat docks. Information will also be posted on NID's website to ensure that prospective recreation visitor are informed of Project activities.

These notification requirements will allow recreation visitors to time their visit and plan activities around the construction schedule. Additional measures that NID will implement to help reduce impacts to recreation visitors and minimize displacement are discussed in the following subsections.

Impact 3.11-1. The project is unlikely to increase the use of existing neighborhood and regional parks but could potentially increase the use of other recreational facilities on the reservoir.

The following Project activities have the potential to displace recreation visitors to other facilities on the reservoir.

Transport of Equipment and Material to Staging Areas

Sediment removal activities will involve the use of heavy equipment, vehicles, and machinery. This equipment will be transported to three staging areas, one of which, SA-3, is located at the paved Greenhorn Campground Boat Launch Parking Area (Map 2-2). Equipment and material will be transported to SA-3 via the Greenhorn Access Road over an approximate 2 week period at the beginning of July, and only when the sediment barrier is installed or moved. This road passes the Greenhorn Campground, picnic area, and associated facilities. The access road is paved, so fugitive dust is not expected. However, truck traffic and associated noise could disrupt recreation visitors at the resort, campground, and day-use area. Some of these visitors may be inclined to utilize the facilities located elsewhere on the reservoir.

Accordingly, in addition to ensuring that the concessionaires and public are informed, NID will implement mitigation measure MM-REC-1 to further reduce potential impacts to visitors. This measure requires that NID does not transport equipment and materials to SA-3 on the July 4th holiday, or on the weekend immediately preceding or following the July 4th holiday. This measure will ensure that recreation visitors are not disrupted by construction traffic during the high-use July 4th holiday period. Recreation visitors will be able to utilize the Greenhorn Recreation Area facilities during the July 4th holiday and associated weekends without disruption, thereby minimizing potential displacement. In addition, equipment transport activities will be short-term and temporary, limited to an approximate 2-week period during the few times the sediment barrier is installed or moved. Therefore, potential impacts associated with equipment transport are considered **less than significant**.

Staging Area 3 (SA-3)

A portion of the paved parking area adjacent to the Greenhorn Campground Boat Launch will be used as a staging area for equipment and materials to be used for sediment barrier installation and related activities. SA-3 will only be used in years when the barge is launched for installation or moving of the sediment barrier. During these years, NID will also have a designated fueling station, project office trailer, personnel parking, and a portable restroom stationed at SA-3. About half of the parking area will be used for Project purposes which will reduce the availability of parking for people who launch boats from the Greenhorn Campground Boat Launch. When SA-3 is in use, visitors may be inclined to use other boat launch facilities at Rollins Reservoir, particularly during high-use periods such as holidays and weekends. However, in 2009, on average the Greenhorn Parking Area was only 50% utilized during the peak recreation season, meaning the parking area

has the capacity to accommodate both existing parking demand and the staging area, except possibly on holidays and weekends. In addition, two other parking areas (Picnic Area and Overflow) are available in the Greenhorn Recreation Area, and parking is allowed along the access road. Nevertheless, some users may be displaced to other areas on the reservoir. In this case, the other parking areas around the reservoir have the capacity to absorb increased parking demand, if needed. Therefore, visitor displacement that may occur as a result of using the Greenhorn Campground Boat Launch Parking Area as a staging area is considered **less than significant**.

Installation of Sediment Barrier

The Project includes the installation of a sediment barrier to prevent further migration of sediment into the reservoir. Installation of the sediment barrier will require driving interlocking steel sheet piles in the reservoir bottom with a pile driver mounted on a barge. Initially, the sediment barrier will be installed in the main body of Rollins Reservoir. However, the location of the sediment barrier will eventually move into the Greenhorn Arm as sediment removal activities proceed. Upon completion, the top of the barrier will be beneath the surface of the water and 5-mph buoys and/or signage will be installed in the water and on shore, both upstream and downstream of the barrier (Figure 2-2).

Installation or moving of the sediment barrier is expected to occur over a 2-week period in July. Initially the sediment barrier will be installed in the main body of Rollins Reservoir, however the location will eventually move into the Greenhorn Arm as sediment removal activities proceed. It is estimated that the sediment barrier will be moved two times during the term of the Project (Map 3.9-1). When the sediment barrier is installed or being moved, boaters will be required to use one of the three other boat ramps and/or marinas on the reservoir for boating access. Upon completion of installation or moving of the sediment barrier, SA-3 will be demobilized and the entire parking area and boat launch will be available for recreation use. As discussed below, this activity could result in two potential impacts, one relating to reservoir use and one relating to boat launching.

Reservoir Use

Sediment barrier installation will involve the use of barges and large equipment, including cranes and pile drivers. For public safety reasons, NID will implement mitigation measure MM-REC-2 to prohibit boaters from entering the Work Area while the sediment barrier is installed. This measure requires that NID place buoys and/or signage at a distance of 200 feet around the barge during installation of the sediment barrier. When the installation is complete, the sediment barrier will be under water and boaters will be able to safely pass over the barrier. However, as a precaution, NID will place 5-mph buoys and/or signage in the water and on shore, both upstream and downstream of the barrier (Figure 2-2). This type of low-speed signage is present in other locations on the reservoir.

While the barrier is being installed in the main body of the reservoir, boaters will be able to pass around the Work Area provided they stay outside the area that is delineated by buoys. However, some boaters may be inclined to avoid the Work Area completely due to noise and construction activity. The total area of the reservoir to be affected during sediment barrier installation is approximately 7.25 acres, or 1% of the total reservoir surface area. Given that most of the reservoir will still be available for boating, eliminating 1% of the reservoir for a short-term period is considered a **less-than-significant impact**.

Boat Launch Availability

When the sediment barrier is initially installed, and when it is moved, a portion of the Greenhorn Campground Boat Launch will be unavailable to the public for a 2-week period in July. While a portion of the Greenhorn Campground Boat Launch is closed to the public, boaters may decide to launch their boats from one of the other three launches on the reservoir. This situation will only occur when the sediment barrier is initially installed, and when it is moved out of the main body of the reservoir. As discussed above, the other boat launches and associated parking areas have the capacity to absorb a limited amount of increased use. Since this situation is short-term and temporary, displacement of boaters to other launches is considered **less than significant**.

Sediment Removal, Transport, Processing and Related Activities

Sediment removal, transport, processing and related activities will not occur in the immediate vicinity of the Greenhorn Recreation Area. Therefore, with the exception of the transport of materials and equipment to and from SA-3, and installation of the sediment barrier, these activities will not directly affect recreation visitors using the boat launch, campground, picnic area, resort, or associated facilities. However, it may be possible to hear the noise associated with these activities, particularly during the beginning of the Project when sediment removal activities are more concentrated near the main body of the reservoir. Noise associated with pile driving, sediment removal, loading, transport and sorting could disrupt visitors and displace them to other campgrounds and day-use areas on the reservoir, or potentially one of the other reservoirs with similar opportunities located within 1 to 2 hours of the Project Site (refer to Section 3.10 Noise).

Combined, the four campgrounds at Rollins Reservoir include a total of 348 campsites. The Greenhorn Campground consists of 79 campsites, or 23% of the total. In 2009, the combined seasonal occupancy of the four developed campgrounds at Rollins Reservoir was 65% of capacity, meaning 35% of the campsites were unused. Therefore, on a seasonal basis there is enough capacity at the other campgrounds on the reservoir to absorb displaced users from Greenhorn Campground, even if 100% of those users are displaced. The exception is weekends and holidays when use at all of the facilities on Rollins Reservoir are at or near capacity. Therefore, in addition to the notification requirements summarized above, the Project includes the following requirements that are designed to reduce potential impacts to recreation visitors and to minimize displacement:

- Project-related work will only be performed between the hours of 7:00 a.m. to 7:00 p.m., Monday through Saturday.
- No work will occur on Sunday's and federal holidays, except during emergencies.

Implementation of the Proposed Project is not expected to increase the use of existing neighborhood or regional parks, or other recreation facilities to the extent that substantial physical deterioration of such facility would occur, or be accelerated. It is unlikely that displaced recreation visitors would utilize existing neighborhood or regional parks because, to a large extent, the recreation uses associated with existing neighborhood or regional parks are not comparable to those supported at Rollins Reservoir. Neighborhood and regional parks typically do not include a large water body with associated recreation uses and support facility development. Any potential impacts to other recreation facilities located at Rollins Reservoir would be minimized by: (1) notifying the public of Project-related activities and potential closures or disruptions via a website, the concessionaire, and signage; and (2) avoiding work during high recreation use periods such as weekends and holidays. Therefore, any impacts related to potential recreation visitor displacement are considered **less than significant**.

Impact 3.11-2. The Project will not require the construction or expansion of recreational facilities that might have an adverse effect on the environment. Therefore, implementation of the Project will have no impact.

The Project does not include recreational facilities or require the construction or expansion of recreational facilities. The existing facilities at Rollins Reservoir can accommodate all recreation use that occurs at Rollins Reservoir, including users who may be displaced from the Greenhorn Recreation Area. Therefore NID does not propose to construct or expand any recreation facilities to accommodate use and therefore there is **no impact**.

3.11.5 Mitigation Measures

The following mitigation measures will be implemented as part of the Project to reduce potentially significant impacts to a less-than-significant level.

MM-REC-1 The transport of equipment and materials along the Greenhorn Access Road to SA-3 shall not occur on the July 4th holiday, or during the weekends immediately preceding or following the July 4th holiday, except in emergency situations.

MM-REC-2 A line of buoys and/or signage shall be placed at a distance of 200 feet around the barge during installation of the sediment barrier to prohibit boaters from entering the barrier installation Work Area. Under no circumstances shall boaters be allowed to enter the Work Area delineated by the buoy line.

3.11.6 Level of Significance After Mitigation

As part of the Project, equipment and material will be transported to SA-3 via the Greenhorn Access Road during a 2-week period in July. MM-REC-1 requires NID to avoid equipment and material transport to SA-3 on the July 4th holiday and the weekends surrounding that holiday, all of which traditionally experience heavy recreation use. Implementation of this measure will allow recreation visitors to utilize the Greenhorn Recreation Area without the disturbance of truck traffic and associated noise, thereby minimizing the displacement of visitors to other recreation facilities during high-use periods, thereby reducing the possibility of physical deterioration of those facilities to **less than significant.**

MM-REC-2 requires NID to place a buoy line around the barge during sediment barrier installation. Implementation of this measures allows boaters to continue to access the main body of the reservoir, while keeping a safe distance from the construction zone, thereby reducing the need to utilize other areas of the reservoir or other facilities resulting in impacts that are **less than significant.**

3.11.7 References

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Photo 3.11-1 Greenhorn Campground Boat Launch Parking Area.

Photo 3.11-2 Greenhorn Campground Boat Launch.

Photo 3.11-3 Greenhorn Campground.

Photo 3.11-4 Shoreline Recreation Use at Greenhorn Campground.

3.12 TRANSPORTATION

This section describes the existing traffic and circulation setting within the Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project) vicinity, identifies relevant regulatory requirements, qualitatively evaluates potential impacts, and identifies mitigation measures related to the Project. The Project study area for transportation includes the Interstate 80 (I-80) corridor in Placer County and the State Route 174 (SR-174) corridor in both Placer and Nevada counties, to You Bet Road in Nevada County.

Comments received in response to the Notice of Preparation (NOP) for this Environmental Impact Report (EIR) raised concerns regarding trip generation, impacts to local roads and intersections, impacts to road shoulders, available site distance for Project traffic egressing from the Project Site onto You Bet Road, and use of Staging Area (SA) 1 within the Nevada County right-of-way. As stated in Chapter 2, Project Description, Nevada Irrigation District (NID) will obtain an encroachment permit from Nevada County for use of SA-1. All conditions of the encroachment permit will be implemented as part of the Project. All other traffic concerns are addressed in this section. Copies of the NOP and the comment letters received in response to the NOP are included in Appendix A.

3.12.1 Existing Conditions

3.12.1.1 Study Area Circulation

Access to the Project Site is provided via I-80 and SR-174 in Colfax. From eastbound I-80 access to SR-174 is provided by a one-lane off ramp. From westbound I-80 access to SR-174 is from a one-lane off ramp to Auburn Street.

Access to SA-3, located at the Greenhorn Campground Boat Launch parking area, would be via SR-174 to Greenhorn Access Road. Access to the Work Area would be via SR-174 to You Bet Road through SA-1, located at Greenhorn Creek crossing.

Interstate 80

I-80 is a primary transcontinental freeway and is the principal east-west route through Northern California. It is the only freeway crossing the Sierra Nevada Range. In the Project vicinity, I-80 is a four-lane freeway. The Colfax overcrossing is a two-lane facility. The off-ramps are controlled by stop signs, as is the overcrossing connection.

State Route 174

SR-174 is a non-interregional route that extends 13.1 miles northward from I-80 in Colfax to Grass Valley. According to Caltrans, increasing numbers of local and regional commuters are using SR-174 as a direct route between Auburn and Grass Valley or Nevada City to avoid congestion on

SR-49. Large trucks and slow-moving vehicles occasionally affect traffic flow, which may cause sizable lines of traffic along some areas of the route. Despite this, traffic congestion is not a continuous major problem over the entire length of SR-174 (Caltrans 2017). Within the study area SR-174 is a winding, rural 2-lane highway with 0- to 2-foot shoulders and limited recovery space for errant vehicles. Trees and embankments line the roadway along with numerous properties with private driveways that connect to the highway (Caltrans 2016a). Nevada County classifies SR-174 as a minor arterial.

Caltrans SR-174 Improvement Project

In 2013 Caltrans District 3 Traffic Safety Branch determined that a 1.9-mile segment of SR-174, from Maple Way (Post Mile 4.6) to You Bet Road (Post Mile 2.7), experienced a high concentration of run-off road collisions. In addition to You Bet Road, this segment includes Greenhorn Access Road, which is also in the study area. During a 3-year period, a total of 30 collisions occurred, including two resulting in fatalities. This concentration of accidents is 1.6 times higher than the statewide average and the fatality rate is 7 times higher than the statewide average for highways of similar configuration (Caltrans 2016a).

Caltrans will address these safety issues with several improvements along the 1.9-mile segment of SR-174. Within the Project Site, Caltrans plans to widen shoulders and clear the recovery zone in the vicinity of You Bet Road, and add a turn lane, widen shoulders, and clear the recovery zone at Greenhorn Access Road. As stated by Caltrans, the increased curve radii will reduce the potential for a vehicle to lose control. The wider shoulders will provide more room for pedestrians and bicycles to travel the corridor, and provide room for an errant vehicle to regain control without leaving the roadway. The removal of fixed objects such as trees and embankments from the clear recovery area will reduce the severity of a run off road collision. Lastly, the improved curve radii, wider shoulders, and removal of fixed objects along the roadway will improve sight distances for roadway users, which will allow more time to identify and react to potential hazards (Caltrans 2016a). This Caltrans project is scheduled to begin construction September 2019 and be completed by October 2020 (Caltrans 2017).

Greenhorn Access Road

Greenhorn Access Road is a two-lane road maintained by the County in good condition. It serves as the access road from SR-174 to Greenhorn Campground, which is one of four independently operated campgrounds at NID-owned Rollins Reservoir. The Project proposes use of Greenhorn Access Road to access SA-3, located in the Greenhorn Campground Boat Launch parking area. SA-3 would be used during installation or movement of the sediment barrier only. Installation of the barrier would occur during the first year of the Project, and is anticipated to be moved two times during the term of the Project (Figure 3.9-1). Installation or movement of the barrier would occur over a two-week period in July. Haul trucks removing sediment would not use Greenhorn Access Road.

You Bet Road

You Bet Road is a Level of Service (LOS) A County-maintained two-lane minor collector off SR-174. It is in good condition, appearing to have been recently resurfaced and restriped. The Project proposes use of You Bet Road to You Bet Bridge as an access/haul road for removal of sediment.

Transit, Bicycle, and Pedestrian Facilities

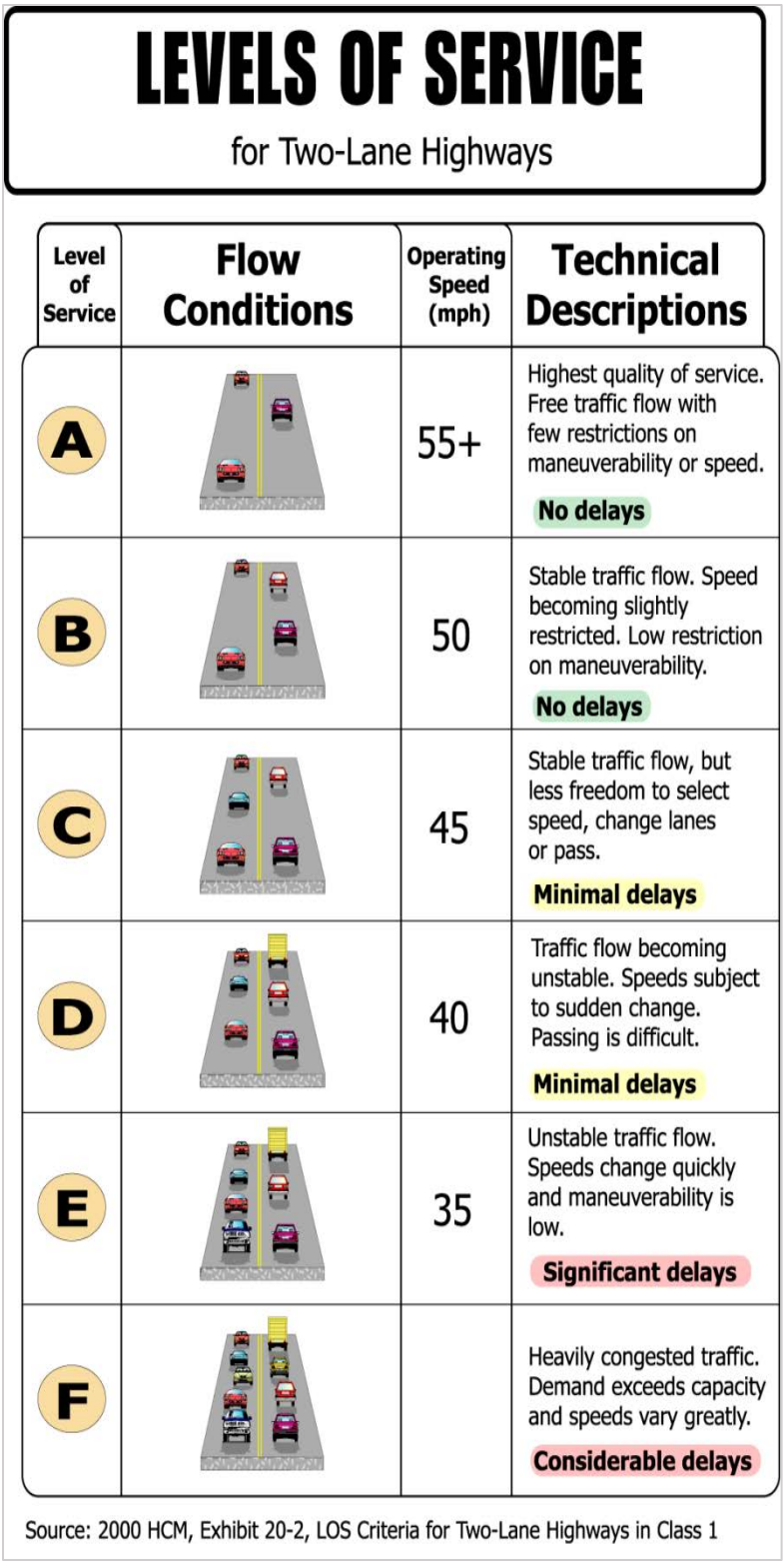
Transit in Nevada County includes the Gold Country Stage, which is a fixed route system operating primarily in and between Nevada City and Grass Valley. There are also three on-demand dial-a-ride or non-fixed route services in the County (Nevada County 2010). There are currently no designated bicycle or pedestrian facilities within the study area. However, according to Caltrans, SR-174 is increasingly being used by recreational cyclists (Caltrans 2017).

3.12.1.2 Impacts Evaluation Methodologies

In the past, local agencies, including both Nevada and Placer counties, have adopted minimum LOS standards as a part of general and community plans for roads under their jurisdiction; and LOS has also been the metric used to evaluate transportation impacts under the California Environmental Quality Act (CEQA). As described in Section 3.12.2.2, the recent updates to CEQA Guidelines now identify vehicle miles travelled (VMT), rather than LOS, as the most appropriate metric for evaluating a project's transportation impacts. However, Nevada and Placer county policies have not yet been updated to reflect the changes in state law. Therefore, this section described methodology for both LOS and VMT.

Level of Service Methodology

The LOS is a qualitative measure of traffic operating conditions whereby a letter grade A through F corresponds to progressively worsening traffic operating conditions. In general terms, LOS is calculated for an hour-long traffic condition at a signalized intersection, unsignalized intersection, or roadway segment. Figure 3.12-1, presents typical LOS characteristics for a two-lane highway, such as SR-174.



LEVELS OF SERVICE

for Two-Lane Highways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		55+	Highest quality of service. Free traffic flow with few restrictions on maneuverability or speed. **No delays**
B		50	Stable traffic flow. Speed becoming slightly restricted. Low restriction on maneuverability. **No delays**
C		45	Stable traffic flow, but less freedom to select speed, change lanes or pass. **Minimal delays**
D		40	Traffic flow becoming unstable. Speeds subject to sudden change. Passing is difficult. **Minimal delays**
E		35	Unstable traffic flow. Speeds change quickly and maneuverability is low. **Significant delays**
F			Heavily congested traffic. Demand exceeds capacity and speeds vary greatly. **Considerable delays**

Source: 2000 HCM, Exhibit 20-2, LOS Criteria for Two-Lane Highways in Class 1

Source: TRB 2000

Figure 3.12-1 Levels of Service.

Nevada County Level of Service Standards

Local agencies currently adopt minimum LOS standards as a part of general and community plans for roads under their jurisdiction. The Project is located in Nevada County. However, roads that could be affected by the Project are located in both Nevada and Placer counties. Each county has its own set of operating standards.

In Placer County these are defined by the Placer County General Plan (Placer County 2013). Policies contained in the Placer County General Plan indicate that the LOS minimum standard for intersections and roadways is generally LOS C. Land development requirements are set to sustain LOS C at all intersection and roadways for as long as possible. The Placer County General Plan also indicates that the LOS standard must be D within 0.5 mile of state highways. Similarly, the California Department of Transportation (Caltrans) identifies LOS D as the acceptable intersection LOS standard. As such, the LOS D standard is applicable to the study area intersections and local roadways.

In Nevada County LOS standards are defined by the 2010 Nevada County General Plan and is be based on the typical highest peak hour of weekday traffic. According to General Plan Policy LU-4.1.1, for Rural Regions of the County, the minimum LOS is C, except where the existing LOS is less than C. In those situations, the LOS is not allowed to drop below the existing LOS. Special events which may temporarily exceed this minimum LOS, may be permitted. Based upon these LOS standards, the existing regional road system serving Nevada County generally provides acceptable service (Nevada County 2010).

Caltrans Level of Service Standards

I-80. Caltrans District 3 has developed a Transportation Corridor Concept Report (TCCR) for I-80 (Caltrans 2010). It is the long-range planning document for the I-80 corridor, the purpose of which is to identify existing route conditions and future needs, including existing and forecast travel data, a concept LOS standard, and the facility needed to maintain the concept LOS and address mobility needs over a 20-year planning horizon (Caltrans 2010). The District 3 TCCR for I-80 is broken into 16 freeway segments. Segment 11 is included in the study area.

Within the TCCR a "Concept LOS" is defined and represents the minimum acceptable service conditions over the next 20 years. Caltrans has established minimum concept LOS standards for the planning horizon at LOS D for rural segments, and LOS E for urban segments. However, the concept LOS for some segments departs from these minimums, and Segment 11 is identified as one of these exceptions. The TCCR indicates that it would not be feasible to maintain or re-attain LOS D on Segments 9 through 14 due to lack of funding under current projections and due to factors such as the cost of adding more lanes to numerous structural elements of I-80. A concept LOS F is identified for these segments. This operating condition also reflects peak day seasonal

directional volumes on the highway, generally representative of afternoon weekend conditions during periods of high recreational traffic (Caltrans 2010).

SR-174. The TCCR for SR-174 divides the highway into four segments and has assigned concept LOS for each. All four segments would be used by the Proposed Project. Table 3.12-1 provides a description of each segment, the concept LOS, and planned improvements for SR-174 as provided in the TCCR.

Table 3.12-1
Caltrans Concept LOS and Planned Improvements for SR-174

Segment #	Location	Concept LOS	Planned Caltrans Improvements
1	Begins at the I-80 and SR-174 interchange on South Auburn Street and ends at Main Street in Colfax	E	• Reconstruct I-80/SR-174 interchange (2036) • Intersection improvements/complete streets (2036)
2	Main Street to Placer/Nevada County line	D	• None planned.
3	Placer/Nevada County line to Grass Valley city limit	D	• Widen shoulders and curve improvements on SR-174 from Maple Way to You Bet Road (2020) • Realign to create a 4-way intersection and install traffic signal or roundabout on SR-174 at Brunswick Road/Cedar Ridge intersection (2035)
4	Grass Valley city limit to northwestern terminus of SR-174 at SR-20	E	• Improve curve channelization on SR-174 at Race Street (2035) • Construct Americans with Disabilities Act (ADA) curb ramps from Race Street to SR-20/route terminus (2020)

Source: Caltrans 2017

Existing Traffic Volumes

ROADWAYS

According to the latest traffic counts existing traffic levels on You Bet Road are approximately 2,087 annual average daily traffic (AADT, or total volume of vehicle traffic for a year divided by 365 days), which is considered LOS A (Nevada County Planning Department [NCPD] 2017). Counts are not available for Greenhorn Access Road.

FREEWAYS

I-80. Peak hour volume usually occurs between 7:00 and 9:00 am and 5:00 to 7:00 pm. According to 2015 Caltrans traffic volume data, the average daily peak hour volume was 4,550 west of Colfax and 4,250 east of Colfax. The AADT west of Colfax was 32,900 (16% trucks), and the AADT east

of Colfax was 27,600 (19% trucks) (Caltrans 2015). In the vicinity of the Project, I-80 operates at LOS E.

The most recent traffic counts for freeway ramps at I-80 and Auburn Street (to SR-174) are from 2007. The westbound direction had an average daily traffic (ADT) rate of 5,000 and the eastbound direction an ADT of 3,900 (Caltrans 2016b).

SR-174. The TCCR for SR-174 provides existing condition information for each segment of SR-174 as summarized in Table 3.12-2.

Table 3.12-2
Existing Level of Service and Vehicle Miles Travelled for SR-174

Segment	Existing VMT[1]	ADT[2]	AADT Truck Traffic[3]	Total Truck % of AADT
1	417	14,000	230	1.57%
2	1,308	6,500	362	7.24%
3	7,634	13,200	362	7.24%
4	1,057	13,300	507	7.24%

Source: Caltrans 2017 (2013 data)
Notes:
[1] VMT = Estimates the number of vehicle miles that motorists travelled.
[2] ADT = The average daily traffic in both directions.
[3] AADT = The annual average daily truck is the total traffic volume for the year divided by 365 days.

Vehicle Miles Travelled Methodology

VMT data are evaluated as advised in the California Office of Planning and Research (OPR's) *Technical Advisory on Evaluating Impacts in CEQA* (OPR 2018), which states that the VMT metric supports three statutory goals: reduction of greenhouse gas emissions (GHGs), development of multimodal transportation networks, and a diversity of land uses. Because the Project is a sediment removal project, and does not propose to develop transportation networks and will not change existing land uses, the analysis of VMT is focused primarily on impacts associated GHGs. Further, the OPR states that smaller project that "generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact" (OPR 2018). Therefore, this analysis uses 110 trips per day as the threshold for significant impacts.

3.12.2 Relevant Plans, Policies, and Ordinances

3.12.2.1 Federal

There are no federal transportation plans or policies that would be directly applicable to the Proposed Project.

3.12.2.2 State

Transportation Corridor Concept Report

As described previously, the TCCRs for I-80 and SR-174 serve as the Caltrans District 3 long-range planning documents for the freeway corridors. The purpose of each TCCR is to identify existing route conditions and future needs, including existing and forecast travel data, a concept LOS standard, and the facilities needed to maintain the concept LOS and address mobility needs over a 20-year planning horizon.

California Environmental Quality Act

In January 2018, the OPR transmitted its proposal for comprehensive updates to the CEQA Guidelines to the California Natural Resources Agency. Among other things, this package included proposed updates related to analyzing transportation impacts pursuant to Senate Bill 743, under which the criteria for determining the significance of transportation impacts must "promote the reduction of GHGs, the development of multimodal transportation networks, and a diversity of land uses." This resulted in changes to the CEQA Guidelines that identify VMT as the most appropriate metric to evaluate a project's transportation impacts, rather than automobile delay, as measured by "level of service" and other similar metrics, which generally no longer constitute a significant environmental effect under CEQA. (Pub. Resources Code, § 21099, subd. (b)(3)). Accordingly, revisions to Appendix G of the CEQA Guidelines now include evaluation of the transportation impacts as described in CEQA Guidelines Section 15064.3, subdivision b), cited below:

> (b) Criteria for Analyzing Transportation Impacts.
>
> > (1) Land Use Projects. Vehicle miles travelled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles travelled in the project area compared to existing conditions should be considered to have a less than significant transportation impact.

(2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles travelled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, a lead agency may tier from that analysis as provided in Section 15152 .

(3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles travelled for the particular project being considered, a lead agency may analyze the project's vehicle miles travelled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

(4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles travelled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles travelled, and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles travelled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

3.12.2.3 Local

Nevada County Transportation Commission

The Nevada County Transportation Commission (NCTC) is a Regional Transportation Planning Agency for Nevada County. The NCTC coordinates transportation planning for Grass Valley, Nevada City, Nevada County, and the Town of Truckee. The NCTC has adopted a Regional Transportation Plan (RTP) to establish transportation policy and document short-term (2015 to 2025) and long-term (2025 to 2035) regional transportation needs and to set forth an action plan to meet these needs. The NCTC is currently in the process of updating the Nevada County RTP.

Placer County Transportation Planning Agency

The Placer County Transportation Planning Agency (PCTPA) is the Regional Transportation Planning Agency for Placer County, excluding the Lake Tahoe Basin. PCTPA is also the County's Congestion Management Agency. PCTPA is part of a larger metropolitan planning jurisdiction (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties), which is coordinated by the Sacramento Area Council of Governments. PCTPA's two most recent regional transportation plans are incorporated into the Sacramento Area Council of Governments' regional planning processes through the Metropolitan Transportation Plan. Regional Transportation Plans document the policy direction, actions, and funding recommendations that are intended to meet the short and long-range transportation needs of Placer County.

3.12.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to transportation are based on Appendix G of CEQA Guidelines (14 CCR 15000 et seq.). According to Appendix G, a significant impact related to traffic and circulation (transportation) would occur if the Project would:

1. Conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
2. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).
3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves, or dangerous intersections) or incompatible uses (e.g., farm equipment).
4. Result in inadequate emergency access.

3.12.4 Impact Analysis

As described previously, Nevada and Placer county policies currently use LOS as the standard for evaluating transportation conditions rather than VMT, as required under the recent updates to CEQA regulations. This analysis, therefore, evaluates transportation impacts using both metrics. LOS is used to evaluate transportation impacts in the discussion for *Impact 3.12-1*; and VMT is used in the discussion for *Impacts 3.12-2*.

Impact 3.12-1. The Project would conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

The Project would remove 50,000 tons of silt, sand, and aggregate during a typical year. It is assumed the maximum amount of material removed every 6th year would be 200,000 tons. Dry sediment would be excavated in the Work Area using heavy excavating and earthmoving equipment (e.g., scrapers, trackhoes, backhoes, excavators, and/or front-end loaders). Excavation would continue until the level of creek bed surface is lowered to the top of the dewatering pipe/channel. Excavated material would be transported to the SA-2 via the streambed access/haul

road for testing and processing. Materials that meet hazardous waste standards will be distributed for use via You Bet Road and to Hansen Bros., sold locally in Nevada County, for use in reclamation of mining site, or for use outside of Nevada County, as described in more detail below.

In addition, the Project would involve installation of a sediment barrier using a barge within Rollins Reservoir. Stockpiling of equipment, fuel storage and a personnel trailer would be at SA-3 located within Greenhorn Campground Boat Launch parking area. Installation or moving of the sediment barrier would take approximately two weeks in July. It is anticipated that the sediment barrier will be moved two times during the term of the Project. The Project would employ up to six persons.

Trip Generation

The transport of material will be dependent upon material availability as well as customer demand and location. The following assumptions were used in calculating trip generation data for the Project.

- Typically 50,000 tons of material to be removed per year, with a maximum of up to 200,000 tons removed per year. It is assumed that 200,000 tons would be removed every 6th year.
- Generally a 4-month period (August through November) for transporting the material, 6 days a week, or approximately 96 days per year.
- 50,000 tons equates to 520 tons of material per day; 200,000 tons equates to 2,083 tons of material per day.
- A standard 10-wheeler dump truck is typically used to haul bulk material by commercial operators and accommodates 15 tons of material (without trailer). This truck capacity equates to 35 truckloads per day (or 70 truck trips, 35 in/35 out) assuming 50,000 tons and 139 truckloads per day (or 278 truck trips, 139 in/139 out) assuming 200,000 tons. It is assumed all trucks depart fully loaded, given the relatively remote location of the Project Site.
- Employees – up to six people, six trips inbound in AM peak hour, six outbound in PM peak hour used as a worst case.

Table 3.12-3 shows the vehicle type and total daily number of truck trips by phase, under the 50,000 tons/year and 200,000 tons/year (every 6th year) scenarios. Phase 1 is mobilization, Phase 2 is sediment removal, and Phase 3 is demobilization. Refer to Section 2.0 for a list of activities to be implemented within each phase. These trip generation characteristics have been used for purposes of analysis and are estimated to represent a reasonable “worst case” condition.

Table 3.12-3
Project Vehicle Type and Total Daily Number of Truck Trips by Phase and Scenario (Annual)

Vehicle Type	Total Daily Truck Trips			Scenario Total (Phases 1 through 3)
	Phase 1 (24 days)	Phase 2 (96 days)	Phase 3 (24 days)	
Large Equipment Delivery/Removal Flatbed Trucks[1]	2	--	2	
Pickup Trucks (supplies, debris, etc.)[2]	12	12	12	
Construction Personnel Vehicles[3]	12	12	12	
Subtotal	**26**	**24**	**26**	
Haul/Dump Trucks – 50,000 tons/yr	--	70	--	
50,000 tons/yr TOTAL	**26**	**94**	**26**	**146**
Haul/Dump Trucks – 200,000 tons/yr	--	278	--	
200,000 tons/yr TOTAL	**26**	**302**	**26**	**354**

Notes:
1 Twenty flatbed trucks will be used to mobilize equipment, over a 1-month period, or 24 working days. This averages approximately two truck trips day.
2 Six pickup trucks (12 truck trips) will be used daily to deliver/remove daily supplies and minor debris.
3 Six employees (12 trips) will commute to the site daily. Three from Auburn area and three from Grass Valley area.

Trip Distribution

The demand and ultimate destination for processed material from the Project Site would vary, depending on various market conditions. For the purposes of the transportation analysis, the following material distribution assumptions were used:

- Analysis assumes that all excavated sediments are larger aggregates that will be distributed as described below (rather than fine sediments to be disposed of at the local transfer station);
  - Distribution of approximately 30% of material to Hansen Bros. Enterprises for processing at the local plant located across You Bet Road approximately 1.25 miles north of the Project;
  - Distribution of approximately 30% of material for local sales in Nevada County via SR-174;
  - Distribution of approximately 10% of material for use in reclamation of one or more mining sites within 10 miles of the Project; and
  - Distribution of approximately 30% of material via I-80 for sales outside of Nevada County. Of the 30%, 75% would be westbound and 25% would be eastbound.

Phase 2 would experience the highest number of daily trips on area roadways. Table 3.12-4 shows the estimated trip distribution to area roadways during Phase 2 based on the distribution assumptions above.

Table 3.12-4
Phase 2 Trip Distribution from SA-2

50,000 tons/year		200,000 tons/year	
To Hansen Bros.	27	To Hansen Bros.	90
To Northbound SR-174	27	To Northbound SR-174	90
To Southbound SR-174	27	To Southbound SR-174	90
To Other Mining Sites	13	To Other Mining Sites	32
Total	**94**	**Total**	**302**

I-80

The Proposed Project would use the I-80 freeway ramps onto Auburn Street. The most current data from Caltrans is dated 2015. The westbound direction had an ADT of 5,000 and the eastbound direction an ADT of 3,900 (Caltrans 2016b). Under the 50,000 tons/year scenario, the Proposed Project would add approximately 21 truck trips per day to the westbound ramp (75% assumed to head westbound), and 7 truck trips per day to the eastbound ramp (25% assumed to head eastbound). Under the 200,000 tons/sixth year scenario, the Proposed Project would add approximately 67 truck trips per day to the westbound ramp, and 25 truck trips per day to the eastbound ramp. The increase would not measurably affect the available capacity of the existing ramps. The impact would be considered **less than significant**.

Segment 11 of I-80 currently operates at LOS E, with and has an average daily peak hour volume of 4,550 west of Colfax and 4,250 east of Colfax. The AADT west of Colfax was 32,900 (16% trucks), and the AADT east of Colfax was 27,600 (19% trucks) (Caltrans 2015). Under the 50,000 tons/year scenario, the Proposed Project would add approximately 27 truck trips per day to I-80, which includes trucks from southbound SR-174. Under the 200,000 tons/sixth year scenario, the Proposed Project would add approximately 90 truck trips per day to I-80. The increase would be considered relatively minor compared to existing volumes on I-80 in the study area, and would not measurably affect the available capacity of the highway. The impact would be considered **less than significant**.

Under future conditions, the TCCR for I-80 indicates that the AADT for Segment 11 would be 58,900 in 2028. Caltrans has determined it would not be feasible to re-attain LOS D on Segment 11 due to lack of funding under current projections and due to factors such as the cost of adding more lanes to numerous structural elements of I-80. A concept LOS F is identified for this segment. This operating condition also reflects peak day seasonal directional volumes on the highway,

generally representative of afternoon weekend conditions during periods of high recreational traffic (Caltrans 2010). Under the 50,000 tons/year scenario, the Proposed Project would add approximately 27 truck trips per day to I-80, which includes trucks from southbound SR-174. Under the 200,000 tons/sixth year scenario, the Proposed Project would add approximately 90 truck trips per day to I-80. The increase would be considered relatively minor compared to existing and future volumes on I-80 in the Project Area, and would not measurably affect the available capacity of the highway. The impact would be considered **less than significant**.

SR-174

As shown on Table 3.12-1, SR-174 currently operates at LOS D/E. Caltrans' concept LOS for SR-174 is to maintain LOS D/E by implementing several improvement projects as listed in Table 3.12-2. As shown on Table 3.12-4, the Proposed Project would add 54 truck trips per day to SR-174 (both north- and southbound) under the 50,000 tons/year scenario and 180 truck trips per day under the 200,000 tons/sixth year scenario. Although the Project would contribute to cumulative traffic conditions along SR-174, the increase would not be considered a substantial contribution. In addition, implementation of planned Caltrans improvements along SR-174 would help minimize the additional traffic of the Proposed Project. The impact would be considered **less than significant**.

You Bet Road

According to the latest traffic counts, existing traffic levels on You Bet Road are approximately 2,087 ADT, which is considered LOS A. Traffic levels would have to reach 8,550 ADT to degrade to LOS D, which is the level considered unacceptable under the Nevada County General Plan LOS standard (NCPD 2017). The Proposed Project would add 66 truck trips per day (70% of trucks leaving the Project Site) under the 50,000 tons/year scenario and 211 truck trips per day (70% of trucks leaving the Project Site) under the 200,000 tons/sixth year scenario. The additional traffic under existing conditions and in the future would be noticeable to area residents using the roadway, but the increase would not measurably affect the available capacity of the existing roadway. The impact would be considered **less than significant**.

Truck Loading on Area Roads

The relative impact of truck traffic on area road conditions associated with the Proposed Project has been considered based on the procedures contained in Chapter 6 of the Caltrans Highway Design Manual (Caltrans 2012). These procedures equate truck loadings over a 20-year period to equivalent single axle loads (ESALs) and identify relative impact in terms of the resulting traffic index (NID 2015).

For the purpose of pavement analysis, it is assumed that 200,000 tons/year of material would be transported every 6th year; however, NID estimates that 50,000 tons of material is the more likely scenario over a long-term planning horizon.

Annualizing the 200,000-ton haul scenario over a 365-day year, for purposes of the ESAL calculation, results in 365 trucks per day in one direction. This load is spread over the pavement's 20-year useful life. The number of ESALs associated with this level of truck activity can be identified based on Table 603.3A of the Highway Design Manual (Caltrans 1995). Each daily truck (3-axle, 10-wheeler dump) creates 3,680 ESALs over a 20-year period. Thus, the Project's contribution to loadings on Auburn Street and Taylor Road to SR-174, and You Bet Road could be up to 132,480 ESALs.

The roadway needed to accommodate this loading over a 20-year period is expressed in terms of the section's traffic index. A traffic index of 7.0 is needed to accommodate 132,480 ESALs. The roadway section required to provide a traffic index of 7.0 is a relatively moderate section typical of many public streets. The extent of the street sections serving the Project are not known. Although area roadways are likely constructed to this standard, the Project could appreciably change the overall conditions of the road over time or result in an accelerated maintenance schedule.

The Proposed Project would not significantly increase traffic volumes on area roadways to unacceptable LOS standards. Although the existing condition of area roadways are in good condition, over time truck loading would significantly contribute to deterioration of road conditions. This impact is considered a **significant impact**. Mitigation measure MM-TRA-1 would be implemented to reduce potential impacts to **less than significant**.

Impact 3.12-2. The Project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).

CEQA Guidelines Section 15064.3, subdivision (b) describes four criteria for analyzing transportation impacts. The first two criteria pertain specifically to land use and transportation projects and therefore are not applicable to this Project. The third and fourth criteria allow for lead agency discretion in use of qualitative (versus quantitative) analysis and in selection of methodology for evaluating a Project's VMT. Consistent with the lead agency discretion permitted under CEQA Guidelines Section 15064.3, subdivision (b)(3) and (4) in determining the approach for analysis of transportation impacts, this analysis discloses the quantitative impact (i.e., VMT) for the maximum potential daily truck trips generated by the Project (i.e., 370 truck trips/day for 96 days under Phase 2 of the 200,000 tons/year scenario). However, lacking established quantitative thresholds for VMT for non-land-use and non-transportation projects, a qualitative analysis is provided of the effects of transportation as related to GHGs (as required under CEQA).

The following assumptions were used in calculating VMT:

- Truck trips per day are the same as those shown in Table 3.12-3, above.
- All excavated sediments are assumed to be larger aggregates (rather than fine sediments to be disposed of at the local transfer station) that will be distributed as described below. This assumption would maximize VMT:
  - Distribution of approximately 30% of material to Hansen Bros. Enterprises for processing at the local plant located across You Bet Road; one-way mileage from SA-2 is approximately 1.25 miles.
  - Distribution of approximately 30% of material for local sales in Nevada County via SR-174; one-way mileage from SA-2 is estimated at 21 miles, which is the average of one-way mileages to four surrounding cities/population centers (Grass Valley, Nevada City, Penn Valley and Relief).
  - Distribution of approximately 10% of material for use in reclamation of one or more mining sites within 10 miles of the Project; one-way mileage from SA-2 is estimated at 10 miles.
  - Distribution of approximately 30% of material via I-80 for sales outside of Nevada County; one-way mileage from SA-2 is estimated at 36 miles, which is the average of one-way mileages to four cities along I-80 (Colfax, Auburn, Roseville, Sacramento).

As shown in Table 3.12-5, VMT/day under the 50,000 tons/year sediment removal scenario is 2,777. As shown in Table 3.12-6, VMT/day under the 200,000 tons/year sediment removal scenario is estimated at 6,619. In accordance with the updated CEQA Guidelines, because the Project is a sediment removal project, and does not propose to develop transportation networks and will not change existing land uses, this analysis of VMT is focused primarily on impacts associated GHGs. As described in Section 3.6, the Proposed Project would not exceed the GHG threshold of 10,000 metric tons CO_2E per year under either sediment removal scenario, and would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. In addition, transportation impacts associated with the Project would be limited to between July and December; and the sharp rise in VMT associated with Phase 2 sediment distribution under the 200,000 tons/year scenario would only occur infrequently (i.e., every 6th year). Considering the fact that transportation levels under the Project would not result in impacts related to GHGs, this impact would be **less than significant.**

Table 3.12-5
VMT/Day Under 50,000 Tons/Year Sediment Removal Scenario (Phases 1, 2 and 3)

	Estimated Vehicle Miles (one-way)	Distribution Percentage	Truck Trips/Day[1]	VMT/Day
Phase 1	**20**	**100%**	**26**	**520**
Phase 2				
Hanson Bros. Enterprises	1.25	30%	28	26
Nevada County	21	30%	28	441
Mining Reclamation Sites	10	10%	9	70
Placer County	36	30%	28	756
Phase 2 Subtotal	**68.25**	**100%**	**94**	**1,737**
Phase 3	**20**	**100%**	**26**	**520**
Scenario Total	**108.25**		**146**	**2,777**

Table 3.12-6
VMT/Day Under 200,000 Tons/Year Sediment Removal Scenario (Phases 1, 2, and 3)

	Estimated Vehicle Miles (one-way)	Distribution Percentage	Truck Trips/Day[1]	VMT/Day
Phase 1	**20**	**100%**	**26**	**520**
Phase 2				
Hanson Bros. Enterprises	1.25	30%	91	113
Nevada County	21	30%	91	1,903
Mining Reclamation Sites	10	10%	30	302
Placer County	36	30%	91	3,262
Phase 2 Subtotal	**68.25**	**100%**	**302**	**5,579**
Phase 3	**20**	**100%**	**26**	**520**
Scenario Total	**108.25**		**354**	**6,619**

Impact 3.12-3. The Project would potentially increase hazards due to a geometric design feature or incompatible use.

State Route 174 and You Bet Road would be the primary roadways used for hauling sediment from SA-2. Greenhorn Access Road would be used to access SA-3 for a two-week period in July when the sediment barrier is installed or moved.

SR-174

During Phase 2, haul truck traffic would peak on SR-174. The Proposed Project would add approximately 66 daily trips under typical haul conditions (50,000 tons/year) and up to 207 daily trips every 6th year (200,000 tons/year). Caltrans has identified hazardous roadway conditions along SR-174 and has plans to widen shoulders and clear the recovery zone in the vicinity of You Bet Road. In addition, the Caltrans project would make improvements, including adding a turn lane, widening shoulders, and clearing the recovery zone at Greenhorn Access Road. The Caltrans project is expected to be completed in 2020 (Caltrans 2017) and would minimize potential increased hazards associated with truck traffic entering and exiting SR-174. This would be considered a **less than significant** impact.

Greenhorn Access Road

Greenhorn Access Road is a 1.1-mile two-lane roadway that terminates at the Greenhorn Campground entry gate. The roadway is approximately 20 feet wide, with little to no shoulders. The majority of the roadway is generally flat, but has a slight drop down into the campground. No significant curves or advisory signs are present. Adequate sight distance exists along Greenhorn Access Road. The roadway within the campground is not striped and has limited two-way capacity in some areas.

The Proposed Project would add up to 26 truck trips per day to Greenhorn Access Road during installation or moving of the sediment barrier, which would occur for a two-week period during the recreation season. This roadway does not have curves that would create significant hazardous conditions. However, hazardous conditions could occur due to potential conflicts between boat launch traffic and truck traffic since the campground roadway has limited two-way capacity. This would be considered a **significant impact**.

To minimize potential hazards from truck traffic, NID will implement MM-TRA-2 which requires NID to development a Traffic Management Plan to minimize construction-related traffic safety hazards on the affected roadways. With implementation of MM-TRA-2, impacts would be considered **less than significant**.

You Bet Road

Proposed Project haul trucks would use approximately 2.5 miles of You Bet Road to reach SR-174 from SA-1 located at Greenhorn Creek crossing. From SR-174, You Bet Road is a two-lane winding uphill roadway for approximately 0.8 mile where it peaks and then travels downhill for 1.7 miles to SA-1. You Bet Road provides access to numerous residences and is also used by Hansen Bros. to haul aggregate materials from their processing plant. The roadway is approximately 20 feet in width, with little to no shoulders. Several curves are signed with warnings to indicate road curvature and advisory speed (e.g., "curves ahead" with 20 miles per hour advisory speed). The Proposed Project would add approximately 66 daily trips under typical haul conditions (50,000 tons/year) and up to 207 daily trips every six years (200,000 tons/year).

You Bet Road provides adequate signage indicating road curvature and providing an advisory speed limit. Adherence to the advisory aids in identifying the presence of an oncoming vehicle in the vicinity of the curve, as sight distance is limited. In addition, the Caltrans project is expected to be completed in 2020 (Caltrans 2017) and would help minimize potential increased hazards associated with truck traffic entering and exiting You Bet Road. However, the Proposed Project would increase hazards through increased two-way truck traffic on a roadway that has limited width and sight distance in some areas. The impact is considered **significant.**

To minimize potential hazards from truck traffic, NID will implement MM-TRA-2 which requires NID to development a Traffic Management Plan to minimize construction-related traffic safety hazards on the affected roadways. With implementation of MM-TRA-2, impacts would be considered **less than significant**.

Impact 3.12-4. The Project would result in inadequate emergency access.

In the Project Area SR-174 is considered a primary access route by the Nevada County Office of Emergency Services (OES). All other roadways are considered secondary (J. Gulserian, pers. comm.). The Proposed Project would result in an increase in haul truck traffic on area roadways. The Project would add approximately 66 daily trips to You Bet Road from August through November during a typical year, and up to 207 daily trips infrequently (i.e., under the 200,000 tons/year sediment removal scenario). Although the increase in trucks would not result in significant traffic levels compared to current local roadway volumes the increase would occur during a portion of peak fire season. In addition, You Bet Road has narrow shoulders and does not provide adequate graveled or paved areas/turnouts to allow haul trucks to pull over and yield to oncoming emergency vehicles. As a result, the Proposed Project would result in a significant impact related to emergency access. Mitigation measures MM-TRA-3 will be implemented to reduce potential impacts to **less than significant**.

3.12.5 Mitigation Measures

The following mitigation measures will be implemented as part of the Project to reduce potentially significant impacts to a less than significant level.

MM-TRA-1 **County Road Maintenance.** NID shall pay to Nevada County all Traffic Impact Mitigation Fees required per Board Resolutions 18-206. Payment of these fees by the project applicant would ensure that the Project contributes its fair share of the cost of necessary for future improvements to the regional roadway network.

- NID shall document road and shoulder conditions along You Bet Road prior to Project implementation to provide a baseline against future evaluations of road and shoulder conditions. Every 5 years, or a timeframe deemed appropriate by Nevada County Public Works, road and shoulder conditions will be evaluated. Based on the results of evaluation and in consultation with Nevada County Public Works, NID may be required to repair roads and/or shoulders that have been affected by increased truck traffic associated with the Project.

- Gravel, sand, soil, and other debris from the Project Site and affected roadways is promptly removed from roads and shoulders.

MM-TRA-2 **Hazards Due to Truck Traffic**. NID shall develop a Traffic Management Plan to minimize construction-related traffic safety hazards on the affected roadways. To the extent practicable, the Traffic Management Plan will conform to the latest edition of the California Manual on Uniform Traffic Control Devices for Temporary Traffic Control. NID shall coordinate development and implementation of this plan with the Nevada County Office of Emergency Services (OES), Caltrans and the Placer and Nevada County Public Works Departments, as appropriate. The Traffic Management Plan will include, but would not be limited to, the following elements:

- Movement of large oversized equipment and hauling of materials of oversized vehicles related to sediment barrier installation and removal shall be done by convoy using applicable roadway standards.

- Develop and implement a plan for notifications and a process for communication with affected Greenhorn Campground users and residents along affected roadways before the start of construction. Public notification will include posting of notices at NID website, Greenhorn Campground website, Placer and Nevada County Public Works Departments websites, Nevada County OES, notices at the Project Site, and appropriate signage of construction activities. The notifications will include the construction schedule, the location and duration of activities on each roadway (e.g., which roads/lanes, access points/driveways would be

blocked on which days and for how long, and alternative vehicle routes), and contact information for questions and complaints.

- Maintenance of access for vehicles in and/or adjacent to roadways affected by construction activities at all times.
- Evaluate sighting distances along You Bet Road annually to determine if they meet the current County Policy; and, where deficiencies occur, install warning signs, convex high visibility mirrors, or other similar measures to improve sighting distances, as necessary.

MM-TRA-3 NID shall notify the Nevada OES annually at least 30 days prior to commencing work. The Nevada County OES is responsible for coordinating with local fire, police, and the Nevada County Public Works Department regarding maintaining safe conditions during project implementation.

3.12.6 Level of Significance After Mitigation

- With implementation MM-TRA-1 potential impacts related to road degradation from haul trucks would be reduced to less than significant.
- With implementation of MM-TRA-2 hazards resulting from increased truck traffic would be reduced to less than significant.
- With implementation of MM-TRA-3 impacts related to inadequate emergency access would be reduced to less than significant.

3.12.7 References

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3.13 PUBLIC UTILITIES AND SERVICES

This section describes the existing public utilities and services in the Project vicinity and identifies associated regulatory requirements and evaluates potential impacts related to implementation of the proposed Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project).

3.13.1 Existing Conditions

The Project Site is located in unincorporated Nevada County approximately 6 miles north of the City of Colfax. The approximately 108-acre Project Site is located on the Greenhorn Arm of Rollins Reservoir. The City of Grass Valley is located approximately 7 miles to the west and Interstate 80 (I-80) is located approximately 2.5 miles southeast of the Project Site. Scattered single-family rural residences are located in the Project vicinity, directly adjacent to the Project Site.

3.13.1.1 Public Utilities

Domestic Water

Western Nevada County, including the Project vicinity, is served primarily by the Nevada Irrigation District (NID). Early mining ditches in western Nevada County formed the backbone of NID, which supplies surface water to its domestic, industrial, and agricultural customers. Water supply for NID is currently derived from rain and mountain snowpack from northern California's Sierra Nevada. NID has an extensive system of storage reservoirs (including Rollins Reservoir) that provide surface water supply to NID's six water treatment plants as well as to raw water customers. Outside of the existing service areas, water users depend primarily on groundwater through individual or small systems (NID 2015).

Wastewater

Public sanitary sewer systems in the western part of the County are provided by the cities of Grass Valley and Nevada City and the Nevada County Sanitation District No. 1. In areas outside the cities' service areas, the County of Nevada, through the Nevada County Sanitation District No. 1, operates and maintains the sewage collection and treatment facilities constructed by the Sanitation District. Currently, there are nine systems or zones within the Nevada County Sanitation District No. 1. These zones are Lake Wildwood, Lake of the Pines, Kingsbury Greens, Gold Creek, Penn Valley, Mountain Lakes Estates, North San Juan, Cascade Shores, and Glenbrook (which contracts with the City of Grass Valley for treatment and disposal) (County of Nevada 1996). Wastewater treatment services are not available to the Project and such services are not needed.

Solid Waste and Recycling Services

Waste Management of Nevada County provides refuse and recycling collection services to local residents and businesses. Trash collected by Waste Management in Nevada County is transported to the McCourtney Road Transfer Station located at 13083 Grass Valley Avenue in Grass Valley. After sorting is complete, residual garbage is hauled to Lockwood Regional Landfill in Sparks, Nevada.

Waste Management offers customized recycling programs to residential, commercial, and industrial customers to reduce the amount of solid waste generated in Nevada County. Current programs include buy/drop-off centers; paper, wood, and pallet recycling; and glass and plastic recycling. Waste Management also provides recycled materials pickup and transfer services, and offers a variety of sizes of mail-back sharps containers, which provides customers a system for the safe disposal of sharps waste (County of Nevada 2017).

3.13.1.2 Public Services

Fire Protection and Emergency Services

Nevada County is protected by multiple fire protection agencies, including local fire districts, city fire departments, the California Department of Forestry and Fire Protection (CAL FIRE), the Bureau of Land Management (BLM), and the U.S. Forest Service (USFS). The ten separate fire districts that currently serve Nevada County include the Grass Valley Fire Department, Higgins Area, North San Juan, Rough and Ready, Truckee, Peardale–Chicago Park, Penn Valley, Nevada County Consolidated, Nevada City Fire Department, and Ophir Hill. The Project vicinity is within the Peardale–Chicago Park Fire District. The Peardale–Chicago Park Fire District provides fire protection for structures and wildland, emergency medical response, and public assistance from Station 57 in Chicago Park and Station 257 in Peardale. The Nevada–Yuba–Placer Unit of CAL FIRE also provides wildland fire protection services to portions of Nevada County, including the Project vicinity. The nearest CAL FIRE station to the Project Site is located at 15057 Highway 174, Grass Valley, CA. USFS and BLM provide wildland fire protection services on federal lands in federal responsibility areas for watershed and resource protection. Various agreements between the fire protection agencies enable cooperative fire protection services. The Grass Valley Emergency Command Center, a cooperative facility between the USFS and CAL FIRE, provides emergency dispatching services through cooperative agreements with all the fire districts and cities within Nevada County (County of Nevada 1996).

Law Enforcement Services

The Nevada County Sheriff's Office has primary jurisdiction over all of the unincorporated areas of Nevada County and also assists other law enforcement agencies when the need arises. The geographical area of responsibility for the sheriff's office spans in excess of 900 square miles,

including numerous lakes and several rivers. The Sheriff's Department is staffed with 169 personnel. There are three main divisions within the Sheriff's Department: Operations, Administrative Support, and Corrections. The Sheriff's Department provides all the duties of Sheriff, Coroner, and Public Administrator (Nevada County Sheriff's Office 2016). The Sheriff's Department is headquartered at 950 Maidu Avenue in Nevada City.

Recreation and Parks Districts

In Nevada County, numerous federal, state, and local jurisdictions as well as private entities provide recreation opportunities.

There are four recreation and park districts in Nevada County: Western Gateway Recreation and Park District in the Penn Valley area, Bear River Recreation and Park District in southern Nevada County, Truckee–Donner Recreation and Park District in eastern Nevada County, and Oak Tree Park and Recreation District in the San Juan Ridge area. Bear River District currently operates the Magnolia Sports Complex in conjunction with the Pleasant Ridge School District. Nevada County owns no lands available for public recreation other than the Western Gateway Park, which the county leases to the Western Gateway Regional Recreation and Park District (County of Nevada 1996). Cities within Nevada County also offer recreational opportunities, these include the Town of Truckee, the City of Grass Valley, and Nevada City.

In addition to the county and city recreation providers, other local agencies maintain recreational facilities. NID provides outdoor recreational opportunities at district reservoirs in the foothills and mountains of the Northern Sierra. Recreational facilities owned by NID include Rollins Reservoir, Scotts Flat Reservoir, Bowman Reservoir, Combie Reservoir, Faucherie Reservoir, and Jackson Meadows Reservoir. In the Project vicinity, Rollins Reservoir, located at 2,100-foot elevation off Highway 174 between Grass Valley and Colfax, has four independently operated campgrounds. Long Ravine, Greenhorn, Orchard Springs, and Peninsula campgrounds offer a combined 250 campsites and a range of services that includes stores, restaurants, fuel sales, and equipment rentals (NID 2017). Portions of the Greenhorn Campground and Greenhorn Campground Boat Launch are within the Project Site boundary and are adjacent to the Work Area (Map 2-2). Refer to Section 3.11 Recreation for more detailed information on recreation facilities in the Project vicinity.

Other Public Services and Facilities

Other public service providers in the vicinity of the Project include the Nevada County Elementary School and Nevada Union High School Districts. Library services are provided by Nevada County and the City of Grass Valley.

The Project Site currently has electrical service provided by Pacific Gas and Electric Company (PG&E). The Project is proposing to light the mobile office and equipment staging areas for

security purposes and to prevent the unauthorized or illegal use or entrance into the Project Site. The PG&E electrical service connection would be removed upon Project completion.

3.13.2 Relevant Plans, Policies, and Ordinances

3.13.2.1 Federal

National Pollutant Discharge Elimination System Permits (Federal and State)

The National Pollutant Discharge Elimination System (NPDES) permit system was established under the Clean Water Act to regulate municipal and industrial discharges to surface waters of the United States. The discharge of wastewater to surface waters is prohibited unless an NPDES permit has been issued to allow that discharge. Each NPDES permit includes the following provisions: effluent and receiving water limits of allowable concentrations and/or mass of pollutants contained in the discharge; prohibitions on discharges not specifically allowed under the permit; provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, and self- monitoring activities; and other regulatory requirements.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (40 CFR 258), Subtitle D, contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the federal landfill criteria. The federal regulations address the location, operation, design, groundwater monitoring, and closure of landfills.

3.13.2.2 State

Quimby Act

The Quimby Act (California Government Code, Section 66477) permits local jurisdictions to require the dedication of land or the payment of fees in lieu of land for parks and recreational purposes as a condition for approval of a new development's tentative or parcel map. The act sets the requirement at 3 to 5 acres per 1,000 residents, based on the existing park-to-population ratio of the surrounding community.

Statewide General Waste Discharge Requirements

The Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (Order No. 2006-0003-DWQ) established by the State Water Resources Control Board (State Water Board) apply to public agencies that own and operate more than 1 mile of pipe that collects and conveys untreated or partially treated wastewater to a publicly owned treatment facility. These waste discharge requirements, intended to reduce sanitary sewer overflows, require agencies to develop

and certify a sewer system management plan, sections of which must be submitted to the State Water Board.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) is California's statutory authority for the protection of water quality. Under the Porter-Cologne Act, the state must adopt water quality plans, policies, and objectives that will provide protection to the state's waters for the use and enjoyment of the people of California. In California, the State Water Board has authority and responsibility for establishing policy for water quality control issues for the state. Regional authority for planning, permitting, and enforcement is delegated to the nine Regional Water Quality Control Boards (RWQCBs). The Porter-Cologne Act authorizes the State Water Board and RWQCBs to issue NPDES permits containing waste discharge requirements, and to enforce these permits. State Water Board and RWQCB regulations implementing the Porter-Cologne Act are included in Title 27 of the California Code of Regulations.

Assembly Bill 1826

Assembly Bill (AB) 1826, effective as of April 1, 2016, requires businesses to recycle their organic waste. This law also requires that, on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. Organic waste (also referred to as organics) means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste. This law phases in the mandatory recycling of commercial organics over time, while also offering an exemption process for rural counties. In particular, the minimum threshold of organic waste generation by businesses decreases over time, which means an increasingly greater proportion of the commercial sector will be required to comply.

Assembly Bill 341

AB 341, effective as of July 1, 2012, sets forth the requirements of the statewide Mandatory Commercial Recycling Program, which was one of several measures adopted by the California Air Resources Board under AB 32 pursuant to the California Global Warming Solutions Act. The Mandatory Commercial Recycling Measure focuses on increased commercial waste diversion as a method to reduce greenhouse gas (GHG) emissions. It is designed to achieve a reduction in GHG emissions of 5 million metric tons of carbon dioxide (CO_2) equivalents. To achieve the measure's objective, an additional 2 to 3 million tons of materials annually will need to be recycled to reach California's recycling goal of 75% by the year 2020. The law states that all California businesses that generate 4 cubic yards or more of solid waste per week, and multifamily residential dwellings with five or more units, are required to start recycling. Cities are also obligated to start

implementing "education, outreach and monitoring" of a Mandatory Commercial Recycling Program by the deadline. The new recycling law does not carry any fines or penalties, but rather gives local jurisdictions the authority to come up with their own rules of enforcement in a "phased in" process. Cities are required to file annual reports on compliance with the California Department of Resources Recycling and Recovery, known as CalRecycle, which is overseeing the statewide regulation.

Energy Efficiency Standards

Title 24, Part 6, of the California Building Code establishes energy efficiency standards for new construction (new buildings, additions, alterations, nonresidential buildings, and repairs). These standards were established in 1978 in response to a legislative mandate to reduce California's energy consumption and are updated periodically to allow consideration and incorporation of new energy efficiency technologies. New standards were adopted in 2008 to reduce California's electricity demand. For building permit applications submitted on or after January 1, 2010, the 2008 standards must be met. The 2010 building energy efficiency standards were developed in response to a number of efforts, including AB 32, the Global Warming Solutions Act of 2006, which mandates that California must reduce its greenhouse gas emissions to 1990 levels by 2020. The updated standards were adopted by the California Energy Commission in April 2008.

3.13.2.3 Local

Nevada Irrigation District

NID's mission statement is to provide a dependable, quality water supply; continue to be good stewards of the watersheds, while conserving the available resources in its care. The following Strategic Plan 2016-2018 goals (NID 2016) are applicable to the Proposed Project:

- **Goal 2**: Stewardship of District resources requires a collaborative and responsive relationship with our Local and Regional community.
- **Goal 3**: Developing and managing our resources in a self-determining manner protects and provides for local control of our community's most valuable assets – a fairly priced and available water supply.

Nevada County Land Use and Development Code

Chapter XVI of the Nevada County Land Use Development Code requires new projects and construction to meet fire safety standards described in the California Public Resources Code Section 4290, and establishes requirements for fuel modification and emergency water supply, as well as minimum fire safe driveway and road standards. New structures built in Nevada County must also comply with fire safety building regulations. These building codes require the use of

ignition-resistant building materials and establish design standards to improve the ability of a building to survive a wildfire.

State-mandated California Public Resources Code, Section 4291 requires the management of flammable vegetation around buildings or structures as a firebreak within 30 feet or to the property line from a structure, and as a fuel break, within 30 to 100 feet or to the property line from the structure. This regulation applies to all buildings or structures in a mountainous area; forest-covered, brush-covered, or grass-covered lands; or any land that is covered with flammable material in the state responsibility area.

Nevada County General Plan

The Nevada County General Plan (County of Nevada 1996) contains goals, objectives, and policies related to the provision of public utilities and services. The following goals, objectives, and policies are applicable to the Proposed Project.

Recreation Element

Objective 5.7: Preserve and encourage water based recreational opportunities.

Policy 5.18: Cooperate with other public agencies to provide public access to the lakes and impoundments in the County, consistent with their ability to support water-based recreation.

Policy 5.19: Cooperate with other public and private agencies to provide public access to the rivers in the County, with emphasis at road and highway bridges so as to assure access for police and emergency vehicles.

Policy 5.20: Encourage proper operation and environmental standards for private facilities on lakes, impoundments, and rivers.

Safety Element – Hazardous Materials

Goal HM-10.5: Protect public health, safety, natural resources, and property through regulation of use, storage, transport, and disposal of hazardous materials.

Policy HM-10.5.1: Provide means for the identification, safe use, storage, transport, and disposal of hazardous materials.

Policy HM-10.5.3: The County will encourage the clean-up of sites contaminated by mine wastes or other hazardous materials.

Policy HM-10.5.4: The County will actively promote prompt clean-up or remediation of properties contaminated by mine waste or other hazardous materials and shall not grant any discretionary or ministerial land use approvals to develop or change boundaries or reconfigure parcels believed to be contaminated unless and until the nature, extent, type and location of the contamination is determined and satisfactory arrangements are made for clean-up or remediation, in accordance with Nevada County standards or state regulations.

Safety Element – Fire Hazards and Protection

Policy FP-10.7.7: Cooperate with CAL FIRE, US Forest Service, local fire districts, and the Nevada County Fire Safe Council in fire prevention programs.

Goal FP-10.11: Reduce fire severity and intensity through fuels management.

Policy FP-10.11.1: Recognize Public Resources Codes 4290 and 4291, and other defensible space standards and guidelines in order to protect structures from wildfire, protect wildlands from structure fires, and provide safe access routes for people and firefighters.

Policy FP-10.11.2: Recognize the Nevada County Defensible Space Standard as described in this policy. The Defensible Space Standard provides the basic protection measures for life and property from encroaching wildfire, and minimizes structure fires or other fires which may threaten to spread into the wildlands. The standard utilizes Public Resources Code 4291 and includes one component of Public Resources Code 4290, fuels treatment next to driveways, as the minimum fire safety standard in Nevada County.

Public Facilities and Services Element

Objective 3.4: Develop and operate public facilities and services in an environmentally sound way.

Policy 3.24: The County, in cooperation with other affected agencies, shall continue to implement the County Integrated Waste Management Plan. Preparation of a comprehensive long-range facilities plan for the County shall consider the need for transfer stations, composting sites, hazardous waste collection facilities, and other solid waste disposal facilities.

3.13.3 Threshold of Significance

3.13.3.1 Public Services

The significance criteria used to evaluate the Project impacts to public services are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.). According to Appendix G, a significant impact related to public services would occur if the Project would:

1. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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:
    a. Fire protection.
    b. Police protection.
    c. Schools.
    d. Parks.
    e. Other public facilities.

3.13.3.2 Public Utilities

The significance criteria used to evaluate the Project impacts to public utilities are based on Appendix G of the CEQA Guidelines. According to Appendix G, a significant impact related to public utilities would occur if the Project would:

1. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.
2. Have insufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years.
3. Result in a determination by the wastewater treatment provider which 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.
4. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

5. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

3.13.4 Impacts Analysis

3.13.4.1 Public Services

Impact 3.13-1. The Project would not 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:

Fire Protection

The Project may require assistance from the Peardale–Chicago Park Fire Protection District and/or CAL FIRE in the event of an emergency. The Proposed Project is located within a CAL FIRE state responsibility area and is designated as a "High Fire Hazard" severity zone (CAL FIRE 2007). The Peardale–Chicago Park Fire Protection District also provides fire protection services in the Project vicinity. The Peardale–Chicago Park Fire Protection District has two stations within 5 miles of the Project Site, one in Peardale and the other in Chicago Park. The nearest CAL FIRE station is located in Grass Valley approximately 3.4 miles from the Project. Access to the Project Site would be via Highway 174 to either Greenhorn Access Road or You Bet Road depending on the activities being carried out and the phase of the Project. Because the Project would not result in an increased residential population and would include only a minimal increase in the daytime population (employees), it is anticipated that the existing Peardale–Chicago Park Fire Protection District and CAL FIRE staff and equipment would be sufficient to meet the demands of the Project while maintaining appropriate response times and standards. The Project would not require the construction or expansion of any Peardale–Chicago Park Fire Protection District or CAL FIRE facilities that would have a significant effect on the environment. Therefore, the impact on fire protection services would be considered **less than significant**.

Police Protection

The Project would involve sediment removal operations in the Greenhorn Arm of Rollins Reservoir. The Project Site, which is in unincorporated Nevada County, is within the Nevada County Sheriff's existing service area. The closest sheriff's office is located at 14647 McCourtney Rd, Grass Valley, which is approximately 13.5 miles from the Project Site. Development of the Proposed Project could slightly increase demand for police services in the event of trespassing or vandalism within the Project Site. However, because the Project would not result in an increased residential population in Nevada County, it is anticipated that the existing Nevada County Sheriff

staff levels would be sufficient to meet the demands of the Proposed Project. The number of employees working at the site on a daily basis would not trigger the need to add additional officers. The Project would not require the construction or expansion of any police/sheriff facilities that would have a significant effect on the environment; therefore, impacts would be considered **less than significant**.

Parks

The Proposed Project would not result in an increased residential population and would therefore not result in an increased demand for existing park and recreation facilities. The Project would involve sediment removal operations on the Greenhorn Arm of Rollins Reservoir and may result in improved future recreational opportunities and boat access within Rollins Reservoir and the Greenhorn Arm of Rollins Reservoir. The improvements may result in an increase in recreational visits to the Project Site and vicinity. Therefore, the Project would result in **no impact** on park and recreational facilities.

Schools and Other Public Facilities

Because the Project would not introduce a new residential population to the area, it would result in **no impacts** related to an increase in demand for schools, libraries, or other public facilities.

The Project Site currently has electrical service provided by PG&E. The Project is proposing to light the office and equipment staging area for security purposes. The utility connections would be removed annually during demobilization. Accordingly, **no impact** related to electrical service is anticipated.

3.13.4.2 Public Utilities

Impact 3.13-2. The Project would not require or result in the relocation or construction of new or expanded water, wastewater treatment, storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or expansion of which could cause significant environmental effects.

The Proposed Project would not result in the generation of raw sewage, nor create a demand for sewer collection and/or, waste water drainage, electric power, natural gas, or telecommunications facilities. Water will be applied to material being stockpiled and loaded as required to reduce fugitive dust. Watering will be limited to dust suppression and will be applied in a manner to prevent direct run-off into the Greenhorn Arm. The water will be supplied onsite using NID's surface water in the Project vicinity. Potable water needs for the Project would be minimal and would be delivered by truck, as needed. Implementation of the Proposed Project would therefore have **no impact** related to the construction or expansion of water, wastewater treatment, storm water drainage, electric power, natural gas, or telecommunications facilities.

Impact 3.13-3. The Project would have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years from existing entitlements and resources, and no new or expanded entitlements would be needed.

The Proposed Project would require a minimal amount of water (i.e., temporary use of water for dust suppression) that would be accommodated from existing water supplies and entitlements. Water for dust suppression will be supplied onsite using NID's surface water in the Project vicinity. Potable water needs for the Project would be minimal and would be delivered by truck, as needed. The Project would have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years from existing entitlements and resources, and no new or expanded entitlements would be needed, therefore, there would be **no impact**.

Impact 3.13-4. The Project would not result in a determination by the wastewater treatment provider which serves or may serve the Project that it has inadequate capacity to serve the Project's projected demand in addition to the provider's existing commitments.

The Proposed Project would not result in the generation of raw sewage, nor discharge of wastewater from the Project Site. Thus, there would be no exceedance of the wastewater treatment capacity of any facilities. Portable restrooms for Project employees would be placed on site by a licensed vendor and operated in accordance with Nevada County Environmental Health requirements. Wastewater from the portable restrooms would be managed off site by the vendor. Implementation of the Proposed Project would have **no impact** to wastewater treatment providers in the area.

Impact 3.13-5 and 3.13-6. With implementation of mitigation, the Project would not generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure; and the Project would be implemented consistent with federal, state, and local management and reduction statutes, solid waste reduction goals.

The Project would be implemented annually from July through December; and up to six construction staff would be at the Project Site for up to 6 days a week, or approximately 96 days per year. Solid waste generated by construction staff would be relatively minimal, and would include (but is not limited to) food and other personal waste and empty containers/discarded packaging from construction supplies. These materials would be hauled off site to the McCourtney Road Transfer Station located at 13083 McCourtney Road in Grass Valley. All of the waste would be sorted at the transfer station to capture any recyclable materials. Once sorting is completed, residual garbage would be transferred by the transfer station to the Lockwood Regional Landfill, in Sparks, Nevada. Under current projected development conditions, the transfer station has a

permitted lifespan extending through 2066 (CalRecycle 2019). Therefore, construction activities are not expected to generate waste in excess of the capacity of local infrastructure.

The Project would also generate approximately 50,000 tons of excavated sediments in a typical year, although the amount removed could potentially be as much as 200,000 tons in a year. It is assumed that the 6-year total for sediment removal would be 200,000 tons. Sediments would be processed and sorted to separate fine sediments from larger aggregates. As described in Chapter 2, Project Description, larger aggregates would be sold or used for mining reclamation. Therefore, there would be no impact to local disposal facilities associated with disposal of larger aggregates.

Fine sediments would transported off site for disposal at an approved processing center. It is unknown what percentage of the sediment would be fines versus larger aggregate. For the purposes of this analysis, we assume a worst-case scenario in which all excavated material must be transferred by the McCourtney Road Transfer Station to a local landfill. The McCourtney Road Transfer Station typically transports materials to the Lockwood Regional Landfill that has a daily intake limit of approximately 5,000 tons per day (Nevada Department of Environmental Protection 2010). Assuming 96 work days per year, 50,000 tons equates to 520 tons of material per day; and 200,000 tons equates to 2,083 tons of material per day. Therefore, even under the unlikely scenario that 200,000 tons are excavated in a year, and that all excavated materials are composed of fine sediment, the landfill has sufficient capacity to accommodate the sediments.

Additionally, the amount of material excavated in any given year would, in part, be driven by the availability of disposal sites. Therefore, if local disposal facilities reach capacity and cannot accommodate the sediments, or can only accommodate a portion of sediments, excavation activities would be adjusted accordingly. Considering that the Project would generate minimal construction-related solid waste; and that the amount of material excavated falls within current intake limits and would adjust year-to-year according to landfill capacity, impacts related to the capacity of local infrastructure would be **less than significant**.

The Project would be implemented consistent with federal, state, and local regulations. Solid waste reduction goals set forth under AB 1826 pertain specifically to recycling of organic waste and AB 341 regulates commercial solid waste (defined under 14 CCR § 17225.12 as "all types of solid wastes generated by stores, offices and other commercial sources, excluding residences, and excluding industrial wastes"). Nevada County currently recycles green waste including grass clippings, leaves, flowers, wood branches, and untreated lumber. Disposal of fine river sediments is not regulated under current waste reduction goals. The Project would not generate significant amounts of organic or commercial solid waste, and, as described above, the minimal amounts of construction-generated waste would be sorted, recycled, and/or disposed of at local facilities consistent with county and state regulations. Therefore, the Project would have **no effect** on the attainment of solid waste reduction goals.

Finally, sediment will be sampled and analyzed to identify any potential hazards to the public or environment. If sediments exceed hazardous waste thresholds, the sediment will be disposed of in accordance with relevant hazardous waste regulations at an approved hazardous materials disposal site. As identified in Section 3.7 Hazards and Hazardous Materials, NID will implement MM-HAZ-2 which requires development of a Hazardous Materials Business Plan (HMBP). The HMBP will specify measures to manage and remediate waste, including contaminated sediment, in compliance with all applicable regulations. NID will also implement MM-HAZ-6 which describes testing methods and disposal options for excavated sediment. With implementation of MM-HAZ-2 and MM-HAZ-6, impacts associated with solid waste, including contaminated sediment, would be **less than significant**.

3.13.5 Mitigation Measures

Refer to MM-HAZ-2 and MM-HAZ-6 in Section 3.7.

3.13.6 Level of Significance After Mitigation

With implementation of HAZ-2 and HAZ-6, all impacts related to public utilities would be considered **less than significant**.

3.13.7 References

County of Nevada. 1996. *Nevada County General Plan.* Accessed April 4, 2017. https://www.mynevadacounty.com/1065/General-Plan.

County of Nevada. 2017. Website. Accessed April 5, 2017. https://www.mynevadacounty.com/1447/Solid-Waste.

Nevada County Sheriff's Office. 2016. *Nevada County Sheriff's Office Annual Report 2016*.

Nevada Division of Environmental Protection. 2010. Fact Sheet (Pursuant to the Solid Waste Disposal Regulations of the Nevada Administrative Code [NAC] 444.641.3[bb]) Lockwood Regional Landfill.

NID (Nevada Irrigation District). 2015. *2015 Urban Water Management Plan*. Adopted June 2016.

NID. 2016. Strategic Plan 2016 to 2018.

NID. 2017. "Recreation & Campground Information." Website. Accessed April 4, 2017. http://nidwater.com/recreation/.

3.14 WILDFIRE

California Environmental Quality Act (CEQA) Guidelines require additional analysis of the risk of wildfire in State Responsibility Areas (SRAs) (non-federal lands outside of city boundaries within which California assumes financial responsibility for preventing and suppressing fires); and other non-federal areas that have been designated by California Department of Forestry and Fire Protection (CAL FIRE) as "very high" fire hazard severity zones (FHSZ). The Proposed Project is both located in an SRA and is located in a "very high" FHSZ.

3.14.1 Existing Conditions

Nevada County encompasses approximately 978 square miles of diverse and rugged rural lands in the northern Sierra Nevada Range. These landscapes are fire prone with both natural and anthropogenic sources of ignition. The County's increasing population and expansion of development into previously undeveloped areas is creating more "wildland-urban interface" (WUI) issues with a corresponding increased risk of loss to human life, natural resources, and economic assets associated with wildland fires. Rising temperatures and increasing temporal variability of water availability is substantially increasing wildfire risk in many areas.

Nevada County is protected by multiple fire protection agencies, including local fire districts, city fire departments CAL FIRE, the Bureau of Land Management (BLM), and the U.S. Forest Service (USFS). The ten separate fire districts that currently serve Nevada County include the Grass Valley Fire Department, Higgins Area, North San Juan, Rough and Ready, Truckee, Peardale–Chicago Park, Penn Valley, Nevada County Consolidated, Nevada City Fire Department, and Ophir Hill. The Project vicinity is within the Peardale–Chicago Park Fire District. The Peardale–Chicago Park Fire District provides fire protection for structures and wildland, emergency medical response, and public assistance from Station 57 in Chicago Park and Station 257 in Peardale. The Nevada–Yuba–Placer Unit of CAL FIRE also provides wildland fire protection services to portions of Nevada County, including the Project vicinity. The nearest CAL FIRE station to the Project Site is located at 15057 Highway 174, Grass Valley, CA. USFS and BLM provide wildland fire protection services on federal lands in federal responsibility areas for watershed and resource protection. Various agreements between the fire protection agencies enable cooperative fire protection services. The Grass Valley Emergency Command Center, a cooperative facility between the USFS and CAL FIRE, provides emergency dispatching services through cooperative agreements with all the fire districts and cities within Nevada County (Nevada County 1996).

3.14.2 Relevant Plans, Policies, and Ordinances

Responsibility for fire prevention, suppression, and post-fire mitigation in California includes a nexus of policies and plans at the federal, state, and local level. Each of these levels is outlined below.

3.14.2.1 Federal

Disaster Mitigation Act of 2000

The Federal Disaster Mitigation Act of 2000 enacted a number of changes to the Robert T. Stafford Disaster Relief and Emergency Assistance Act related to pre-disaster mitigation, streamlining the administration of disaster relief, and controlling the costs of federal disaster assistance. These changes have collectively brought greater focus on pre-disaster planning and activities as a means for reducing response and post-disaster costs. In accordance with the Act, local governments must have a Local Hazard Mitigation Plan that is reviewed by the State Mitigation Officer and then approved by the Federal Emergency Management Agency (FEMA) as this is a required condition of receiving FEMA mitigation project assistance. These Local Hazard Mitigation Plans must be revised, reviewed, and approved every five years.

Fire Safe Councils can play an important role in the development of Local Hazard Mitigation Plans. The typical Council consists of state and federal fire agencies, local fire districts, businesses, local government, and local concerned citizens. Some Councils have also combined with neighboring fire safe councils to develop countywide wildfire hazard mitigation plans.

3.14.2.2 State

Senate Bill 1241

To address the increasing risk of wildfire in the WUI, Senate Bill 1241 revised the safety element requirements for SRAs and very high FHSZs (Government Code Sections 65302 and 65302.5). Senate Bill 1241 requires that the draft element or draft amendment to the safety element of a county or a city's general plan be submitted to the State Board of Forestry and Fire Protection and to every local agency that provides fire protection to a territory in the city or county at least 90 days prior to either: 1) the adoption or amendment to the safety element of its general plan for each county that contains state responsibility areas; or 2) the adoption or amendment to the safety element of its general plan for each city or county that contains a very high FHSZ.

Cities and counties are required to adopt a general plan to guide major land use decisions. Each plan includes seven mandatory elements: land use, circulation, housing, conservation, open space, noise, and safety. SB 1241 requires cities and counties to review and update their safety elements to address fire risks on SRA lands and very high FHSZs.

A set of feasible implementation measures designed to carry out the goals, policies and objectives of the general plan must include measures designed to minimize fire risk if a project falls within a SRA or very high FHSZ, including:

- Avoiding or minimizing the wildfire hazards associated with new uses of land.
- Locating, whenever feasible, new essential public facilities (i.e., hospitals and health care facilities, emergency shelters, etc.) outside a SRA or a very high FHSZ. If a facility must be placed within SRAs or very high FHSZs, construction and operation methods must be implemented to minimize potential damage of wildland fire.
- Designing adequate infrastructure for new developments, including safe access for emergency response vehicles, visible street signs, and water supplies for structural fire suppression.
- Working cooperatively with public agencies with responsibility for fire protection.

Government Code Section 66474.02, as added by SB 1241, requires that a legislative body of a county make three findings before approving a tentative map or parcel map, for an area located in a SRA or very high FHSZ. These findings must include evidence that 1) the design and location of each lot in the subdivision is consistent with any applicable regulations adopted by the State Board of Forestry and Fire Protection; 2) structural fire protection and suppression services will be available for the subdivision from a) the county, or b) the Department of Forestry and Fire Protection by contract; and 3) ingress and egress for the subdivision meets the regulations regarding road standards for fire equipment.

3.14.2.3 Local

A summary of fire hazard planning requirements for local governments, based on federal and state regulation, is provided below:

- In order to be eligible for FEMA mitigation project funding, local governments must adopt a Local Hazard Mitigation Plan, and then review and revise that plan every 5 years.
- In order to influence where and how federal agencies implement fuel reduction projects on federal land, as well as how additional federal funds may be distributed for projects on non-federal lands, local governments may develop Community Wildfire Protection Plans.
- Safety elements of local general plans must be revised, upon the next update to the Housing Element to address SRAs and very high fire hazard severity zones. The revision must include information about wildfire hazards, as well as goals, policies, and objectives and feasible implementation measures for the protection of the community from the unreasonable risk of wildfire.

- Before approving a tentative subdivision map or parcel map within a state responsibility area or a very high fire hazard severity zone, a city or county must make certain findings. Those findings include that the subdivision is consistent with CAL FIRE regulations and that fire protection and suppression services are available for the subdivision.

Nevada County Community Wildfire Protection Plan

In recognition of widespread declining forest health, the Healthy Forest Restoration Act (HFRA) was passed in 2003 to expedite the development and implementation of hazardous fuel reduction projects on federal land. A key component of the HFRA is the development of Community Wildfire Protection Plans (CWPPs) as a mechanism for public input and prioritization of fuel reduction projects. A CWPP provides background information about a project area, discussion of community values at risk, community base maps, a fire risk assessment, and recommendations that identify treatment areas for reducing fuels and promoting education and awareness about wildland fires, as well as monitoring and assessment strategies.

The primary goal of the Nevada County CWPP (last updated in 2016) is to protect human life, private property, essential infrastructure and natural resources through the implementation of fire prevention projects that work to increase public awareness, improve forest health, sustain local wildlife and preserve the natural beauty of the area through a shared responsibility concept. This approach is intended to: 1) Restore and maintain resilient landscapes; 2) Create fire adapted communities; and 3) Safe and effective wildfire response. Due to the high inter-mix of development in Nevada County, an all-lands approach is necessary to effectively meet the objectives stated above by strategically emphasizing fuels treatments around communities at risk, critical ingress/egress routes and essential infrastructure.

Nevada County and Nevada Operational Area Emergency Operations Plan

The Nevada County and Nevada Operational Area Emergency Operations Plan, published in June 2011, describes the organization, responsibilities, and concept of operations of the Emergency Services Organization, and delineates responsibilities for each county department, agency, office, and individual in response to and recovery from a natural disaster or a man- caused incident. The Emergency Operations Plan provides the guidelines needed for emergency response planning, training, and execution throughout Nevada County. The plan also comprises the standard operating procedures for the flow of information and data within the Emergency Operations Center.

Nevada County General Plan (Safety Element – Fire Hazards and Protection)

Policy FP-10.7.7: Cooperate with CAL FIRE, US Forest Service, local fire districts, and the Nevada County Fire Safe Council in fire prevention programs.

Goal FP-10.11: Reduce fire severity and intensity through fuels management.

Policy FP-10.11.1: Recognize Public Resources Codes 4290 and 4291, and other defensible space standards and guidelines in order to protect structures from wildfire, protect wildlands from structure fires, and provide safe access routes for people and firefighters.

Policy FP-10.11.2: Recognize the Nevada County Defensible Space Standard as described in this policy. The Defensible Space Standard provides the basic protection measures for life and property from encroaching wildfire, and minimizes structure fires or other fires which may threaten to spread into the wildlands. The standard utilizes Public Resources Code 4291 and includes one component of Public Resources Code 4290, fuels treatment next to driveways, as the minimum fire safety standard in Nevada County.

3.14.3 Thresholds of Significance

The analysis in this section pertains specifically to SRAs, which are non-federal lands outside of city boundaries within which California assumes financial responsibility for preventing and suppressing fires; and other non-federal areas that have been designated by CAL FIRE as "very high" FHSZs. The Proposed Project is both located in an SRA and is located in a "very high" FHSZ.

The significance criteria used to evaluate potential Project impacts associated with energy consumption are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a Project could have a significant impact if located in or near state responsibility areas or lands classified as very high fire hazard severity zones if the Project would:

- Substantially impair an adopted emergency response plan or emergency evacuation plan;
- Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire;
- Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or
- Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

3.14.4 Impacts Analysis

Impact 3.14-1. The Project would not substantially impair an adopted emergency response plan or emergency evacuation plan.

Emergency response and evacuation plans for the Project Site are described in the *Emergency Operations Plan* for Nevada County and the Nevada Operational Area (Nevada County 2011). The Emergency Operations Plan is developed for consistency with statewide standards and delegates responsibilities and actions to be taken during, after, and in the recovery phase of an incident. Implementation of the Project would not impair implementation of the applicable emergency response plan. As required by mitigation measure MM-HAZ-5, NID will develop a Project-specific Fire Plan, in consultation with the fire department, that would minimize the potential for fire to occur during implementation of the Project. In the event of a fire-related emergency, the Plan would direct NID and/or contractors to contact the appropriate fire response organizations (i.e., Peardale–Chicago Park Fire Protection District and/or CAL FIRE), who would then implement the response consistent with the Emergency Operations Plan, as well as any other applicable plans or regulations .

Annex B of the Emergency Operations Plan outlines procedures related to emergency support of evacuees moving within or through the County on I-80 and State Highway 20 or 49. As described in Section 3.12, hauling of sediments would result in only a minor increase in truck trips on I-80 as compared to existing conditions. In addition, as required by mitigation measure MM-WF-1, in the event that the County, state, or other authorities declare a state of emergency that involves evacuation on I-80 or other routes that may be used during implementation of the Project, all non-essential operation of vehicles that could affect evacuation routes would cease until the evacuation is no longer in effect. Considering that the Project will be implemented consistent with the County Emergency Operations Plan, and with implementation of MM-HAZ-5 and MM-WF-1, this impact would be **less than significant with incorporation of mitigation**.

Impact 3.14-2. The Project would exacerbate fire risk due to slope, prevailing winds, and other factors, exacerbate wildfire risks; and could potentially expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

The Project Site is located in a “very high” FRHZ, and the nature and location of the Project poses inherent risks related to fire. First, the Project involves use of motorized vehicles and construction equipment. Equipment use is one of the top causes of fire in California, responsible for ignition of approximately 30 percent of all fires (Nevada County 2011). Fire intensities and rates of spread increase as slope increases, and the Project Site is located at the base of a canyon with steep slopes rising on both sides. In addition, while work and staging areas are located on disturbed areas and on creek sediments that are devoid of vegetation, the surrounding slopes are heavily forested,

providing potential fuel for a fire, if ignited. Therefore, the Project could potentially exacerbate fire risk and could potentially expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. As described above, MM-HAZ-5 requires NID to develop a Project-specific Fire Plan. The plan will include (but is not limited to) appropriate contacts and procedures to be followed in case of a fire-related emergency and measures intended to minimize the risk of fire such as keeping work and staging areas cleared of vegetation, equipping vehicles and equipment with spark arrestors, and carrying fire extinguishers and other equipment (as required) in all vehicles. With implementation of MM-HAZ-5, this impact is **less than significant with implementation of mitigation.**

Impact 3.14-3. The Project would not require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

The Project does not involve construction of fuel breaks, emergency water sources, power lines, or other utilities that would exacerbate fire risk. The Project does include construction of a temporary haul road along the bottom of the canyon formed by Greenhorn Creek. Construction and operation of vehicles along this haul road could temporarily increase the risk of fire during annual implementation of the Project. Following sediment removal, the temporary haul road would be abandoned and allowed to return to pre-Project conditions as a result of increased water flow in the creek during the winter. As described previously, increased fire risk would be minimized through implementation of MM-HAZ-5. This impact is **less than significant with implementation of mitigation**.

Impact 3.14-4. The Project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

The Project is located at the base of the canyon formed by Greenhorn Creek and is immediately upstream of Rollins. Therefore, there are no habitations or permanent structures downslope or downstream of the Project, and no associated risk to people or structures. There is **no impact.**

3.14.5 Mitigation Measures

MM-WF-1: In the event that the County, state, or other authorities declare a state of emergency that involves evacuation on I-80 or other routes that may be used during implementation of the Project, all non-essential operation of Project vehicles that could affect evacuation routes would cease until the evacuation is no longer in effect.

3.14.6 Level of Significance After Mitigation

The Proposed Project will not have a substantial adverse effect related to wildfire with implementation of mitigation measures. Impacts of the Project are **less than significant.**

3.14.7 References

Nevada County. 1996. *Nevada County General Plan.* Accessed April 4, 2017. https://www.mynevadacounty.com/1065/General-Plan

Nevada County. 2011. Local Hazard Mitigation Plan for Nevada County 2011–2016.

CHAPTER 4
OTHER CEQA CONSIDERATIONS

4.1 EFFECTS FOUND NOT TO BE SIGNIFICANT

Section 15128 of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15128) requires that an environmental impact report (EIR) briefly describe potential environmental effects that were determined not to be significant and, therefore, were not discussed in detail in the EIR. The environmental issues discussed in the following sections are not considered significant, and the reasons for the conclusion of non-significance are discussed below.

4.1.1 Agriculture and Forestry Resources

4.1.1.1 Thresholds of Significance

The significance criteria used to evaluate impacts of the Greenhorn Sediment Removal at Rollins Reservoir Project (Proposed Project or Project) to agriculture and forestry resources are based on Appendix G of the CEQA Guidelines. According to Appendix G, a project impact would be considered significant if it would:

- 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.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- 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)).
- Result in the loss of forest land or conversion of forest land to non-forest use.
- 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.

4.1.1.2 Discussion

The Project Site is located in the Greenhorn Arm of Rollins Reservoir and does not contain land that is designated as prime agricultural soils by the Soils Conservation Service, nor does it contain prime farmland, unique farmland, or a farmland of statewide importance designated by the California Department of Conservation or forest land or timberland. In addition, the Project Site

is not subject to, nor is it near, a Williamson Act contract site pursuant to Sections 51200-51207 of the California Government Code. Furthermore, the Nevada County General Plan land use designation for the Project Site is "water area" and surrounding land is designated as "rural" and "estate" residential. There is no land in the Project vicinity that is designated as farmland under the Farmland Mapping and Monitoring Program of the California Department of Conservation. Therefore, there would be no impacts associated with agricultural and forestry resources due to implementation of the Project.

4.1.2 Geology and Soils

4.1.2.1 Thresholds of Significance

The significance criteria used to evaluate Project impacts to geology and soils are based on Appendix G of the CEQA Guidelines. According to Appendix G, a significant impact related to geology and soils would occur if a project would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of as known fault. Refer to Division of Mines and Geology Special Publication 42.
  - Strong seismic ground shaking.
  - Seismic-related ground failure, including liquefaction.
  - Landslides.
- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- 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.

4.1.2.2 Discussion

For an environmental issue area like geology, soils, and seismicity, it is important to note that impacts of the environment on a project or plan (as opposed to impacts of a project or plan on the environment) are beyond the scope of required CEQA review. "[T]he purpose of an EIR is to identify the significant effects of a project on the environment, not the significant effects of the environment on the project" (Ballona Wetlands Land Trust v. City of Los Angeles 2011, p. 473). Most topics related to geology, soils, and seismicity are effects of preexisting environmental hazards on users of the project and structures in the project. As explicitly found by the court in the Ballona decision, they therefore "do not relate to environmental impacts under CEQA and cannot support an argument that the effects of the environment on the project must be analyzed in an EIR" (Ballona, p. 475).

Therefore, impacts with respect to geology, soils, and seismicity would only occur if the Project (1) alters existing land uses or increases the density/extent of development in areas with preexisting geologic and/or seismic hazards, and/or (2) increases the occurrence, extent, or severity of geologic and/or seismic risks in populated or publicly accessible areas. The Project is located in an active stream channel and reservoir bottom with no public facilities or infrastructure. The Project proposes neither structures for human occupancy nor any new fixed/permanent facilities or equipment. Due to the lack of adjacent development potential effects are limited to localized instabilities within loose creekbed sediments (alluvium). The sediment removal operation would not affect bedrock. Because the Project would not alter land uses or result in new permanent structures, impacts with respect to geology, soils, and seismicity are less than significant.

4.1.3 Mineral Resources

4.1.3.1 Thresholds of Significance

The significance criteria used to evaluate the Project impacts to mineral resources are based on Appendix G of the CEQA Guidelines. According to Appendix G, a project impact would be considered significant if it would:

- 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.
- 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.

4.1.3.2 Discussion

The main objective of the Project is to improve the water storage capacity in the Greenhorn Arm of Rollins Reservoir and prevent further migration of suspended sediment from the arm into the main reservoir. A consequence of removing sediment to improve water storage and recreational opportunities in the Greenhorn Arm of Rollins Reservoir is disposing of the sediment or finding alternative uses for it. Therefore, a secondary objective of the Project is to economically dispose of the removed sediment. Sediments that are approved for distribution will either be processed and sold as construction materials or used in reclamation of one or more mining sites.

It is estimated that up to 200,000 tons of material could be removed from the Work Area per year; however, a typical year would include removal of approximately 50,000 tons of material. The annual removal effort will depend on the rate of sediment deposition, water year type, and access to the Work Area, and distribution opportunities.

Because the Project includes processing of removed sediments approved for distribution and making them available for construction material or use for reclamation of one or more mining sites, the Project would increase the availability of a known mineral resource. The impact with respect to this topic would thus be beneficial.

4.1.4 Population and Housing

4.1.4.1 Thresholds of Significance

The significance criteria used to evaluate the Project impacts related to population and housing are based on Appendix G of the CEQA Guidelines. According to Appendix G, a project impact would be considered significant if it would:

- Induce substantial population growth in an area, either directly or indirectly.
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

4.1.4.2 Discussion

The Proposed Project would not directly construct or remove housing, nor would it create a significant demand for housing, which could induce population growth in the area. The work force necessary is fairly small (up to six workers onsite). These workers may come from several sources: existing Nevada Irrigation District (NID) workforce, new seasonal hires, or outside contractors. These sources would not require the relocation of large numbers of workers to implement the

Project, nor would it require the construction of worker housing. Therefore, there would be no impacts associated with population and housing due to implementation of the Project.

4.2 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL EFFECTS

CEQA Section 21100(b)(2) and CEQA Guidelines Section 15126.2(b) require that any significant and unavoidable effect on the environment must be identified in the EIR. In addition, CEQA Guidelines Section 15093(a) allows the decision-making agency to determine whether the benefits of a Proposed Project outweigh the unavoidable adverse environmental impacts of implementing the project. The agency can approve a project with unavoidable adverse impacts if it has prepared and adopted a "Statement of Overriding Considerations" setting forth the specific reasons for making such a judgment.

The Proposed Project would result in significant and unavoidable noise impacts. Impacts 3.10-1 and 3.10-2 identify direct noise impacts to nearby residences as a result of Project activities. Implementation of MM-NOI-1 through MM-NOI-5 will reduce construction noise impacts; however, due to the nature of the Project, with heavy equipment mobilizing within the Work Area and Staging Areas 6 days per week, the lack of setback areas that could minimize Project-generated noise, and because sensitive receptors are elevated above the Work Area and would, therefore, not benefit from shielding noise sources, the impact of exposure of persons to or generation of noise levels in excess of local standards would be considered significant and unavoidable even with mitigation incorporated.

4.3 GROWTH-INDUCING EFFECTS

As required by the CEQA Guidelines, an EIR must include a discussion of the ways in which the Proposed Project could directly or indirectly foster population growth or economic development, and how that growth would, in turn, affect the surrounding environment (CEQA Guidelines Section 15126.2[d]).

Direct growth inducement would result if a project involved construction of new housing. Indirect growth inducement would result, for instance, if implementing a project resulted in any of the following:

- Substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises);
- Substantial short-term employment opportunities (e.g., construction employment) that indirectly stimulates the need for additional housing and services to support the new temporary employment demand; and/or

- Removal of an obstacle to additional growth and development, such as removing a constraint on a required public utility or service (e.g., construction of a major sewer line with excess capacity through an undeveloped area).

The CEQA Guidelines do not distinguish between planned and unplanned growth for purposes of considering whether a project would foster additional growth. Therefore, for purposes of this EIR, to reach the conclusion that a project is growth inducing as defined by CEQA, the EIR must find that it would foster (i.e., promote, encourage, allow) additional growth in economic activity, population, or housing, regardless of whether the growth is already approved by and consistent with local plans. The conclusion does not determine that induced growth is beneficial or detrimental, consistent with Section 15126.2(d) of the CEQA Guidelines.

The main objective of the Project is to improve the water storage capacity in the Greenhorn Arm of Rollins Reservoir and prevent further migration of suspended sediment from the arm into the main reservoir. A consequence of removing sediment to improve water storage and recreational opportunities in the Greenhorn Arm is disposing of the sediment or finding alternative uses for it. Therefore, a secondary objective of the Project is to economically dispose of the removed sediment. Sediments that are approved for distribution will either be processed and sold as construction materials or used in reclamation of one or more mining sites.

It is estimated that up to 200,000 tons of material could be removed from the Work Area per year; however, a typical year would include removal of approximately 50,000 tons of material. The annual removal effort will depend on the rate of sediment deposition, water year type, and access to the Work Area, and distribution opportunities. If sediment removed from the site is used for a large infrastructure or development project, that project would go through a federal and/or state project-specific environmental review process, and any adverse impacts related to growth inducement as a result of that particular project would be analyzed at such time.

The availability of sand and gravel aggregate resources does not, in itself, induce or encourage growth. The aggregate available as a result of the Proposed Project is a byproduct of the actual Project and not a response to demand for construction materials. Removal of sediment from the Greenhorn Arm of Rollins Reservoir is not expected to induce substantial new population growth in the area or foster economic development. The Project does not result in the construction of new housing, add permanent or short-term employment opportunities that would stimulate the need for housing or services, or remove an obstacle to growth and development; therefore, the Project would not result in growth-inducing impacts.

4.4 ENERGY

4.4.1 Introduction

CEQA provides that an EIR shall include a detailed statement setting forth all of the following:

> *Mitigation measures proposed to minimize significant effects on the environment, including, but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy (California Public Resources Code, Section 21100(b)(3)).*

Appendix F of the CEQA Guidelines includes suggested information to "assure that energy implications are considered in project decisions" and states that "the California Environmental Quality Act requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see Public Resources Code Section 21100(b)(3))." In addition, the December 2018 updates to the CEQA Guidelines revised the Appendix G checklist to include an energy section that addresses both a project's energy efficiency and its consistency with state and local energy policies. Refer to Section 3.5, Energy, for a discussion of the topics required under Appendix F and Appendix G.

The removal of sediment requires the consumption of energy, including transportation fuels. Although the fuel usage, particularly at maximum operation, may appear to be a large amount when considered in isolation, it should be considered in relation to two key factors. The first is the energy cost of transporting aggregate from longer distances. As discussed in Section 4.3, aggregate consumption is a byproduct of growth. The state has become increasingly concerned with the lack of local aggregate supplies and the resulting environmental costs of transporting from other areas of the state, country, and from abroad. The second factor is the cost, both economically and environmentally, of additional water storage projects. Estimates of proposed water storage projects in California range from $1,700 to $2,700 per acre-foot (Lund 2014). In addition, such projects consume energy and may have significant local environmental effects.

The Project has been designed to increase efficiency through the use of stockpiles. Material from the Project Site may be used as is or may be processed in a centralized site closer to where the final product is needed.

Based on the objective of maintaining reservoir capacity and the additional benefit of locally sourced construction materials, the Proposed Project is, therefore, not inefficient, wasteful, or unnecessary with regard to energy usage.

4.5 CUMULATIVE EFFECTS

4.5.1 Introduction

CEQA (California Public Resources Code, Section 21000 et seq.) requires that an EIR contain an assessment of the cumulative impacts that could be associated with the Proposed Project. This assessment involves examining Project-related effects on the environment in the context of similar effects that have been caused by past or existing projects, and the anticipated effects of future projects. As indicated in the CEQA Guidelines, the discussion of cumulative impacts need not provide the same level of detail as Project-related impacts. The discussion should be guided by "standards of practicality and reasonableness" (14 CCR 15130(b)). Although Project-related impacts can be individually minor, the cumulative effects of these impacts, in combination with the impacts of other projects, could be significant under CEQA and must be addressed (14 CCR 15130(a)). Where a lead agency concludes that the cumulative effects of a project, taken together with the impacts of other closely related past, present, and reasonably foreseeable future projects are significant, the lead agency then must determine whether the Project's incremental contribution to such significant cumulative impact is "cumulatively considerable" (and thus significant in and of itself).

4.5.2 Cumulative Context

To ensure an adequate discussion of cumulative impacts is included in an EIR, CEQA allows the lead agency to use either a list of past, present, and probable future projects (including those projects outside the control of the lead agency), or projections included in an adopted local, regional, or statewide plan like a general plan (14 CCR 15130(b)(1)).

It is important to note that the geographic scope of the cumulative analysis varies by technical area. For example, cumulative air quality impacts from Project operations are considered at the air basin level. Similarly, water quality impacts are considered within the Bear River watershed. Impacts such as visual change, however, are limited to the viewshed where impacts are tied to specific local projects.

The Proposed Project includes the annual removal of sediment from the Greenhorn Arm of Rollins Reservoir. Due to the annual migration of aggregate from Greenhorn Creek into the Project Site, the Project will be ongoing with the ultimate goal of maintaining water storage capacity in Rollins Reservoir.

Past, present and reasonably foreseeable future projects and/or actions considered as part of this cumulative effects analysis include the following:

4.5.2.1 Yuba-Bear Hydroelectric Project Operation and Maintenance Activities (Existing License)

NID owns and operates the Yuba-Bear Hydroelectric Project (Federal Energy Regulatory Commission [FERC] Project No. 2266), a water supply and power generation project located on the west slope of the Sierra Nevada. The Project consists of four developments, including the Rollins Development, which is comprised of the dam, spillway, reservoir, powerhouse, powerhouse penstock, switchyard, recreation facilities, and all appurtenant facilities and features. The proposed sediment removal will occur in the Greenhorn Arm of Rollins Reservoir.

NID operates the Yuba-Bear Project in accordance with a license issued by the Federal Power Commission, predecessor to FERC. NID has an obligation to operate and maintain the Yuba-Bear Project pursuant to articles and conditions contained within the FERC license. To ensure license compliance and that the Rollins Development operates efficiently and reliably, NID implements various protection, mitigation, and enhancement measures; conducts inspection, testing, and maintenance of infrastructure; performs maintenance activities, including vegetation and pest management, debris management, road and trail maintenance, and recreation facility maintenance.

4.5.2.2 Yuba-Bear Hydroelectric Project Operation and Maintenance Activities (New License)

NID's existing FERC license expired on April 30, 2013. Prior to expiration, NID initiated a relicensing process in order to continue to operate the Yuba-Bear Project. Since the license expired, NID has been operating under annual license until such time that FERC issues a new license. Proposed operation of the Yuba-Bear Project would be generally consistent with existing operations (FERC 2014); with the only significant changes related to new and increased minimum flow releases and modified ramping rates. The new license is also anticipated to include various protection, mitigation, and enhancement measures (many of which are also in the existing license); and construction of Rollins Powerhouse upgrades, including a new generating facility adjacent to the existing Rollins Powerhouse and associated facility modifications. As part of the new license, NID will also continue to conduct inspections, testing, and maintenance of infrastructure; and conduct maintenance activities at Rollins Development facilities.

4.5.2.3 Bear River Sediment Removal Project

The Bear River Sediment Removal Project reestablishes aggregate removal on the Bear River between Rollins Reservoir and Steephollow Creek. The ultimate goal is to restore storage capacity in Rollins Reservoir and reduce available material from the Bear River channel that continues to be deposited in the reservoir. The project was established to benefit water storage capacity, river restoration, and recreation.

4.5.2.4 Hansen Bros. Enterprises Gravel Extraction Project

The Hansen Bros. Enterprises Gravel Extraction Project involves sand and gravel extraction operations in Greenhorn Creek upstream of the Hansen Bros. Enterprises Lease boundary (Map 2-2). The project involves removal of overburden of hydraulic mine tailings conveyed downstream during stormwater events from upstream placer diggings from the latter half of the 19th century. Mining on the deposit began in 1878 and has been continuously mined since that time. Mining of the site in its current capacity began in 1971 when the facility was owned by Terex Corporation. Hansen Bros. Enterprises acquired the property and the operation in 1973, has improved the facility throughout their time of ownership, and expanded the operation in 1994. Current operations involve harvesting aggregate material from the streambed of Greenhorn Creek and processing the material into marketable products. Harvested materials are transported to an onsite material processing plant, located north of You Bet Road, for screening, washing, and/or crushing. All material is sold and hauled offsite.

4.5.2.5 Blue Lead Gold Mine

The Blue Lead Gold Mine is a proposed 74-acre gold mining operation located at 18272 Red Dog Road, approximately, 3 miles northeast of the Project Site. The surface-mining project, which has not yet been initiated, will excavate approximately 4.5 million cubic yards over 20 years (Central Valley Regional Water Quality Control Board [CVRWQCB] 2018). The project calls for using bulldozers and other earth-moving equipment to dig up gravel, transport it to a sifting apparatus, and sort out any gold. The project includes a reclamation plan under which sifted soil will be kept on site and used to fill in the excavated area when the mining project is complete, and the site would be revegetated with native species.

4.5.3 Cumulative Impacts by Resource Area

Cumulative project-related impacts were analyzed for each of the resources and topics analyzed in the impact sections of this EIR (Chapter 3). The cumulative impacts of the Project and other developments in the Project area on each resource or topic are described below.

4.5.3.1 Aesthetics

The Proposed Project would affect the visual quality of the Project Site, but not to a level considered significant with mitigation implemented. The viewshed for the Project is restricted primarily to the river valley; and those portions of the reservoir from which the river valley is visible. No other projects have been identified within the Project viewshed that would affect the character or quality of the Project Site. Therefore, impacts to aesthetic resources are considered **less than cumulatively considerable**.

4.5.3.2 Air Quality

The cumulative setting for air quality impacts is the Mountain Counties Air Basin (MCAB). The basin has been designated as a federal and state nonattainment area for O_3 (ozone), and a state nonattainment area for PM_{10} (coarse particulate matter). As described previously, the Proposed Project would require implementation of mitigation to reduce PM_{10} emissions to less than significant levels. All other daily average emissions are below threshold levels; and implementation of mitigation would further reduce any emissions impacts. Collectively, the projects considered in this analysis would not construct permanent new emissions sources and air quality impacts would be related primarily to use of construction vehicles, including haul trucks. A discussion of effects to air quality were not available for the Yuba-Bear Hydroelectric Project, (either under the existing operations or the new license operations) or for the Blue Lead Gold Mine Project. Air quality effects were not quantified for the Hansen Bros. Enterprises project, but were considered less than significant with implementation of required air quality protection measures (Nevada County 2017). The EIR for the Bear River Sediment Removal Project found that cumulative emissions of NO_x would exceed Placer County Air Pollution Control District thresholds and result in significant and unavoidable cumulative impacts for this constituent (NID 2015).

If implemented simultaneously, the Proposed Project together with the Bear River, Hansen Bros. Enterprises, and Blue Lead Gold Mine projects could remove up to 1,058,000 tons of material annually. While not quantified for all projects, extensive use of haul trucks would be required for the transport and disposal of these materials. Considering that NOx emissions for the Bear River project would result in significant and unavoidable impacts to air quality; the incremental contribution of the remaining projects could **potentially result in a cumulatively considerable impact** to air quality in the MCAB.

4.5.3.3 Biological Resources

The cumulative setting for this analysis for aquatic species is Rollins Reservoir and its direct tributaries; and for terrestrial species is the Project Site plus an approximate 1-mile buffer. The Proposed Project is limited primarily to unvegetated portions of the Greenhorn Creek valley floor, and would not permanently reduce the habitat of any terrestrial wildlife species, or reduce the number/range of special-status plants. This analysis focuses on potential cumulative impacts to fish and foothill yellow-legged frog (FYLF).

Sediment removal activities associated with the Proposed Project could potentially directly impact fish within the Greenhorn Arm of Rollins Reservoir, or result in downstream effects to fish in Rollins Reservoir. Fish species in Rollins Reservoir include a variety of native and non-native species, and California Department of Fish and Wildlife (CDFW) currently stocks the reservoir to improve the recreational fisheries. Projects considered in this analysis that affect riverine habitat,

such as hydroelectric operations and sediment removal in the vicinity of Rollins Reservoir, could therefore potentially result in cumulative impacts to fish populations.

Continued operation of the Yuba-Bear Hydroelectric Project could potentially affect fish. The EIS (FERC 2014) for the relicensing requires monitoring of fish populations in Rollins Reservoir, and noted that augmented flow regimes, particularly in critically dry years, would likely benefit fish populations within the Yuba-Bear drainage, including Rollins Reservoir. The Bear River Sediment Removal at Rollins Reservoir Project could potentially affect fish populations downstream of the sediment removal activities, but with incorporation of mitigation measures to prevent spills, any effects were considered less than significant, and removal of sediment likely improves fish dispersal and fish habitat upstream of the Bear River/Steephollow Creek confluence (NID 2015). The upstream Hansen Bros. Enterprises Gravel Extraction Operation Project may have resulted in short-term stranding of fish during dewatering of Greenhorn Creek (Nevada County 2017), but these effects were minimized through appropriate fish rescue and monitoring measures. Avoidance and protection measures established by the CDFW in the Amendment and Re-Instatement of Lake and Streambed Alteration Agreement (LSAA) (1600-2007-0142-R2; Greenhorn Creek), are similar to proposed mitigation measures established for the Greenhorn Sediment Removal at Rollins Reservoir Project. Avoidance and protection measures for fish have been established for this project by CDFW and are being implemented. No information is available on the potential impact of the operation of the Blue Lead Gold Mine on fish populations in Greenhorn Creek. However, it is assumed that any such impacts would be similar to those described for the Hansen Bros. Enterprises Project.

The projects included in this analysis would not permanently reduce riverine habitats in the vicinity of Rollins Reservoir; and generally (with the exception of the Blue Lead Gold Mine) include measures to reduce the potential for direct impacts to fish populations. Survey and monitoring efforts required as part of mitigation measures for these projects would be reviewed and approved by appropriate agencies, as applicable.

Sediment removal activities associated with the Proposed Project could also potentially directly impact FYLF within the Greenhorn Arm of Rollins Reservoir. The FYLF population within the region is considered to be one of the most robust populations anywhere in the Sierra Nevada foothills (NID 2015). Projects considered in this analysis that affect riverine habitat, such as hydroelectric operations and sediment removal in the vicinity of Rollins Reservoir, could therefore potentially result in cumulative impacts to FYLF populations.

Continued operation of the Yuba-Bear Hydroelectric Project could potentially affect FYLF. The EIS (FERC 2014) for the relicensing requires monitoring of FYLF populations in Steephollow Creek to assess whether spills from the Chicago Park conduit will affect the population in this reach. The Bear River Sediment Removal at Rollins Reservoir Project does not propose skimming

or gravel storage in the vicinity of Steephollow Creek, and thus would generally avoid this population; and mitigation measures for the project require annual surveys and avoidance of breeding habitat for this species (NID 2015). The upstream Hansen Bros. Enterprises Gravel Extraction Operation Project resulted in similar impacts to FYLF within Greenhorn Creek as those for the Proposed Project (Nevada County 2017). Avoidance and protection measures established by the CDFW in the Amendment and Re-Instatement of Lake and Streambed Alteration Agreement (LSAA) (1600-2007-0142-R2; Greenhorn Creek), are similar to proposed mitigation measures established for the Greenhorn Sediment Removal at Rollins Reservoir Project. Avoidance and protection measures for FYLF have been established for this project by CDFW and are being implemented. No information is available on the potential impact of the operation of the Blue Lead Gold Mine on FYLF populations in Greenhorn Creek. However, it is assumed that any such impacts would be similar to those described for the Hansen Bros. Enterprises Project.

The projects included in this analysis would not permanently reduce riverine habitats in the vicinity of Rollins Reservoir; and generally (with the exception of the Blue Lead Gold Mine) include measures to reduce the potential for direct impacts to FYLF breeding populations. Survey and monitoring efforts required as part of mitigation measures for these projects would be reviewed and approved by appropriate agencies, as applicable.

Therefore, impacts to fish and FYLF are **less than cumulatively considerable**.

4.5.3.4 Cultural Resources

Cultural resource impacts are typically individual in nature, as significance is often a function of uniqueness, unless a resource is affected by more than one project (such as effects to a historic district). Therefore, the cumulative impact analysis area is the Area of Potential Effect (APE) as defined in this DEIR. There are no historic districts within the APE that could be affected by the Project or other past, present or reasonably foreseeable projects considered as part of this cumulative effects analysis. The Proposed Project would also not directly or indirectly disturb two cultural resources that may be eligible for listing in the California Register of Historical Resources. The Project could potentially impact previously unidentified subsurface cultural resources or human remains during sediment removal activities. However, impacts would be less than significant with mitigation. Therefore, impacts to cultural resources are considered **less than cumulatively considerable**.

4.5.3.5 Energy

Cumulative impacts to energy could occur if wasteful, uneconomic, inefficient, and unnecessary uses of power contributed to an overall trend of rapid rate of growth in demand for electric energy resulting in serious depletion or irreversible commitment of energy, land and water resources, and potential threats to the state's environmental quality. Considering that energy consumption is

estimated based on the GHG emissions modeling, the cumulative impact analysis area is limited to the Mountain Counties Air Basin.

In addition to this Project, three other projects would require the use of energy for processing and distribution or disposal of large volumes of materials. This includes the Bear River Sediment Removal Project, Hansen Bros. Enterprises Gravel Extraction Project, and the Blue Lead Gold Mine Project. For this analysis, it is assumed that each project would comply with all federal, state, and local statutes and regulations for energy efficiency. All of these projects will consume energy resources; however, it is not expected that they would result in a serious depletion or irreversible commitment of energy resources.

In addition, although operation and maintenance of the Yuba-Bear Hydroelectric Project under the existing license and under the new license would consume energy, it would also contribute to renewable energy through the generation of hydropower. In addition, under the new license, a new generating facility would also be developed adjacent to the existing Rollins Powerhouse. This new facility would be developed consistent with regulations on renewable energy and energy efficiency and would contribute additional energy resources within the basin.

While the Project requires use of energy for removal of sediments, it is a temporary construction-type project that will not result in serious depletion or irreversible commitment of energy resources. In addition, the use of energy is not considered wasteful, inefficient, or unnecessary because the purpose of the Project is to maintain existing water storage infrastructure, which would have benefits to land and water resources in the state. Therefore, any impacts associated with energy consumption are considered **less than cumulatively considerable.**

4.5.3.6 Greenhouse Gas Emissions

Global climate change is a cumulative impact; a project contributes to this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gases (GHGs). The cumulative setting for GHG emissions is the Mountain Counties Air Basin. As described previously, the Proposed Project would produce GHG emissions associated with employee vehicles, heavy-duty diesel haul trucks, and off-road diesel equipment, however, would not exceed GHG emissions thresholds recognized by the local air district.

The other projects considered in this analysis would not construct permanent new emissions sources and GHG emissions would also be related to use of construction vehicles, including haul trucks and use of trucks for personnel to access facilities for ongoing operation and maintenance activities. Specifically, the Bear River Sediment Removal Project would also not exceed the GHG emissions threshold and impacts were considered less than significant. The Hansen Bros. Enterprises Gravel Extraction Project, which consists of an expansion of the harvesting area and potentially a longer operational timeframe, would increase local GHG emissions; however, with

implementation of emissions-reducing measures the overall GHG impact would be reduced to a level that is less than significant. A discussion of the effects to GHG were not available for the Yuba-Bear Hydroelectric Project, (either under the existing operations or the new licenses) or for the Blue Lead Gold Mine Project. Because individually, each project is consistent with the Placer County Air Pollution Control District thresholds impacts to GHG emissions are considered **less than cumulatively considerable.**

4.5.3.7 Hazards and Hazardous Materials

The cumulative setting for hazards and hazardous materials includes the Project Site; Rollins Reservoir and its direct tributaries; and regional disposal facilities potentially used by project proponents considered in this analysis. Cumulative impacts related to hazards and hazardous materials could occur where regional development patterns place structures and/or people in proximity to significant sources of safety hazards or hazardous materials emissions, or where regional patterns develop new cumulatively hazardous sources near sensitive receptors.

The projects considered in this analysis would involve the routine transport, use, and disposal of hazardous materials (e.g., gasoline, diesel fuel, oil, hydraulic fluid, and lubricants for vehicles and other equipment). When used properly, the types and amounts of hazardous materials that would be used for the Project would not pose a substantial health risk to construction workers and the public. Spills and leaks of hazardous materials during project activities could potentially result in environmental contamination, including soil, surface water, or groundwater contamination. Impacts associated with transport, use, and disposal of hazardous materials, and release of hazardous materials into the environment are potentially significant, but would generally be reduced to less than significant assuming that all projects are operated consistent with existing regulations, permit conditions, and mitigation measures, as applicable.

The Proposed Project and the Bear River, Hansen Bros. Enterprises, and Blue Lead Gold Mine projects all include excavation and disposal of sediments. Rollins Reservoir is impaired under CWA Section 303(d) for mercury; and based on the known historical environmental impacts of mining in the watershed, excavated sediments could potentially contain metals, including mercury, that are considered hazardous to human health. Disturbances associated with the proposed gravel skimming operations could increase the bioavailability of mercury through transport in the water column and through methylation within standing water bodies. However, considering that the reservoir is impaired for mercury under existing conditions, the prevailing standard would be for projects to reduce the potential for mercury mobilization and methylation to the maximum extent practicable. The projects considered in this analysis, by removing fine sediment, would reduce the total mercury load present within the river system. Additionally, the Proposed Project, the Bear River project, the Hansen Bros. Enterprises Project, and the Blue Lead Gold Mine Project would be implemented consistent with mitigation measures and permit conditions to minimize the

potential for mobilization of mercury. Disposal of sediments would be implemented consistent with hazardous waste regulations. Therefore, impacts associated with hazards and hazardous materials would be considered **less than cumulatively considerable.**

4.5.3.8 Hydrology and Water Quality

The cumulative setting for hydrology and water quality includes Rollins Reservoir and its direct tributaries. Water quality could potentially be impacted by siltation, erosion, and turbidity resulting from ground disturbance during construction and sediment extraction associated with the projects considered in this analysis. Such impacts would be cumulatively less than significant with incorporation of mitigation measures and water quality permit conditions required for the Proposed Project and described in environmental documents for the Yuba-Bear Hydroelectric Project (FERC 2014), the Bear River project (NID 2015), the Hansen Bros. Enterprises project (Nevada County 2017), and the Blue Lead Gold Mine Project (CVRWQCB 2018).

As described in Section 4.5.3.7, Rollins Reservoir is on the 303(d)-impairment list for containing mercury. While mercury may occur naturally, this water quality impairment is likely a result of historic gold mining activity. The projects considered in this analysis would not add additional mercury to Rollins Reservoir, and would reduce the total mercury present in the system. To the extent that the Project would cause methylation of mercury in the sediment, the Project could increase bioavailability of mercury. However, the Project design and the implementation of additional mitigation measures would reduce the Project's contribution to cumulative water quality impacts to **less than cumulatively considerable**.

4.5.3.9 Land Use and Planning

Division of an established community commonly occurs as a result of development of physical features that constitute a barrier to easy and frequent travel between two or more constituent parts of a community. The projects considered in this analysis will not result in the establishment of new public roadways, bridges, or other infrastructure that would alter the physical connectivity in the Project vicinity. Therefore, impacts to land use and planning are considered **less than cumulatively considerable**.

4.5.3.10 Noise

The cumulative setting for noise is limited to noise-sensitive receiver locations identified in Section 3.10 of this EIR. The Proposed Project would exceed the Nevada County daytime average noise level standard at several residences adjacent to the Project Site. To reduce these impacts, NID will implement mitigation measures; however, due to the nature of the Project, with heavy equipment mobilizing within the Work Area and Staging Areas 6 days per week, the lack of setback areas that could minimize Project-generated noise, and because sensitive receptors are

elevated above the Work Area and would, therefore, not benefit from shielding noise sources, the impact of exposure of persons to or generation of noise levels in excess of local standards would be considered significant and unavoidable. Simultaneous operation of other projects in the Greenhorn Creek Arm, including the Hansen Bros. Enterprises and/or Blue Lead Gold Mine projects, could potentially contribute to noise impacts for noise-sensitive receivers. However, considering that these projects are located approximately 1 mile and 3 miles (respectively) from the nearest receiver location identified in Map 3.10-1 in Section 3.10 of this EIR, noise from these locations would attenuate significantly over distance before reaching these receptors. In addition, noise impacts associated with the Hansen Bros. Enterprises project would be reduced to less than significant considering implementation of mitigation measures that limit hours of operation, require use of mufflers; limit noise to 65 decibels or less; require a buffer around neighboring properties; require compliance with County noise standards; and limit simultaneous operation of paddle-wheel scrapers.

Noise impacts from the Hansen Bros. Enterprises and/or Blue Lead Gold Mine would only contribute small incremental effects to overall noise in the cumulative analysis area. However, noise generated from the Proposed Project alone would have a cumulatively considerable impact to noise-sensitive receivers for the reasons identified above. Therefore, noise impacts associated with implementation of the Project are considered **potentially cumulatively considerable**.

4.5.3.11 Recreation

The cumulative setting for recreation includes recreation facilities associated with the Rollins Reservoir. Project activities will occur in the immediate vicinity of the Greenhorn Recreation Area and could potentially affect recreation visitors using this area. Some of these visitors could be displaced to other facilities on Rollins Reservoir. Public notification requirements incorporated into the Project would help minimize potential effects to recreation visitors and minimize displacement.

Under both the existing and the proposed new license for the Yuba-Bear Project, recreation facilities associated with Rollins Reservoir would be maintained or enhanced. No effects to recreation were identified in relation to the Bear River or Hansen Bros. Enterprises projects; and, while no information is available on the potential effects of the Blue Lead Gold Mine on recreation at Rollins Reservoir, it is assumed that any such effects would be negligible. Therefore, impacts to recreation resources are considered **less than cumulatively considerable**.

4.5.3.12 Transportation

The cumulative setting for transportation includes roadways considered in Section 3.12, Transportation, including Interstate (I)-80, State Route (SR)-174, Greenhorn Access Road, and You Bet Road. There would be no cumulative effects to Greenhorn Access Road because it would not be additionally affected by other projects considered in this analysis. In addition, projects

considered in this analysis are not expected to significantly affect road conditions or increase traffic levels in relation to existing and future volumes on I-80 or SR-174.

You Bet Road is a two-lane County-maintained road that would be used for hauling sediment excavated as part of the Proposed Project, the Hansen Bros. Enterprises project, and the Blue Lead Gold Mine Project. As described in Section 3.12, impacts to roadway conditions from the Proposed Project alone are considered potentially significant, but would be mitigated to a less-than-significant level. However, under the potential scenario in which the three projects are implemented simultaneously and at maximum annual material removal levels (600,000 tons for Hansen Bros. Enterprises; 258,000 tons for the Blue Lead Gold Mine; and 200,000 tons for the Proposed Project) truck traffic associated with the disposal or distribution of excavated materials could result in significant impacts to both traffic levels and road conditions along You Bet Road. In addition, any hazards associated with emergency access and limited line-of-sight along the road may be exacerbated. These impacts along You Bet Road would be considered **potentially cumulatively considerable.**

4.5.3.13 Public Utilities and Services

Development creates cumulative demand on public utilities and services by increasing the number of inhabitants, employees, or visitors to an area. The projects considered in this cumulative analysis generally would not introduce a new residential population to the area, and would not create a demand for public facilities, services, or utilities.

In addition to this Project, three other projects require processing and distribution or disposal of large volumes of material:

- Bear River Sediment Removal, between 50,000 and 250,000 tons of material annually;
- Hansen Bros. Enterprises Gravel Extraction, between 200,000 and 600,000 tons of sand and gravel per year; and
- Blue Lead Gold Mine, approximately 4.5 million CY of soil and gravel over 20 years (approximately 258,000 tons per year).

This analysis assumes that each project would comply with all federal, state, and local statues related to the disposal and recycling of solid waste. There is the potential for all of these projects to be operating simultaneously; and sediment disposal needs for all projects cumulatively could potentially overwhelm local landfills. However, for all projects a significant portion of extracted materials would be marketable gravels that would be sold and would not be placed in a landfill. Material extraction for all projects would be ultimately limited by both available buyers and disposal limits of local facilities. Finally, the Hansen Bros. Enterprises and Blue Lead Gold Mine projects would use extracted native soils for post-project reclamation and replanting. Therefore,

these sediment excavation and gravel extraction projects are unlikely to overwhelm the capacity of local infrastructure. Therefore, impacts associated with public utilities and services are considered **less than cumulatively considerable**.

4.5.3.14 Wildfire

The Project would result in cumulative wildfire-related effects if it contributed to an increase of fire risk or to the ability of fire authorities to appropriately respond to fires. The projects considered under this analysis are all located in a State Responsibility Area with a fire hazard severity rating of "very high". Use of equipment associated with all of the projects has an inherent risk of sparking fires, which could result in a cumulatively increased risk of wildfire in the area. However, given that all of the projects considered in this analysis include fire prevention and suppression measures, are short-term and construction-related, the incremental effect of removal of sediment from the Greenhorn Creek Arm would be **less than cumulatively considerable.**

4.5.4 Cumulative Impact Summary

As identified in Sections 4.5.3.2, 4.5.3.9, and 4.5.3.10, the Project would contribute to potentially cumulatively considerable effects to air quality (related to NO_x emissions, specifically); noise (specific to impacted noise-sensitive receivers); and transportation (related to You Bet Road, specifically). Therefore, the Project's incremental effect is cumulatively considerable.

4.6 ALTERNATIVES

4.6.1 Introduction

Pursuant to the CEQA Guidelines (14 CCR 15000 et seq.), EIRs are required to "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" (14 CCR 15126.6(a)). An EIR "must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation" (14 CCR 15126.6(a)). The alternatives discussion is required even if these alternatives "would impede to some degree the attainment of the project objectives, or would be more costly" (14 CCR 15126.6(b)).

The inclusion of an alternative in an EIR does not constitute definitive evidence that the alternative is in fact "feasible." The final decision regarding the feasibility of alternatives lies with the decision maker for a given project, who must make the necessary findings addressing the feasibility of alternatives for avoiding or substantially reducing a project's significant environmental effects (California Public Resources Code, Section 21081; see also 14 CCR 15091).

4.6.2 Project Objectives

The overall purpose of the Project is to remove existing sediments and to prevent the accumulation of future transported sediments in Rollins Reservoir. The Project constitutes a public necessity and is intended to be ongoing as long as sediments continue to migrate from the Greenhorn Arm into Rollins Reservoir. The Greenhorn Sediment Removal Project objectives are as follows:

- Maintain the water storage capacity in the Greenhorn Arm of Rollins Reservoir in perpetuity by conducting annual sediment maintenance activities to remove accumulated sediments, which could enter the main reservoir during high flows.
- To the extent possible, make progress in restoration of the historic water storage capacity in the Greenhorn Arm of Rollins Reservoir.
- Prevent further migration of suspended sediment from the Greenhorn Arm of Rollins Reservoir into the main body of the reservoir.
- Restore recreational opportunities in the Greenhorn Arm of Rollins Reservoir through the removal of accumulated sediment thereby increasing water depth and improving aquatic habitat and boating access.
- Economically remove and dispose of the sediment removed from the Greenhorn Arm of Rollins Reservoir.

4.6.3 Alternatives Considered but Rejected

Section 15126.6(c) of the CEQA Guidelines requires EIRs to identify any alternatives that were considered by the lead agency but were rejected as being infeasible during the scoping process, and briefly explain the reasons for the lead agency's decision to reject such alternatives. The following is a discussion of alternatives that were considered but rejected by NID, along with the reasons for not including them in the alternatives analysis.

4.6.3.1 Alternative Location

The proposed location for sediment removal on the Greenhorn Arm of Rollins Reservoir was determined based on the goal of making progress toward restoration of the historic water storage capacity in the Greenhorn Arm and preventing further loss of storage capacity in Rollins Reservoir. Although an alternative location for the Proposed Project could be selected on a different segment of Greenhorn Creek, the impacts associated with the sediment removal would be the same as the Proposed Project since the same methods would be used and the environmental resources would be similar.

Section 15126.6(f)(2) of the CEQA Guidelines addresses alternative locations for a project. The key question and first step in the analysis is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need to be considered for inclusion in the EIR. Since an alternative location for the project would not avoid or reduce impacts associated with the project, this alternative has been eliminated from further analysis.

4.6.3.2 Dredge Rollins Reservoir Alternative

One of the main goals of the Proposed Project is to prevent further loss of storage capacity in Rollins Reservoir. An alternative approach to achieving this goal would be to dredge the Greenhorn Arm of Rollins when water levels are high. The dredging alternative would avoid potential impacts to FYLF and the potential for erosion (head cutting, incision, and avulsion) in Greenhorn Creek above the Work Area. However, as Rollins Reservoir is listed as impaired due to the presence of mercury, in-water operations would increase potential water quality impacts due to creating turbid water with an increased risk of exceeding the Total Maximum Daily Load for mercury in the water column.

4.6.4 Alternatives Analysis

This section discusses two alternatives to the Proposed Project, including the No Project Alternative. The No Project Alternative is a required element of an EIR pursuant to Section 15126.6(e) of the CEQA Guidelines that examines the environmental effects that would occur if the Project were not to proceed. The other alternative is discussed as part of the "range of reasonable alternatives" selected by the NID. The alternatives addressed in this section are listed below, followed by a more detailed discussion of each:

1. No Project Alternative
2. Reduced Production Alternative

4.6.5 No Project Alternative

Under the No Project Alternative, no sediment removal activities would occur. Sediment would continue to build up in the Greenhorn Arm of Rollins Reservoir and recreational opportunities and aquatic habitat would be further degraded. In addition, lack of sediment removal would result in continued migration of suspended sediment from the Greenhorn Arm into the main body of the reservoir further reducing water storage capacity.

4.6.5.1 Aesthetics

The No Project Alternative would not involve any new operations related to sediment removal and would, therefore, not result in any changes to the aesthetics of the area. No new light sources would be introduced under this alternative. Therefore, the No Project Alternative would avoid the Proposed Project's impact due to the introduction of new light sources and the potential for sky glow, which would be less than significant with mitigation.

4.6.5.2 Air Quality

The No Project Alternative would not cause an increase in air emissions since there would be no sediment removal operations and no associated haul trips that could increase emissions.

4.6.5.3 Biological Resources

The No Project Alternative would maintain the existing habitats and conditions in the Project Site and would not have impacts on special-status plant or wildlife species or waters of the U.S. or State. Since no sediment removal operations would be implemented, this alternative would avoid the potential for Proposed Project's impacts to biological resources, which would be less than significant with mitigation.

4.6.5.4 Cultural Resources

Under the No Project Alternative, no ground-disturbing activities would be implemented that could potentially impact subsurface cultural resources or human remains. Therefore, the No Project Alternative would avoid the Proposed Project's potential impacts to cultural resources, which would be less than significant with mitigation.

4.6.5.5 Energy

Under the No Project Alternative, there would be no increase in energy consumption for the removal of sediment and the Greenhorn Arm of Rollins Reservoir and sediments would continue to migrate to Rollins Reservoir and reduce water storage capacity. Although the Proposed Project would not result serious depletion or irreversible commitment of energy resources, or in wasteful, inefficient, or unnecessary use of energy, implementation of the No Action Alternative would

avoid additional use of energy altogether. Therefore, impacts under the Reduced Production Alternative would be similar to the Proposed Project.

4.6.5.6 Greenhouse Gas Emissions

As described under Air Quality, the No Project Alternative would not cause an increase in air emissions since no new operations would be introduced to the Project area. Although the Proposed Project would not result in any significant impacts to greenhouse gas emissions, the No Project Alternative would avoid impacts altogether and would, therefore, have reduced impacts.

4.6.5.7 Hazards and Hazardous Materials

The No Project Alternative would not increase the potential for spills of hazardous materials since no new operations would be introduced. This alternative would, therefore, avoid the Proposed Project's potential impacts to the public and environment associated with the transport, use, and disposal of hazardous materials; accidental spills that could cause soil or groundwater contamination; and impacts from the risk of wildlife, which would be less than significant with mitigation.

4.6.5.8 Hydrology and Water Quality

The No Project Alternative would allow sediment to continue to increase in the Greenhorn Arm of Rollins Reservoir resulting in continued loss of reservoir storage overtime. The potential for erosion (head cutting, incision, and avulsion) in Greenhorn Creek above the Work Area would be reduced under the No Project Alternative due to the lack of sediment removal activity; however, ongoing scour caused by storm events would continue. Under the No Project Alternative, water quality impacts related to the Proposed Project would be avoided, but total mercury would increase as sediment is washed down Greenhorn Creek into Rollins Reservoir.

4.6.5.9 Land Use and Planning

The No Project Alternative would have no effect on land use and zoning designations, or planning policies since no changes to the existing conditions would occur. Although the Proposed Project would not result in any significant impacts to land use and planning, the No Project Alternative would avoid impacts altogether and would, therefore, have reduced impacts.

4.6.5.10 Noise

The No Project Alternative would not introduce any new noise sources to the Project area since no sediment removal operations would occur. This alternative would avoid the Proposed Project's significant and unavoidable impacts due to a substantial temporary increase in ambient noise levels at several residences adjacent to the Project Site.

4.6.5.11 Recreation

The No Project Alternative would not involve any new operations related to sediment removal, including using a portion of the Greenhorn Campground Boat Launch as a staging area during years when the sediment barrier is installed or moved. This alternative would avoid the Proposed Project's potential impacts associated with transport of equipment and materials to and use of Greenhorn Campground Boat Launch and potential displacement of visitors to other recreation areas. In addition, under the No Project Alternative sediment would not be removed from the Greenhorn Arm of Rollins Reservoir and access for recreation use would continue to be lost and expanded into the reservoir overtime.

4.6.5.12 Transportation

The No Project Alternative would not increase use of area roadways, including Interstate 80, State Route 174, You Bet Road, and Greenhorn Access Road, and would not introduce any truck traffic to these roadways. Therefore, this alternative would avoid the Proposed Project's potential impacts related to degradation of road and shoulder conditions, hazards due to increased truck traffic, and emergency access, which would be less than significant with mitigation.

4.6.5.13 Public Utilities and Services

The No Project Alternative would have no effect on public utilities and services since no changes to the existing conditions would occur. Although the Proposed Project would not result in any significant impacts to public utilities and services, the No Project Alternative would avoid impacts altogether and would, therefore, have reduced impacts.

4.6.5.14 Wildfire

The No Project Alternative would allow sediment to continue to increase in the Greenhorn Arm of Rollins Reservoir and would not result in use of motorized vehicles and construction equipment within a "very high" FRHZ that could exacerbate fire risk and that could potentially expose project occupants to pollutant concentrations from a wildfire. Therefore, this alternative would avoid the Proposed Project's potential impacts related to wildlife.

4.6.5.15 Comparison to Project Objectives

The No Project Alternative would not meet any of the Project objectives. This alternative would not remove accumulated sediments from the Greenhorn Arm of Rollins Reservoir and would not make progress in restoring its historic water storage capacity. Suspended sediment from the Greenhorn Arm would continue to migrate into the main body of the reservoir during high flow events further reducing water storage capacity of the reservoir. This alternative would not restore recreational opportunities and access, or reduce the total mercury in the Greenhorn Arm of Rollins Reservoir.

4.6.6 Reduced Production Alternative

The Reduced Production Alternative would involve sediment removal operations similar to the Proposed Project, but limit the amount of material that could be exported from the site (by haul trucks) to 100,000 tons of material during the operating season (July through November). By contrast, under the Proposed Project it is estimated that up to 200,000 tons of material could be removed from the Work Area per year, depending on market demand; although a typical year (based on similar activities) would include removal of approximately 50,000 tons per year. Under the Reduced Production Alternative, it is assumed that 100,000 tons of material, rather than 200,000, would be removed approximately every 6th year, depending on storm events. All other components of the Proposed Project would be identical under the Reduced Production Alternative.

4.6.6.1 Aesthetics

The Reduced Production Alternative would introduce the same new light sources as the Proposed Project. Impacts to aesthetic resources would therefore be the same as those under the Proposed Project and mitigation measures would be implemented to reduce impacts to below a level of significance.

4.6.6.2 Air Quality

The Reduced Production Alternative would limit the amount of material that could be exported from the site (by haul trucks) to a maximum of 100,000 tons of material during the operating season (July through November), compared to a maximum of 200,000 tons under the Proposed Project. As described previously, the Proposed Project would require implementation of mitigation to reduce PM_{10} emissions to less than significant levels. Reducing the amount of material transported during the operating season to 100,000 tons, would reduce all emissions from the associated haul trucks to below the established daily thresholds, without mitigation. The Reduced Production Alternative would, therefore, result in reduced project and cumulative air quality impacts as compared to the Proposed Project.

4.6.6.3 Biological Resources

The Reduced Production Alternative would involve the same sediment removal operations as the Proposed Project and would impact the same Project area. Although maximum production levels would be lower, the typical area and time of operations would be similar. Therefore, this alternative would have the same potential to impact special-status plant and wildlife and waters of the U.S. and state. Impacts to biological resources would, therefore, be the similar to those under the Proposed Project and mitigation measures would be implemented to reduce impacts to below a level of significance.

4.6.6.4 Cultural Resources

The Reduced Production Alternative would involve the same sediment removal operations and ground-disturbing activities as the Proposed Project, which could impact subsurface cultural resources or human remains. Impacts to cultural resources would, therefore, be the similar those under the Proposed Project and mitigation measures would be implemented to ensure impacts are reduced to less than significant.

4.6.6.5 Greenhouse Gas Emissions

As described under Air Quality, the Reduced Production Alternative would involve fewer haul truck trips than the Proposed Project and would, therefore, reduce associated air emissions. This reduction in haul truck trips would also reduce GHG emissions. Although the Proposed Project would not result in significant GHG emissions, the Reduced Production Alternative would further reduce this less-than-significant impact when compared to the Proposed Project.

4.6.6.6 Energy

The Reduced Production Alternative would involve fewer haul truck trips than the Proposed Project and would, therefore, reduce the use of energy required to implement the Project. Similar to the Proposed Project, the Reduced Production Alternative would not result in serious depletion or irreversible commitment of energy resources, and energy use would not be considered wasteful, inefficient, or unnecessary. Therefore, impacts under the Reduced Production Alternative would be similar to the Proposed Project.

4.6.6.7 Hazards and Hazardous Materials

The Reduced Production Alternative would involve the same operations as the Proposed Project, including the use of equipment and vehicles requiring fuel, which could lead to impacts due to fuel spills. Similar to the Proposed Project, this alternative could cause soil or groundwater contamination in the event of a hazardous materials spill and could result in impacts from increased

risk of wildfire. Therefore, impacts would be the same as those under the Proposed Project and mitigation would be implemented to ensure impacts are reduced to less than significant.

4.6.6.8 Hydrology and Water Quality

The Reduced Production Alternative would involve the same sediment removal operations as the Proposed Project, which could impact hydrology and water quality. Impacts to hydrology and water quality would be similar to those under the Proposed Project and mitigation measures would be implemented to ensure impacts are reduced to less than significant.

4.6.6.9 Land Use and Planning

The Reduced Production Alternative would involve operations in the same location as the Proposed Project and would not involve any other changes that would impact land use and planning. Therefore, the Reduced Production Alternative would result in the same less-than-significant impacts to land use and planning as the Proposed Project.

4.6.6.10 Noise

The Reduced Production Alternative would involve the same sediment removal operations as the Proposed Project and would, therefore, have a similar effect on noise levels in the Project area; however, this alternative would result in a reduction in haul truck trips, which could slightly reduce the frequency of increased noise due to truck trips.

Despite the reduced frequency of increased noise due to truck trips, due to the nature of the work with heavy equipment mobilizing within the Work Area and Staging Areas 6 days per week, the lack of setback areas that could minimize Project-generated noise, and because sensitive receptors are elevated above the Work Area and would, therefore, not benefit from shielding noise sources, the impact of exposure of persons to or generation of noise levels in excess of local standards would still be significant and unavoidable under the Reduced Production Alternative.

4.6.6.11 Recreation

The Reduced Production Alternative would involve the same sediment removal operations as the Proposed Project, which could impact recreation users at Greenhorn Campground Boat Launch during a two-week period when the sediment barrier is installed or moved, and recreational visitors in the vicinity of the Greenhorn Recreation Area during implementation of the Project. Although the amount of sediment removed would be lower under this alternative, the Work Area, work activities, and time of operations would be similar. Recreation use within the Greenhorn Arm of Rollins Reservoir would likely be limited for a longer period of time under the Reduced Production Alternative. Impacts to recreation would, therefore, be similar to those under the Proposed Project

and mitigation measures would be implemented to ensure impacts are reduced to less than significant.

4.6.6.12 Transportation

The Reduced Production Alternative would still result in an increase in two-way truck traffic on Greenhorn Access Road and You Bet Road, which have limited two-way capacity and sight distance in some areas; however, there would be fewer average daily haul truck trips and vehicle miles traveled than the Proposed Project; and, therefore, any such effect would be reduced in terms of volume of trucks and/or time required to remove materials. Mitigation would be implemented to ensure impacts are reduced to less than significant.

4.6.6.13 Public Utilities and Services

The Reduced Production Alternative would have operational characteristics similar to those of the Proposed Project and would result in similar impacts to public utilities and services. Therefore, the Reduced Production Alternative would result in the same less than significant impacts to public utilities and services as the Proposed Project.

4.6.6.14 Wildfire

The Reduced Production Alternative would still result in use of motorized vehicles and construction equipment within a “very high” FRHZ that could exacerbate fire risk and that could potentially expose project occupants to pollutant concentrations from a wildfire. Therefore, this alternative would result in similar impacts to the Proposed Project.

4.6.6.15 Comparison to Project Objectives

The Reduced Production Alternative would meet all of the Project objectives to some extent, as it would maintain the water storage capacity in the Greenhorn Arm of Rollins Reservoir through annual removal of accumulated sediments; make progress in restoring the historic water storage capacity in the Greenhorn Arm; prevent further migration of suspended sediment into the main body of the reservoir; and restore recreational opportunities and access, and improve aquatic habitat within the Greenhorn Arm. By reducing the maximum amount of sediment removed to 100,000 tons, this alternative would inhibit the timely realization of Project objectives since less sediment could be removed than under the Proposed Project.

4.6.7 Summary Matrix

A matrix displaying the major characteristics and significant environmental effects of each alternative is provided in Table 4-1, Alternatives Impact Summary, to summarize the comparison with the Proposed Project. The matrix also indicates whether the alternative meets the Project objectives as defined in Chapter 2, Project Description, and Section 4.5.2.

Table 4-1
Alternatives Impact Summary

Environmental Issue	Proposed Project Impacts Prior to Mitigation	Proposed Project Impacts After Mitigation	No Project Alternative	Reduced Production Alternative
Aesthetics	S	LTS	▼	—
Air Quality	S	LTS	▼	▼
Biological Resources	S	LTS	▼	—
Cultural Resources	S	LTS	▼	—
Greenhouse Gas Emissions	LTS	LTS	▼	▼
Hazards and Hazardous Materials	S	LTS	▼	—
Hydrology and Water Quality	S	LTS	▼	—
Land Use and Planning	LTS	LTS	▼	—
Noise	S	S	▼	—
Recreation	S	LTS	▼	—
Transportation	S	LTS	▼	▼
Public Utilities and Services	LTS	LTS	▼	—
Meets Most Project Objectives?	Yes	Yes	No	Yes

Notes:
▲ Alternative is likely to result in greater impacts to environmental issue when compared to Proposed Project.
— Alternative is likely to result in similar impacts to environmental issue when compared to Proposed Project.
▼ Alternative is likely to result in reduced impacts to environmental issue when compared to Proposed Project.
LTS = less than significant impact; S = significant impact.

4.7 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

As indicated in Table 4-1, the No Project Alternative would result in the least environmental impacts and would be the environmentally superior alternative. All impacts associated with the Proposed Project would be reduced under the No Project Alternative. However, the No Project Alternative fails to meet any of the Project objectives. Section 15126.6(e)(2) of the CEQA Guidelines states that if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. In this case, the environmentally superior alternative is the Reduced Production Alternative. This alternative would limit the amount of sediment removed annually to 100,000 tons, resulting in

reduced impacts in terms of air quality, GHG emissions, and transportation (vehicle miles traveled). However, noise impacts under this alternative would still be significant and unavoidable. By reducing the maximum amount of sediment removed, this alternative would inhibit the timely realization of Project objectives.

4.8 REFERENCES

CVRWQCB (Central Valley Regional Water Quality Control Board). 2018. Tentative Waste Discharge Requirements for Blue Lead Gold Mining, LLC. March 21, 2018.

FERC (Federal Energy Regulatory Commission). 2014. Final Environmental Impact Statement for Hydropower License Upper Drum-Spaulding Hydroelectric Project (FERC No. 2310-193), Lower Drum Hydroelectric Project (FERC No. 14531-000), Deer Creek Hydroelectric Project (FERC No. 14530-000), and the Yuba-Bear Hydroelectric Project (FERC No. 2266-102). December 2014.

Lund, J. 2014. "Should California Expand Reservoir Capacity by Removing Sediment?" California Water Blog. Posted June 9, 2014. Accessed August 7, 2018. https://californiawaterblog.com/2014/06/09/should-california-expand-reservoir-capacity-by-removing-sediment/.

Nevada County. 2017. Initial Study, Hansen Bros. Enterprises Greenhorn Creek Aggregate Mine Expansion.

NID (Nevada Irrigation District). 2015. Final Environmental Impact Report for the Bear River Sediment Removal at Rollins Reservoir Project. November 2015.

CHAPTER 5
LIST OF PREPARERS AND ORGANIZATIONS/INDIVIDUALS CONSULTED

5.1 PREPARERS

Janelle Nolan and Associates Environmental Consulting (JNA-Consulting), with support from Cardno, prepared this document under the direction of the Nevada Irrigation District.

5.1.1 Nevada Irrigation District

- Gary D. King, Engineering Manager
- Adrian Schneider, Senior Engineer

5.1.2 Consultant Team

Project Management

- Janelle Nolan (JNA-Consulting)

Executive Summary

- Janelle Nolan (JNA-Consulting)

Introduction

- Janelle Nolan (JNA-Consulting)

Project Description

- Janelle Nolan (JNA-Consulting)
- Ed Bianchi (Cardno)

Aesthetics

- Julie Smith (Cardno)
- Sara Reece (JNA-Consulting)

Air Quality

- Elizabeth Sheppard (Cardno)
- Julie Smith (Cardno)

Biological Resources - Aquatic

- Craig Addley (Cardno)
- Ed Bianchi (Cardno)

Biological Resources - Terrestrial

- Janelle Nolan (JNA-Consulting)
- Sara Reece (JNA-Consulting)

Cultural Resources

- Brian Ludwig (Cardno)
- Sandra Walter-Perry (Cardno)

Energy

- Julie Smith (Cardno)
- Sara Reece (JNA-Consulting)

Greenhouse Gas

- Julie Smith (Cardno)
- Sara Reece (JNA-Consulting)

Hazards and Hazardous Materials

- Julie Smith (Cardno)
- Sara Reece (JNA-Consulting)

Hydrology and Water Quality

- Craig Addley (Cardno)
- Edward Bianchi (Cardno)
- Jody Kubitz (Cardno)

Land Use and Planning

- Julie Smith (Cardno)

Noise

- Kendra Ryan (Cardno)
- Christine DeWolf (Bollard Acoustical Consultants Inc.)

Recreation

- Sandra Walter-Perry (Cardno)

Transportation

- Kendra Ryan (Cardno)

Public Utilities and Services

- Julie Smith (Cardno)
- Sara Reece (JNA-Consulting)

Wildfire

- Sara Reece (JNA-Consulting)

Other CEQA Considerations

- Janelle Nolan (JNA-Consulting)
- Julie Smith (Cardno)

Geographic Information Systems

- Eric Lee (Cardno)

Production Support

- Iris Eschen (Cardno)

5.2 ORGANIZATIONS / INDIVIDUALS CONSULTED

- Bureau of Land Management
- California Department of Fish and Wildlife
- California Department of Transportation
- California Native Plant Society
- Central Valley Regional Water Quality Control Board
- Native American Heritage Commission
- Nevada City Rancheria Tribal Council
- Nevada County Community Development Agency
- Nevada County Planning Department
- Nevada County Public Works Department
- North Sierra Air Quality Management District
- Placer County Air Quality Control District
- Placer County Planning Department
- The Sierra Fund
- Tom Parilo – Contract Planner
- TSI Akim Maidu Tribe
- United Auburn Indian Community of the Auburn Rancheria
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- Washoe Tribe of Nevada and California

APPENDIX A

Notice of Preparation and Comments Received

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NOTICE OF PREPARATION

To: Office of Planning and Research; State Clearinghouse; Responsible and Trustee Agencies; Federal Agencies; Organizations; and Interested Parties

From: Gary King
Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

Subject: Notice of Preparation of a Draft Environmental Impact Report

Nevada Irrigation District will be the Lead Agency and will prepare an Environmental Impact Report (EIR) for the Greenhorn Sediment Removal at Rollins Reservoir Project (Project). We need to know the views of your agency as to the scope and content of the Proposed Project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the Project.

The Project description, location, and the potential environmental effects are contained in the attached materials. A copy of the Initial Study is not attached.

Due to the time limits mandated by state law, your response must be sent at the earliest possible date, but not later than thirty (30) days after receipt of this notice.

Please send your response to Kris Stepanian via e-mail at stepaniank@nidwater.com or regular mail to the address shown above. We will need the name for a contact person in your agency.

Project Title: Greenhorn Sediment Removal at Rollins Reservoir Project

Project Applicant, if any: Nevada Irrigation District

Date: May 17, 2017

Signature: Gary D. King

Gary D. King

Title: Engineering Manager

Telephone: 530-273-6185 ext. 260

Notice of Preparation and Public Scoping Meeting

Date	May 17, 2017
Lead Agency	Nevada Irrigation District
Contact	Gary D. King, PE PhD Engineering Manager 1036 West Main Street Grass Valley, CA 95945 Phone: 530-273-6185 ext. 260 Email:king@nidwater.com
Project Title	Greenhorn Sediment Removal at Rollins Reservoir Project
Project Location	The Project is located in unincorporated Nevada County, California, approximately 6 miles north of the City of Colfax on the Greenhorn Arm of Rollins Reservoir (Attachment A).
County	Nevada

Project Description. The Nevada Irrigation District (NID), acting as Lead Agency under the California Environmental Quality Act (CEQA), will prepare an Environmental Impact Report (EIR) for the Greenhorn Sediment Removal at Rollins Reservoir Project (Project). The objectives of the Project are as follows:

- Restore and maintain the historic water storage capacity in the Greenhorn Arm of Rollins Reservoir and prevent further migration of suspended sediment from this arm into the main reservoir.
- Maintain the water storage capacity in the Greenhorn Arm of Rollins Reservoir in perpetuity by conducting annual sediment maintenance activities to remove accumulated sediments which could enter the main reservoir during storm water flows.
- Restore recreational opportunities in the Greenhorn Arm of Rollins Reservoir through the removal of accumulated sediment thereby increasing water depth and improving aquatic habitat and boating access.
- Economically dispose of the sediment removed from the Greenhorn Arm of Rollins Reservoir.

The EIR will evaluate the environmental impacts of the Project and identified alternatives. Additional information about the Project is presented in Attachment A. This Notice of Preparation (NOP) is also available for review at the following locations: NID's Business Center, 1036 West Main Street, Grass Valley, CA; NID's website: http://www.nidwater.com; and the Nevada County Clerk's office.

Purpose of this Notice. Pursuant to CEQA Guidelines Section 15082, NID prepared this NOP to notify responsible and trustee agencies; Federal agencies; organizations; and other interested parties that it will prepare an EIR for the Project. The purpose of the NOP is to solicit guidance and input from those agencies and interested parties as to the scope and content of the environmental information to be included in the EIR. The NOP is intended to provide agencies with sufficient information describing the Project and its potential environmental effects to allow these agencies to offer meaningful responses related to the scope and content of the EIR.

Probable Environmental Effects. Based on preliminary review, NID has determined that the Project may affect aesthetics, air quality, biological resources, cultural resources, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, recreation, transportation and traffic, and utilities and service systems.

Public Comment Period. The NOP will be circulated for a 30-day public review period. Written comments from interested parties are encouraged and must be received before close of business on **June 16, 2017**. For agencies with statutory responsibilities in connection with the Project (CEQA Guidelines Section 15082[b]), we are requesting your views regarding the scope and content of the environmental information necessary to make any relevant decision by your agency. Your agency may need to use the EIR prepared by NID when considering issuance of a permit or other approval for the Project, if any is required. Written comments and requests for information should be sent to Kris Stepanian at stepaniank@nidwater.com. All comments received, including commenter's names and addresses, will become part of the administrative record and will be made available to the public.

Public Scoping Meeting. Pursuant to CEQA Guidelines Section 15082[c] and 15206, NID will conduct a public scoping meeting for the Project. Meeting information is provided below.

June 1, 2017

6:00–7:30 p.m.

NID Business Center

1036 West Main Street

Grass Valley, CA 95945

The purpose of this meeting is to provide NID with comments on the proposed scope and content of the EIR. The public will have the opportunity to offer oral and/or written comments for consideration during the meeting.

Attachment A

Greenhorn Sediment Removal at Rollins Reservoir Project

Notice of Preparation Background Information

PROJECT LOCATION

The Project is in unincorporated Nevada County, California, approximately 6 miles north of the City of Colfax on the Greenhorn Arm of Rollins Reservoir (**Map 1**). The currently operating Hansen Bros. Enterprises Greenhorn Gravel Plant is located north of the Project area. The Project is located within Sections 2, 3, 10, and 11 of Township 15N and Range 9E on the Chicago Park 7.5-minute USGS topographic quadrangle.

To access the Project area from Interstate 80, exit Highway 174 in Colfax and proceed 7.75 miles north toward Grass Valley. Turn right onto You Bet Road and proceed 2.5 miles to the You Bet Bridge (39°11'14.52" N, 120°56'30.77" W) which is at the northern end of the Project area (**Map 2**).

The Project site is approximately 147 acres in size, including the sediment removal area, three staging areas, and the haul/access road. Sediment removal operations would occur in a 49.7-acre area (Work Area), downstream of the Hansen Bros. Enterprises' lease boundary (**Map 2**).

PROJECT BACKGROUND

Following construction of the Rollins Reservoir Dam in 1965, sediments have accumulated in Rollins Reservoir. An estimated 10,000 acre-feet of storage capacity (17%) has been lost in Rollins Reservoir, which had a capacity of 65,998 acre-feet upon its completion in 1965.

Sediment accumulation in the Greenhorn Arm of Rollins Reservoir can occur very quickly depending on water year type and flows from Greenhorn Creek. **Figure 1** shows the build-up of sediment that has occurred from July 2014 to late 2016. In July 2014 sediments extended in the Greenhorn Arm approximately 9,300 feet from the intersection of You Bet Bridge and the existing access/haul road. In late 2016, sediment build-up began to extend into the main body of the reservoir (extending an additional 980 feet).

In October 2013, NID entered into an agreement with Hansen Bros. Enterprises to remove sediment from Greenhorn Creek during record low water levels. During the work, it was discovered that foothill yellow-legged frogs (FYLF) were present along the haul route in the Greenhorn Arm of Rollins Reservoir. Accordingly, work was halted until NID and Hansen Bros. Enterprises could prepare a Corrective Action Plan (CAP) to protect the frogs. The CAP was completed at the end of November 2013; however, no additional sediment removal has occurred and sediment has continued to be deposited in the Greenhorn Arm and subsequently transported into the reservoir during high-flow events.

PROPOSED PROJECT

NID's Proposed Project includes the annual removal of sediment from the Greenhorn Arm of Rollins Reservoir. Due to the annual migration of aggregate from Greenhorn Creek into the Project area, the Project will be ongoing with the ultimate goal of returning the Project area to pre-1965 conditions (following construction of Rollins Reservoir), and then maintaining this condition in perpetuity.

The Greenhorn Sediment Removal Project objectives are as follows:

- Restore and maintain the historic water storage capacity in the Greenhorn Arm of Rollins Reservoir and prevent further migration of suspended sediment from this arm into the main reservoir.
- Maintain the water storage capacity in the Greenhorn Arm of Rollins Reservoir in perpetuity by conducting annual sediment maintenance activities to remove accumulated sediments which could enter the main reservoir during high flows.
- Restore recreational opportunities in the Greenhorn Arm of Rollins Reservoir through the removal of accumulated sediment thereby increasing water depth and improving aquatic habitat and boating access.
- Economically remove and dispose of the sediment removed from the Greenhorn Arm of Rollins Reservoir.

PROJECT ACTIVITIES

Three primary activities will be implemented annually as part of the Project: (1) notification/mobilization; (2) sediment removal activities; and (3) demobilization. In addition, the Project includes implementation of a water quality and methylmercury monitoring program.

Notification/Mobilization

- Public Notification

  a. Rollins Reservoir supports three district operated campgrounds, Long Ravine, Orchard Springs, and Peninsula, and one independently operated campground, Greenhorn. Combined these campgrounds offer approximately 250 campsites and a complete range of services, including stores, restaurants, fuel sales and rentals (Map 3). As part of the Project, NID will keep the Rollins Reservoir campground concessionaires apprised of water surface elevation conditions and other construction-related activities in the Greenhorn Arm so that information can be disseminated to the public via the NID website (www.nidwater.com). In addition, NID will provide concessionaires annual notification of the Project schedule and activities in a format that can be posted onsite at the reservation window, at information boards within the campgrounds, and at boat docks. Information will also be posted on NID's website to ensure that prospective recreation visitors are informed of Project activities.

- Transport Equipment and Material Staging Areas

  a. Sediment removal activities will involve the use of heavy equipment, vehicles, and machinery. **Table 1** includes a list of anticipated heavy equipment that will be used during Project implementation. A barge and pile driver will be used to install the sediment barrier to reduce future creep of sediment in the reservoir. A track hoe, front end loaders, excavators, dump trucks/yukes and scrapers will be used during sediment removal activities. In addition, a small backhoe, front-loader, excavator, bulldozer, and flat-bed trucks will be used to transport materials to and within the Work Area and for removal of sediment. Pick-up trucks will be used to transport personnel to and from the Work Area.

  b. NID has three staging areas (SA), as shown on **Map 2**. All staging areas are located in previously-disturbed locations. No grading, vegetation removal, or other site preparation will be necessary prior to use. NID will designate vehicle fueling areas

at SA-1 and SA-3. Fuel will be stored in a mobile tanker truck. Any pumps, generators, or other stationary equipment that must be fueled on the dewatered reservoir bed will be placed on secondary containment structures to avoid soil/water contamination. All fueling activities will be completed consistent with state and federal Best Management Practices.

c. Project office trailers, personnel parking, and portable restrooms, will be located at SA-1 and SA-3. Portable restrooms will be placed onsite by a licensed vendor and operated in accordance with Nevada County Environmental Health requirements.

Sediment Removal Activities

- Establish Work Area Boundary

  a. Prior to initiation of work activities each year, NID will install a buoy line with hazard markers and closure signage to restrict access to the Greenhorn Arm at Rollins Reservoir. The buoy line will remain in place until the reservoir levels drop precluding entrance into the Greenhorn Arm.

  b. Hazard markers and signage will also be placed in the Greenhorn Campground and along the shoreline near the entrance to the Greenhorn Arm to notify the public of the Work Area closure. NID will also notify and provide a Project schedule and activity information to campground concessionaires on Rollins Reservoir for posting on their reservation website, and at the reservation window and information boards.

  c. Hazard markers and additional buoys or signage with a 5-mile-per-hour (mph) speed restriction will be placed near the location of the sediment barrier in the main body of the reservoir. The buoys or signage will remain in place when the sediment barrier is present within the reservoir.

  d. Work area boundaries will be delineated, including the upstream and downstream ends, with fencing, stakes, or flagging.

- Water Quality Monitoring

  a. NID will prepare a Water Quality Monitoring Plan (Plan) for the Project. This Plan will describe the approach for monitoring water quality (baseline and Project conditions) in the vicinity of the Project during implementation (setup through demobilization). The Plan will include compliance thresholds and adaptive management to address potential water quality issues should any arise. The Plan would be implemented in any year which sediment removal activities occur. The Plan will include water quality monitoring for the following constituents:

    - Water temperature;
    - Dissolved oxygen (DO);
    - Turbidity;
    - Total dissolved solids (TDS);
    - Total suspended solids (TSS);
    - Total mercury; and
    - Methylmercury.

- Installation of Sediment Barrier

  a. Interlocking steel sheet piles (36-foot-long steel sheets) will also be driven into the reservoir bottom, with a pile driver off of a barge, to form a sediment barrier perpendicular to the main body of the reservoir. The purpose of the sediment barrier is to:

     - Prevent further migration of sediment into the reservoir;
     - Provide a barrier between the area of active sediment removal and the main body of the reservoir.

     Initially, the sediment barrier will be installed in Rollins Reservoir proper, however, the location will eventually move into the Greenhorn Arm as sediment removal activities proceed. When located in the main body of the reservoir, the barrier will be maintained below the water surface and 5-mph buoys or signage will be installed over the top of the barrier.

- Establish Access/Haul Road

  a. An access/haul road will be used to support Project activities consisting of: (1) the existing road from You Bet Bridge through the Hansen Bros. Enterprises lease to the Greenhorn Arm of Rollins Reservoir; and (2) establishment of a new haul road within the inundation zone of the Greenhorn Arm for Project-specific sediment removal activities. The new haul road will be established annually, as high spring flows from the creek into the reservoir will likely redistribute material used to establish the road.

  b. The new haul road will be 24 feet wide and will be constructed using native material from the Project site. One or two construction vehicle turnarounds will be developed as part of the new road. Bridges and culverts, as appropriate, will be installed along the new haul road to provide access over Greenhorn Creek within the inundation zone of Rollins Reservoir (multiple crossings may be necessary because the creek meanders through Work Area).

  c. The bridge or pipe crossings will be sized and positioned to maintain passage of aquatic species (fish or amphibians) and the appropriate velocity of water flows. Exclusionary, high visibility fencing will be installed, where appropriate, to protect aquatic species breeding sites.

- Channelization of Creek Bed

  a. Following installation of the sediment barrier, and once water levels recede in the Greenhorn Arm, construction mats, bridges, and culverts will be installed, where necessary, to allow access from You Bet Bridge to the Work Area. A track hoe will then be used to construct a berm to form the channelized creek bed. Once the berm is complete, a pilot channel will be excavated. A channel will be constructed and will extend the entire length of the berm. The pilot channel will then be connected to the active stream allowing relocation of Greenhorn Creek to the channelized section. The berm if needed will be established annually as high spring flows will likely redistribute material used to establish the berm.

b. Once the creek is re-routed, a corrugated pipe if needed will be installed perpendicular to the original stream channel and through the berm to collect and direct subsurface water into the channelized creek bed. A valve box/pond will also be installed in the active channel at the upper end of the pipe to allow for controlled release of water from the active channel through the pipe into the channelized creek bed. An aeration system will be placed in the value box and turned on, if necessary, to maintain oxygen concentrations to reduce the methylation of mercury.

c. Flows will be released as needed, from the valve box/pond into the subsurface flow pipe to maintain a reasonable velocity of water, if available from the active channel. Continuous oxygen monitors will be installed in the stream channel upstream of the valve box/pond, at the valve box/pond, and at the end of the subsurface pipe entering the channelized creek bed. The aeration system and oxygen monitors will remain in place until demobilization is complete.

- <u>Installation of Dewatering Pipes/Channels</u>

a. After the creek bed has been channelized, dewatering pipes will be installed or channels will be excavated in the sediment removal area. The dewatering pipes/ channels will direct subsurface flow from the proposed sediment removal area to the reservoir. The pipes/ channels will be installed to allow drainage from the sediment removal area. The dewatering pipes will be 24 inches or larger in diameter, perforated polyvinyl chloride (PVC) or polyethylene pipes.

   The purpose of the dewatering pipes/channels is to collect subsurface water in the sediment removal area to speed up the drying process. Once the sediment in the Work Area is reasonably dry, such that heavy excavating and earthmoving equipment can travel and maneuver over the sediment allowing for initiation of sediment removal activities.

b. A valve box/pond will be installed in the active channel at the upper end of the dewatering pipes/channels to allow for controlled release of water from the active channel, through the dewatering pipes/channels. An aeration system will be placed in the valve box/pond.

c. Flows will be released from the valve box/pond into the dewatering pipes/channels to maintain a reasonable velocity of water, if available, from the active channel. As described above, continuous oxygen monitors will be installed in the stream channel upstream of the valve box/pond, and at the end of the dewatering pipes/channels. The aeration system will be turned on, when necessary, to maintain oxygen concentration to reduce the potential for methylation of mercury by anaerobic digestion.

- <u>Sediment Removal</u>

a. Dry sediment will be excavated in the Work Area using heavy excavating and earthmoving equipment (e.g., scrapers, trackhoes, backhoes, excavators, and/or front end loaders). Excavation will continue until the level of creek bed surface is lowered to the top of the dewatering pipe/channel. An additional dewatering pipe/channel will then be connected to the valve box/pond and sediment removal will continue.

   No dredging would occur as part of the Project. Excavated material will be transported

to the stockpile area via the access/haul road.

- Sediment Transport to Stockpile Area and Processing

  a. Sediment removed from the Work Area will be transported by dump trucks or other loading equipment via the access/haul road to the stockpile area. The stockpile area is an existing stockpile that is currently used as part of the Hansen Bros. Enterprises operations and is located on the east side of the Greenhorn Arm of Rollins Reservoir approximately 0.76 miles from intersection of You Bet Road and the access road maintained by Hansen Bros. Enterprises (**Map 2**).

  b. At the stockpile area, sediment will be passed through a grizzly and various sized mesh screens for removal of debris and large rocks, and to sort the material into various sizes of aggregate. Typical screening sizes include: less than 1 inch, 1-2 inches, and greater than 2 inches. A containment system, such as a flatbed trailer or other container, will be placed under the grizzly to collect fine material. Material collected in the containment system may be returned to the grizzly for re-screening to separate "usable" aggregate material, or if the containment is dominated by silt-sized aggregates (fine sediment), it will be transported via dump truck to an approved offsite processing center for disposal. The screened material (larger aggregate) will be temporarily stockpiled at the site for commercial sale and/or use in a local mine reclamation project. Barrier walls would be placed along the stockpile area adjacent to the reservoir shoreline to minimize erosion during high flows and/or reservoir levels.

  c. The only onsite processing will be screening of sediment and removal of debris. There will be no onsite washing of excavated materials. Water will be applied to material being stockpiled and loaded as required to reduce fugitive dust. Watering will be limited to dust suppression and will be applied in a manner to prevent direct run-off into the Greenhorn Arm. The water will be supplied onsite using NID's surface water in the Project area.

Demobilization

- Annual Demobilization

  a. Following completion of annual sediment removal activities (typically in mid- to late November), the following will be removed from the Work Area:

     - Dewatering pipes/channels;
     - Valve box/pond;
     - Aeration system;
     - Construction equipment and mats;
     - Bridges and culverts;
     - Work area closure buoy line; and
     - Processing plant.

  b. The sediment barrier may remain in place depending on the extent of sediment removal completed. Buoys or signage with 5-mph speed restriction will be maintained adjacent to these features if they remain in place. The berm and new access/haul road will be left in place, but high spring flows will likely redistribute the material into the Work Area. In addition, the stockpile area barrier wall will remain in

place throughout the duration of the Project.

- Sediment Fate-Offsite Transport

  a. It is estimated that up to 250,000 tons (approximately 3.5 acre-feet) of material could be removed from the Work Area per year, depending on market demand; although a typical year (based on similar activities) would include removal of approximately 50,000 tons per year. It is assumed that 250,000 tons of material would be removed approximately every 6 years, depending on storm events.

  b. The stockpile area will be used to temporarily store sediment until the material can be transported to an approved offsite location. Sediment will be sampled and analyzed to identify any potential hazards to the public or environment. If sediments exceed hazardous waste thresholds, the sediment will be disposed of in accordance with relevant hazardous waste regulations at an approved hazardous materials disposal site. If sediments do not exceed hazardous waste thresholds, the materials will be distributed as follows:

     - Distribution of approximately 30% of material to Hansen Bros. Enterprises for processing at the local plant located across You Bet Road approximately 1.25 mile north of the Project (**Map 2**);
     - Distribution of approximately 30% of material for local sales in Nevada County via Highway 174;
     - Distribution of approximately 10% of material for use in reclamation of one or more mining sites within 10 miles of the Project; or
     - Distribution of approximately 30% of material via Highway 80 for sales outside of Nevada County.

ENVIRONMENTAL ANALYSIS

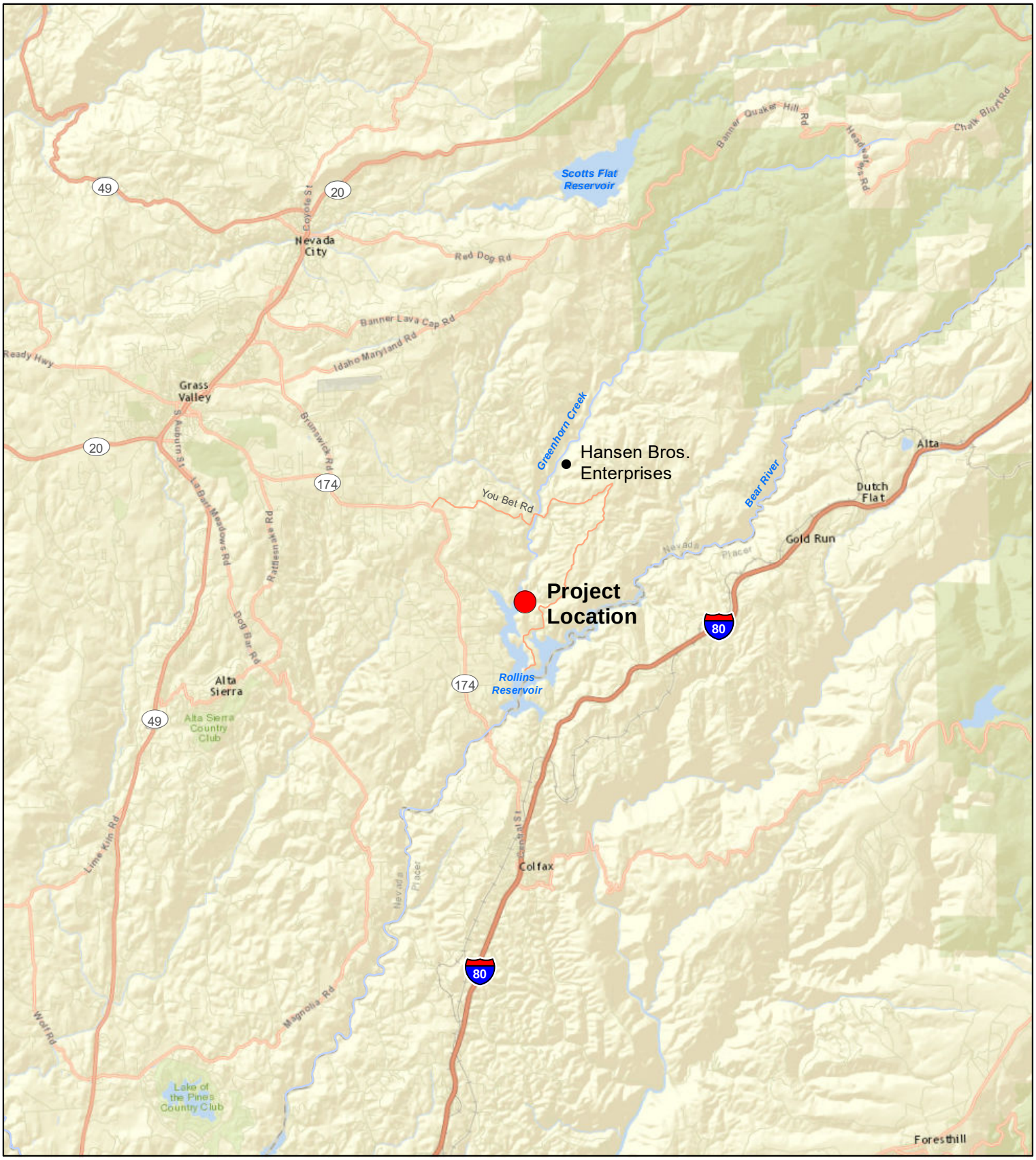
NID (as the lead agency) will prepare a Draft Environmental Impact Report (EIR) under CEQA that clearly demonstrates the future need for removal of sediment from the Greenhorn Arm of Rollins Reservoir and discloses potential environmental effects.

The Draft EIR will:

- Describe the environmental and regulatory setting;
- Evaluate a reasonable range of alternatives capable of avoiding or substantially lessening one or more of the Project's significant environmental effects;
- Identify thresholds of significance that will be used to evaluate the changes in the physical conditions;
- Evaluate the environmental effects of components of the Proposed Project, including direct, indirect, short-term, long-term, cumulative, and unavoidable impacts; and
- Propose mitigation measures to reduce significant impacts, should any be identified, to a less-than-significant level when possible.

ENVIRONMENTAL REVIEW

The initial step in the environmental review process is a formal public scoping period, for which this NOP has been prepared. During the public scoping period, NID will conduct a public meeting on June 1, 2017 to solicit comments on the proposed scope and content of the EIR. Following the public scoping period, a Draft EIR will be prepared and circulated for a 45-day public review period (CEQA Guidelines Section 15105). Public comments on the Draft EIR will be accepted in writing during the review period, or verbally at a public meeting to be held by NID. NID will subsequently prepare written responses to comments on environmental issues raised during the public review period and include these responses in the Final EIR. These documents will be considered by NID's Board of Directors (BOD), along with the Draft EIR, and any revisions to the draft based on the responses to comments, for certification as the Final EIR. Following the BOD's certification of the Final EIR, NID will prepare and file a Notice of Determination (NOD) to inform interested parties and responsible agencies that the Final EIR has been adopted pursuant to CEQA.



0 3 6 Miles

0 3 6 9 Kilometers

1:150,000

Map 1: Project Vicinity

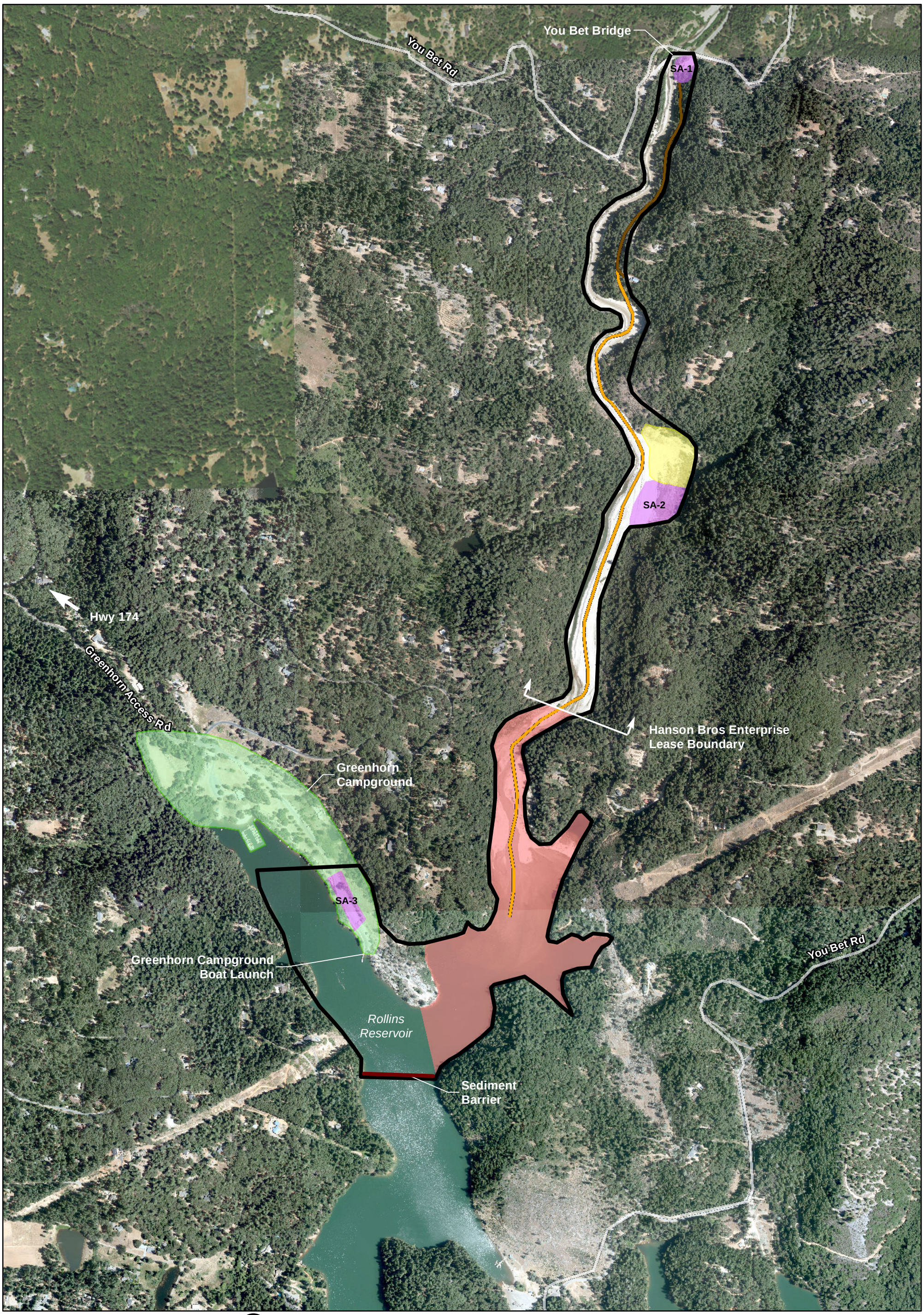
Greenhorn Sediment Removal
at Rollins Reservoir Project
Nevada County, CA

USGS 7.5' Quads:
Chicago Park, CA
T 15N, R 09E, Sections 2-3, 10-11

Map Prepared By A. Clare
11/18/2016

Cardno
2300 Clayton Road,Suite 200
Concord, CA 94520
tel (925) 935-9920
fax (925) 935-5368
www.cardno.com

Map Projection : NAD 1983 UTM Zone 10N



0 0.2 0.4 Miles

0 0.2 0.4 0.6 Kilometers

1:10,000

Legend

- Project Site Boundary
- Existing Haul Road
- New Haul Road
- Campground
- Work Area
- Staging Area
- Stockpile Area

Map 2: Project Area

Greenhorn Sediment Removal at Rollins Reservoir Project
Nevada County, CA

USGS 7.5' Quads:
Chicago Park, CA
T 15N, R 09E, Sections 2-3, 10-11

Image Source: NID, 2016
Map Prepared By A. Clare
3/1/2017

Cardno
2300 Clayton Road,Suite 200
Concord, CA 94520
tel (925) 935-9920
fax (925) 935-5368
www.cardno.com

Map Projection : NAD 1983 UTM Zone 10N

2014 Imagery (NAIP)

2016 Imagery (NID)

Figure 1: Extent of Sediment in the Greenhorn Arm of Rollins Reservoir

Greenhorn Sediment Removal at Rollins Reservoir Project
Nevada County, CA

USGS 7.5' Quads:
Chicago Park, CA
T 15N, R 09E, Sections 2-3, 10-11

Map Prepared By A. Clare
1/5/2017

0 0.1 0.2 Miles
0 0.1 0.2 0.3 Kilometers

1:5,138

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2300 Clayton Road,Suite 200
Concord, CA 94520
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www.cardno.com

Map Projection : NAD 1983 UTM Zone 10N

1/5/2017, 11:47 AM | GIS Analyst: Anna.Clare | Map Document: C:\Users\anna.clare\Documents\Edited\EntireProject\E316104901_Greenhorn\map\Greenhorn_Figure1_ExtentOfSediment_AerialComparison_20170105.mxd | Plot Size: 8.5" x 11"

Table 1. Construction Vehicles and Equipment.

Equipment	Quantity
Construction Vehicles	
Large Loader	2
Skid Steer Loader	1
Large Excavator	1
Medium Excavator	1
Small Excavator	2
Backhoe	2
Trackhoe	2
Scraper	3
Bulldozer	2
Compaction Equipment	
Large Vibratory Roller	1
Small Vibratory Roller	1
Hand Vibratory Compactor	1
Trucks	
Flat-bed Trucks	1
Pick-up Trucks	4
Delivery Trucks	2
Dump Truck/Yukes	4
Sweeper Truck	1
Water Truck	1
Other Construction Equipment	
Grizzly	1
Barge	1
Pile Driver	1
Chainsaw	3
Aeration Equipment	1-3
Oxygen Sensors	3-6

WO# 8515

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Edmund G. Brown Jr.
Governor

Ken Alex
Director

Notice of Preparation

RECEIVED
MAY 24 2017
ENGINEERING
NEVADA IRRIGATION DISTRICT

May 19, 2017

To: Reviewing Agencies

Re: Greenhorn Sediment Removal at Rollins Reservoir Project
SCH# 2017052054

Attached for your review and comment is the Notice of Preparation (NOP) for the Greenhorn Sediment Removal at Rollins Reservoir Project draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Gary D. King
Nevada Irrigation District
1036 W. Main Street
Grass Valley, CA 95945

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH#	**2017052054**
Project Title	Greenhorn Sediment Removal at Rollins Reservoir Project
Lead Agency	Nevada Irrigation District

Type	NOP Notice of Preparation
Description	The Nevada District, acting as Lead Agency under CEQA, will prepare an EIR for the Greenhorn Sediment Removal at Rollins Reservoir Project (Project). The objectives of the Project are as follows: 1. Restore and maintain the historic water storage capacity in the Greenhorn Arm of Rollins Reservoir and prevent further migration of suspended sediment from this arm into the main reservoir. 2. Maintain the water storage capacity in the Greenhorn Arm of Rollins Reservoir in perpetuity by conducting annual sediment maintenance activities to remove accumulated sediments which could enter the main reservoir during storm water flows. 3. Restore recreational opportunities in the Greenhorn Arm of Rollins Reservoir through the removal of accumulated sediment thereby increasing water depth and improving aquatic habitat and boating access. 4. Economically dispose of the sediment removed from the Greenhorn Arm of Rollins Reservoir.

Lead Agency Contact

Name	Gary D. King		
Agency	Nevada Irrigation District		
Phone	530-273-6185 x260	*Fax*	
email			
Address	1036 W. Main Street		
City	Grass Valley	*State* CA	*Zip* 95945

Project Location

County	Nevada		
City			
Region			
Cross Streets	I-80, Hwy 174		
Lat / Long	39° 11' 14.52" N / 120° 56' 30.77" W		
Parcel No.			
Township	*Range*	*Section*	*Base*

Proximity to:

Highways	174, I-80
Airports	
Railways	
Waterways	
Schools	
Land Use	

Project Issues	Water Quality
Reviewing Agencies	Resources Agency; Department of Boating and Waterways; Central Valley Flood Protection Board; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Wildlife, Region 2; Office of Emergency Services, California; Delta Protection Commission; Delta Stewardship Council; Native American Heritage Commission; State Lands Commission; California Highway Patrol; Caltrans, District 3 N; Air Resources Board, Transportation Projects; State Water Resources Control Board, Division of Drinking Water, District 5; State Water Resources Control Board, Division of Water Quality

Date Received 05/19/2017 *Start of Review* 05/19/2017 *End of Review* 06/19/2017

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOP Distribution List

SB

County: Nevada

SCH# 2017052054

Resources Agency

Resources Agency
Nadell Gayou

- [x] Dept. of Boating & Waterways
  Denise Peterson
- [ ] California Coastal Commission
  Elizabeth A. Fuchs
- [ ] Colorado River Board
  Lisa Johansen
- [ ] Dept. of Conservation
  Crina Chan
- [ ] Cal Fire
  Dan Foster
- [x] Central Valley Flood Protection Board
  James Herota
- [x] Office of Historic Preservation
  Ron Parsons

Dept of Parks & Recreation
Environmental Stewardship Section

- [ ] S.F. Bay Conservation & Dev't. Comm.
  Steve Goldbeck
- [x] Dept. of Water Resources
  Resources Agency
  Nadell Gayou

Fish and Game

- [ ] Depart. of Fish & Wildlife
  Scott Flint
  Environmental Services Division
- [ ] Fish & Wildlife Region 1
  Curt Babcock
- [ ] Fish & Wildlife Region 1E
  Laurie Harnsberger
- [x] Fish & Wildlife Region 2
  Jeff Drongesen
- [ ] Fish & Wildlife Region 3
  Craig Weightman
- [ ] Fish & Wildlife Region 4
  Julie Vance
- [ ] Fish & Wildlife Region 5
  Leslie Newton-Reed
  Habitat Conservation Program
- [ ] Fish & Wildlife Region 6
  Tiffany Ellis
  Habitat Conservation Program
- [ ] Fish & Wildlife Region 6 I/M
  Heidi Calvert
  Inyo/Mono, Habitat Conservation Program
- [ ] Dept. of Fish & Wildlife M
  William Paznokas
  Marine Region

Other Departments

- [ ] California Department of Education
  Lesley Taylor
- [x] OES (Office of Emergency Services)
  Monique Wilber
- [ ] Food & Agriculture
  Sandra Schubert
  Dept. of Food and Agriculture
- [ ] Dept. of General Services
  Cathy Buck
  Environmental Services Section
- [ ] Housing & Comm. Dev.
  CEQA Coordinator
  Housing Policy Division

Independent Commissions,Boards

- [x] Delta Protection Commission
  Erik Vink
- [x] Delta Stewardship Council
  Kevan Samsam
- [ ] California Energy Commission
  Eric Knight
- [x] Native American Heritage Comm.
  Debbie Treadway
- [ ] Public Utilities Commission
  Supervisor
- [ ] Santa Monica Bay Restoration
  Guangyu Wang
- [x] State Lands Commission
  Jennifer Deleong
- [ ] Tahoe Regional Planning Agency (TRPA)
  Cherry Jacques

Cal State Transportation Agency CalSTA

- [ ] Caltrans - Division of Aeronautics
  Philip Crimmins
- [ ] Caltrans – Planning
  HQ LD-IGR
  Christian Bushong
- [x] California Highway Patrol
  Suzann Ikeuchi
  Office of Special Projects

Dept. of Transportation

- [ ] Caltrans, District 1
  Rex Jackman
- [ ] Caltrans, District 2
  Marcelino Gonzalez
- [x] Caltrans, District 3
  Eric Federicks – South
  Susan Zanchi - North
- [ ] Caltrans, District 4
  Patricia Maurice
- [ ] Caltrans, District 5
  Larry Newland
- [ ] Caltrans, District 6
  Michael Navarro
- [ ] Caltrans, District 7
  Dianna Watson
- [ ] Caltrans, District 8
  Mark Roberts
- [ ] Caltrans, District 9
  Gayle Rosander
- [ ] Caltrans, District 10
  Tom Dumas
- [ ] Caltrans, District 11
  Jacob Armstrong
- [ ] Caltrans, District 12
  Maureen El Harake

Cal EPA

Air Resources Board

- [ ] Airport & Freight
  Jack Wursten
  - [x] Transportation Projects
    Nesamani Kalandiyur
  - [ ] Industrial/Energy Projects
    Mike Tollstrup
- [ ] California Department of Resources, Recycling & Recovery
  Sue O'Leary
- [ ] State Water Resources Control Board
  Regional Programs Unit
  Division of Financial Assistance
- [ ] State Water Resources Control Board
  Cindy Forbes – Asst Deputy
  Division of Drinking Water
- [x] State Water Resources Control Board
  Div. Drinking Water # SS
- [ ] State Water Resources Control Board
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [x] State Water Resouces Control Board
  Phil Crader
  Division of Water Rights
- [ ] Dept. of Toxic Substances Control
  CEQA Tracking Center
- [ ] Department of Pesticide Regulation

Regional Water Quality Control Board (RWQCB)

- [ ] RWQCB 1
  Cathleen Hudson
  North Coast Region (1)
- [ ] RWQCB 2
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] RWQCB 3
  Central Coast Region (3)
- [ ] RWQCB 4
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] RWQCB 5S
  Central Valley Region (5)
  - [ ] RWQCB 5F
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] RWQCB 5R
    Central Valley Region (5)
    Redding Branch Office
- [ ] RWQCB 6
  Lahontan Region (6)
  - [ ] RWQCB 6V
    Lahontan Region (6)
    Victorville Branch Office
- [ ] RWQCB 7
  Colorado River Basin Region (7)
- [ ] RWQCB 8
  Santa Ana Region (8)
- [ ] RWQCB 9
  San Diego Region (9)

- [ ] Other _____
  _____
  _____

- [ ] _____
  Conservancy

Last Updated 4/28/17

NOTICE OF PREPARATION

To: Office of Planning and Research; State Clearinghouse; Responsible and Trustee Agencies; Federal Agencies; Organizations; and Interested Parties

From: Gary King
Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

Subject: Notice of Preparation of a Draft Environmental Impact Report

Nevada Irrigation District will be the Lead Agency and will prepare an Environmental Impact Report (EIR) for the Greenhorn Sediment Removal at Rollins Reservoir Project (Project). We need to know the views of your agency as to the scope and content of the Proposed Project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the Project.

The Project description, location, and the potential environmental effects are contained in the attached materials. A copy of the Initial Study is not attached.

Due to the time limits mandated by state law, your response must be sent at the earliest possible date, but not later than thirty (30) days after receipt of this notice.

Please send your response to Kris Stepanian via e-mail at stepaniank@nidwater.com or regular mail to the address shown above. We will need the name for a contact person in your agency.

Project Title: Greenhorn Sediment Removal at Rollins Reservoir Project

Project Applicant, if any: Nevada Irrigation District

Date: May 17, 2017

Signature: Gary D. King
Gary D. King

Title: Engineering Manager

Telephone: 530-273-6185 ext. 260

FILED
GREGORY J. DIAZ
NEVADA COUNTY
CLERK-RECORDER
2017 MAY 17 P 4:04
DEPUTY
PAGE 12

POSTED IN THE NEVADA COUNTY CLERKS OFFICE
FROM 5/17/17 TO 6/17/17
BY _____ (DEPUTY)

156547

Print Date:
5/17/2017 4:11:22 PM

Gregory J. Diaz,
Recorder
950 Maidu Avenue
Nevada City, CA 95959
530-265-1221

Nevada County Transaction #: **156547**
Receipt #: **152214**
Cashier Date: **5/17/2017 4:11:22 PM** (KP)
Scan the QR **Code** to search our services
or go to www.mynevadacounty.com/nc/recorder

Customer Information	Transaction Information	Payment Summary	
(NID) NEVADA IRRIGATION DIST 1036 WEST MAIN ST GRASS VALLEY, CA 95945	DateReceived: 05/17/2017 Source Code: Over The Counter Q Code: Over The Counter Return Code: Mail Trans Type: Recording Agent Ref Num:	Total Fees Total Payments	$.00 $.00

1 Payments

NOCHARGE

0 Recorded Items

0 Search Items

2 Miscellaneous Items

(FNG) FNG GREENHORN SEDIMENT REMOVAL AT ROLLINS RESERVOIR PROJECT

(CEQA LETTER) CEQA Filing Letter
NEVADA IRRIGATION DIST

No Charge	1	$0.00

WORK ORDER

STATE OF CALIFORNIA Edmund G. Brown Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
Fax (916) 373-5471
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

#8515

May 24, 2017

Gary D. King
Nevada Irrigation District
1036 W. Main Street
Grass Valley, CA 95945

RE: SCH#2017052054 Greenhorn Sediment Removal at Rollins Reservoir Project, Nevada County

Dear Mr. King:

The Native American Heritage Commission has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.), specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines Section 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared. (Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code § 21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code § 21084.3 (a)). **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. § 800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws**.

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
    a. A brief description of the project.
    b. The lead agency contact information.
    c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code § 21080.3.1 (d)).
    d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code § 21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code § 21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or environmental impact report. (Pub. Resources Code § 21080.3.1(b)).
    a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18). (Pub. Resources Code § 21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
    a. Alternatives to the project.
    b. Recommended mitigation measures.
    c. Significant effects. (Pub. Resources Code § 21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
    a. Type of environmental review necessary.
    b. Significance of the tribal cultural resources.
    c. Significance of the project's impacts on tribal cultural resources.
    d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code § 21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code § 21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
    a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
    b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code § 21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code § 21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code § 21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code section 21084.3 (b). (Pub. Resources Code § 21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        i. Planning and construction to avoid the resources and protect the cultural and natural context.
        ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
        i. Protecting the cultural character and integrity of the resource.
        ii. Protecting the traditional use of the resource.
        iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code § 21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a nonfederally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code § 815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code § 5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An environmental impact report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code § 21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code § 65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code § 65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code section 65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction. (Gov. Code § 65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have been already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions, please contact me at my email address: frank.lienert@nahc.ca.gov

Sincerely,

Frank Lienert
for Associate Governmental Program Analyst

cc: State Clearinghouse

MIWOK MAIDU United Auburn Indian Community of the Auburn Rancheria

Gene Whitehouse, Chairman | John L. Williams, Vice Chairman | Calvin Moman, Secretary | Jason Camp, Treasurer | Gabe Cayton, Council Member

RECEIVED
JUN 15 2017
ENGINEERING
NEVADA IRRIGATION DISTRICT

May 30, 2017

Gary D. King
Nevada Irrigation District
1036 W. Main Street
Grass Valley, CA 95945

Subject: Notice of Preparation of a Draft EIR for the Greenhorn Sediment Removal at Rollins Reservoir Project

Dear Gary D. King,

Thank you for requesting information regarding the above referenced project. The United Auburn Indian Community (UAIC) of the Auburn Rancheria is comprised of Miwok and Southern Maidu (Nisenan) people whose tribal lands are within Placer County and whose service area includes El Dorado, Nevada, Placer, Sacramento, Sutter, and Yuba counties. The UAIC is concerned about development within its aboriginal territory that has potential to impact the lifeways, cultural sites, and landscapes that may be of sacred or ceremonial significance. We appreciate the opportunity to comment on this and other projects. The UAIC would like to consult on this project.

In order to ascertain whether the project could affect cultural resources that may be of importance to the UAIC, we would like to receive copies of any archaeological reports that are completed for the project. We also request copies of environmental documents for the proposed project so that we have the opportunity to comment on appropriate identification, assessment and mitigation related to cultural resources. We recommend UAIC tribal representatives observe and participate in all cultural resource surveys. If you are interested, the UAIC's preservation department offers a mapping, records and literature search services program that has been shown to assist project proponents in complying with the necessary resource laws and choosing the appropriate mitigation measures or form of environmental documentation during the planning process.

The UAIC's preservation committee would like to set up a meeting or site visit, and begin consulting on the proposed project. Based on the preservation committee's identification of cultural resources in and around your project area, UAIC recommends that a tribal monitor be present during any ground disturbing activities. Thank you again for taking these matters into consideration, and for involving the UAIC early in the planning process. We look forward to reviewing the documents requested above and consulting on your project. Please contact Marcos Guerrero, Cultural Resources Manager, at (530) 883-2364 or by email at mguerrero@auburnrancheria.com if you have any questions.

Sincerely,

Gene Whitehouse,
Chairman

CC: Marcos Guerrero, CRM

Tribal Office 10720 Indian Hill Road Auburn, CA 95603 (530) 883-2390 FAX (530) 883-2380

MIWOK MAIDU United Auburn Indian Community of the Auburn Rancheria

Gene Whitehouse, Chairman | John L. Williams, Vice Chairman | Calvin Moman, Secretary | Jason Camp, Treasurer | Gabe Cayton, Council Member

RECEIVED
JUN 15 2017
ENGINEERING
NEVADA IRRIGATION DISTRICT

May 30, 2017

Gary D. King
Engineering Manager
Nevada Irrigation District
1036 W. Main Street
Grass Valley, CA 95945

RE: AB 52 Consultation Request for the Proposed Greenhorn Sediment Removal at Rollins Reservoir Project, Nevada County, CA

Dear Engineering Manager Gary D. King,

The United Auburn Indian Community (UAIC) received a letter from the Nevada Irrigation District dated 5/17/2017, formally notifying us of a proposed project, the Greenhorn Sediment Removal at Rollins Reservoir Project in Nevada County, and an opportunity to consult under AB 52. This letter is notice that UAIC would like to initiate consultation under AB 52.

We would like to discuss the topics listed in Cal. Public Resources Code section 21080.3.2(a), including the type of environmental review to be conducted for the project; project alternatives; the project's significant effects; and mitigation measures for any direct, indirect, or cumulative impacts the project may cause to tribal cultural resources. As consultation progresses, we may also wish to discuss design options that would avoid impacts to tribal cultural resources; the scope of any environmental document that is prepared for the project; pre-project surveys; and tribal cultural resource identification, significance evaluations and culturally-appropriate treatment.

This letter is also a formal request to allow UAIC tribal representatives to observe and participate in all cultural resource surveys, including initial pedestrian surveys for the project. Please send us all existing cultural resource assessments, as well as requests for, and the results of, any records searches that may have been conducted prior to our first consultation meeting. If tribal cultural resources are identified within the project area, it is UAIC's policy that tribal monitors must be present for all ground disturbing activities. Finally, please be advised that UAIC's strong preference is to preserve tribal cultural resources in place and avoid them whenever possible. Subsurface testing and data recovery must not occur without first consulting with UAIC and receiving UAIC's written consent.

In the letter Engineering Manager Gary D. King is identified as the lead contact person for consultation on the proposed project. Marcos Guerrero, our Cultural Resources Manager, will be UAIC's point of contact for this consultation. Please contact Mr. Guerrero by phone at (530) 883-2364 or email at mguerrero@auburnrancheria.com to begin the consultation process.

Thank you for involving UAIC in the planning process at an early stage. We ask that you make this letter a part of the project record and we look forward to working with you to ensure that tribal cultural resources are protected.

Sincerely,

Gene Whitehouse,
Chairman

CC: Matthew Moore, UAIC Tribal Historic Preservation Officer
Marcos Guerrero, UAIC Cultural Resources Manager

Nevada City Rancheria Tribal Council P.O. Box 574 Grass Valley, Ca. 95945
530-265-6563 (Chairman) 530-570-0846 (Secretary)

June 1, 2017

To Nevada Irrigation District:

Nevada City Rancheria would like to request consultation in the upcoming Greenhorn Sediment Removal project. We have seen the NOP and would like to officially request Tribal consultation on this project as it is within the ancestral homelands of the Nevada City Rancheria Nisenan Tribe.

Thank you,

Shelly Covert – Nevada City Rancheria

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

12 June 2017

Gary D. King
Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

CERTIFIED MAIL
91 7199 9991 7036 6990 6989

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, GREENHORN SEDIMENT REMOVAL AT ROLLINS RESERVOIR PROJECT, SCH# 2017052054, NEVADA COUNTY

Pursuant to the State Clearinghouse's 19 May 2017 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environment Impact Report* for the Greenhorn Sediment Removal at Rollins Reservoir Project, located in Nevada County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases,

the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues.

For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/.

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Policy is available on page IV-15.01 at:
http://www.waterboards.ca.gov/centralvalleywater_issues/basin_plans/sacsjr.pdf

In part it states:

> *Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.*
>
> *This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.*

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan

(SWPPP).

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]
The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/.

For more information on the Caltrans Phase I MS4 Permit, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/caltrans.shtml.

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Industrial Storm Water General Permit
Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ.

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACOE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance (i.e., discharge of dredge or fill material) of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications.

Waste Discharge Requirements

Discharges to Waters of the State

If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

Land Disposal of Dredge Material

If the project will involve dredging, Water Quality Certification for the dredging activity and Waste Discharge Requirements for the land disposal may be needed.

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml.

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Water Board's

Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Risk General Order and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Risk Waiver and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2013-0145_res.pdf

Regulatory Compliance for Commercially Irrigated Agriculture
If the property will be used for commercial irrigated agricultural, the discharger will be required to obtain regulatory coverage under the Irrigated Lands Regulatory Program. There are two options to comply:

1. **Obtain Coverage Under a Coalition Group.** Join the local Coalition Group that supports land owners with the implementation of the Irrigated Lands Regulatory Program. The Coalition Group conducts water quality monitoring and reporting to the Central Valley Water Board on behalf of its growers. The Coalition Groups charge an annual membership fee, which varies by Coalition Group. To find the Coalition Group in your area, visit the Central Valley Water Board's website at: http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/app_approval/index.shtml; or contact water board staff at (916) 464-4611 or via email at IrrLands@waterboards.ca.gov.

2. **Obtain Coverage Under the General Waste Discharge Requirements for Individual Growers, General Order R5-2013-0100**. Dischargers not participating in a third-party group (Coalition) are regulated individually. Depending on the specific site conditions, growers may be required to monitor runoff from their property, install monitoring wells, and submit a notice of intent, farm plan, and other action plans regarding their actions to comply with their General Order. Yearly costs would include State administrative fees (for example, annual fees for farm sizes from 10-100 acres are currently $1,084 + $6.70/Acre); the cost to prepare annual monitoring reports; and water quality monitoring costs. To enroll as an Individual Discharger under the Irrigated Lands Regulatory Program, call the Central Valley Water Board phone line at (916) 464-4611 or e-mail board staff at IrrLands@waterboards.ca.gov.

Low or Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Dewatering and Other Low Threat Discharges to Surface Waters* (Low Threat General Order) or the General Order for *Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order). A complete application must be submitted to the Central Valley Water Board to obtain coverage under these General NPDES permits.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf

For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0073.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of the waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit.

For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit3.shtml

If you have questions regarding these comments, please contact me at (916) 464-4644 or Stephanie.Tadlock@waterboards.ca.gov.

Stephanie Tadlock

Stephanie Tadlock
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

RECEIVED
JUN 15 2017
ENGINEERING
NEVADA IRRIGATION DISTRICT

June 12, 2017

Dr. Gary King
Engineering Manager
Nevada Irrigation District
1036 West Main St.
Grass Valley, CA. 95945

Subject: Greenhorn Sediment Removal at Rollins Reservoir Project

Dear Dr. King:

I applaud NID for their efforts to finally start a project to remove the silt from Greenhorn Creek. I have met with NID since the early 2000s, made several presentations to the board, and discussed this issue with past and present General Managers and other staff on numerous occasions.

However, after reading the NOP we recently received in the mail, and my having missed the meeting due to being out of town, I want to express several concerns:

- I trust this is a "real project," and not just a formal excuse to extend Hanson Brothers (HBE) sand/gravel operation further down the creek. I am fully aware of the "good ole boy relationship" of HBE senior management with past NID top management. After seeing HBE "environmentally ravage the upper Greenhorn," which in my opinion is a large part of the problem, mining sand/gravel in the summer, disturbing the creek bed, and then storing sand to wash downstream during the winter (and I have photos to prove it), one has to be suspicious. I hope I am wrong.
- Last summer I took a friend, retired Chief Engineer of Orange County, CA, to see what HBE was doing just below You Bet Bridge. His comment was, "they are just doing what's easy." I hope the currently proposed project is more serious. The equipment list doesn't look very large.
- Since Rollins Reservoir has a designated purpose of recreation, the public who live nearby and boat on the lake and use Greenhorn Access Road, insist that no large trucks will use this road to move material. Your NOP says all material will move up and down the access road built in the stream bed. Stick to your word.
- Noise: I realize noise will be an issue, but please limit it. We and all our neighbors live within 300+/- feet of the creek.

Finally, I wish you and NID success on this project.

Art Meares

Art Meares
14203 Frederick Way
Grass Valley, CA 95945
530 273-8447

cc: NID Board Members

COUNTY OF NEVADA
COMMUNITY DEVELOPMENT AGENCY
DEPARTMENT OF PUBLIC WORKS
950 MAIDU AVENUE, NEVADA CITY, CA 95959-8617
(530) 265-1411 FAX (530) 265-9849 www.mynevadacounty.com

Sean Powers
Community Development Agency Director

Trisha Tillotson
Director of Public Works

RECEIVED
JUN 19 2017
ENGINEERING
NEVADA IRRIGATION DISTRICT

July 15, 2017

Attn: Gary King
Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

Re: Greenhorn Sediment Removal at Rollins Reservoir Project

Dear Mr. King:

Thank you for the opportunity to comment on NID's Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the proposed Greenhorn Sediment Removal at Rollins Reservoir Project (Project). Nevada County received the NOP for the Project on May 19, 2017. The Project will remove sediment from the Greenhorn arm of Rollins Reservoir and prevent further migration of suspended sediment from this arm into the main reservoir. Removal of materials will occur annually to remove accumulated sediments entering the reservoir during the wet season. After removal, materials will be processed using a grizzly and screens to sort the material into various sizes of aggregate. Hansen Brothers Enterprises will contract to conduct the sediment removal and processing. Approximately 30 percent of the material will be processed at Hansen Brothers' permitted Greenhorn Creek facility.

The Nevada County Public Works Department requests that the following issues be addressed in the Draft EIR for the Greenhorn Sediment Removal at Rollins Reservoir Project:

1. Trip Generation: The EIR should evaluate the number of new trips generated by this proposed use in order for the County to determine the traffic impact fees applicable to the project.

2. Traffic Data: The traffic data prepared for the project should include an evaluation of impacts to local roads and intersections. Currently, You Bet Road is at Level of Service A.

3. Road Shoulder Maintenance: Given that heavy equipment will be used to access the Project haul road and the Hansen Gravel Road (for processing), the County's road shoulders in these locations at You Bet Road will likely be impacted. Please evaluate this impact and provide mitigation as necessary, which could include documentation of the shoulder prior to the project and repair of the shoulder as needed on an ongoing basis. Additionally, the County recommends that the contractor be responsible for ensuring that gravel, sand, soil, and other

debris from the project site is removed promptly from the County roadbed and shoulders for the life of project operations.

4. Sight Distance: The EIR should address the available sight distance for project traffic egressing from the staging area/haul road onto You Bet Road or the Hansen Gravel Road and provide any mitigation necessary to remedy any sight distance issues to County standards.

5. Staging Area 1: It appears from a review of NOP Map 2 and Record of Survey 12-52 that Staging Area 1 may be located within the County right of way (ROW). No permanent structures, improvements, or staging are typically permitted in the County ROW. Please clarify how Staging Area 1 will be used and whether it is in the ROW. Be advised that if there are temporary uses of the ROW or construction for project improvements (such as driveway improvements) that must occur for the project, an encroachment permit would be required.

If you have any questions, please contact me at 265-1254 or Jessica.Hankins@co.nevada.ca.us.

Sincerely,

Jessica Hankins
Public Works Project Manager

APPENDIX B

Air Quality Emissions Modeling

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Greenhorn Sed Removal at Rollins Reservoir - 50k

Nevada County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.00	Acre	3.00	130,680.00	0
User Defined Recreational	49.70	User Defined Unit	49.70	2,164,932.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	80
Climate Zone	1			**Operational Year**	2020
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

Greenhorn Sed Removal at Rollins Reservoir - 50k - Nevada County, Summer

Project Characteristics - The construction emissions represents the operational emissions since the project will be implemented annually as maintenance.

Land Use - Acreage taken from CEQA Project Description for areas of disturbance.

Construction Phase - Construction details based on CEQA Project Description information. Sorting and Offsite Transport are split into two separate construction phases while Channelizing Creek Bed and Excavate Dewatering Channel are combined.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - No construction equipment usage. Haul trip only during this phase.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Trips and VMT - Assumptions: 20 haul trips to mobilize/demobilize equipment, ~3,333 haul trips to remove 50k tons of sediment with 15 ton capacity truck, 6 daily vendor trips, and 6 workers will commute daily averaging 40 miles roundtrip.

On-road Fugitive Dust - The only known unpaved road is the road entering into the site from You Bet Road.

Grading -

Energy Use -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	40.00	131.00
tblConstructionPhase	NumDays	40.00	9.00
tblConstructionPhase	NumDays	110.00	6.00
tblConstructionPhase	NumDays	110.00	9.00
tblConstructionPhase	NumDays	40.00	105.00
tblConstructionPhase	NumDays	40.00	105.00

Greenhorn Sed Removal at Rollins Reservoir - 50k - Nevada County, Summer

tblConstructionPhase	NumDays	110.00	105.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblLandUse	LandUseSquareFeet	0.00	2,164,932.00
tblLandUse	LotAcreage	0.00	49.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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tblOffRoadEquipment	PhaseName		Site Preparation-Sediment Stockpiling
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Site Preparation-Sediment Stockpiling
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Grading-New Haul Road
tblOffRoadEquipment	PhaseName		Grading-Channelize Creek and Excavate Channel
tblOffRoadEquipment	PhaseName		Site Preparation-Sediment Stockpiling
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
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tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,333.00

tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	6.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00

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					
2019	6.7813	81.9920	55.7694	0.1457	52.6082	3.2016	55.8098	5.5159	3.0092	8.5252	0.0000	14,641.1669	14,641.1669	2.4930	0.0000	14,703.4907
Maximum	**6.7813**	**81.9920**	**55.7694**	**0.1457**	**52.6082**	**3.2016**	**55.8098**	**5.5159**	**3.0092**	**8.5252**	**0.0000**	**14,641.1669**	**14,641.1669**	**2.4930**	**0.0000**	**14,703.4907**

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					
2019	6.7813	81.9920	55.7694	0.1457	32.3220	3.2016	35.5236	3.4757	3.0092	6.4849	0.0000	14,641.1669	14,641.1669	2.4930	0.0000	14,703.4907
Maximum	**6.7813**	**81.9920**	**55.7694**	**0.1457**	**32.3220**	**3.2016**	**35.5236**	**3.4757**	**3.0092**	**6.4849**	**0.0000**	**14,641.1669**	**14,641.1669**	**2.4930**	**0.0000**	**14,703.4907**

	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**	**38.56**	**0.00**	**36.35**	**36.99**	**0.00**	**23.93**	**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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
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	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
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	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

	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	Site Preparation-Sorting	Site Preparation	7/1/2019	11/29/2019	6	131	Phase 2 Sorting
2	Site Preparation-Mobilization	Site Preparation	7/1/2019	7/10/2019	6	9	Phase 1 Mobilization
3	Grading-New Haul Road	Grading	7/15/2019	7/20/2019	6	6	Phase 1 Establish New Haul Road
4	Grading-Channelize Creek and Excavate Channel	Grading	7/21/2019	7/31/2019	6	9	Phase 1 Channelize Creek Bed and Excavate Dewatering Channel
5	Site Preparation-Sediment Stockpiling	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Transport to Stockpile
6	Site Preparation-Offsite Transport	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Offsite Transport
7	Grading-Conduct Sediment Removal	Grading	8/1/2019	11/30/2019	6	105	Phase 2 Conduct Sediment Removal
8	Site Preparation-Demobilization	Site Preparation	11/15/2019	12/31/2019	6	40	Phase 3 Demobilization

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation-Sorting	Crushing/Proc. Equipment	1	8.00	85	0.78

Greenhorn Sed Removal at Rollins Reservoir - 50k - Nevada County, Summer

Site Preparation-Sorting	Dumpers/Tenders	1	8.00	16	0.38
Site Preparation-Sorting	Excavators	1	8.00	158	0.38
Site Preparation-Sorting	Generator Sets	2	8.00	84	0.74
Site Preparation-Sorting	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation-Sorting	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation-Mobilization	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Mobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading-New Haul Road	Crawler Tractors	1	8.00	212	0.43
Grading-New Haul Road	Excavators	1	8.00	158	0.38
Grading-New Haul Road	Graders	0	0.00	187	0.41
Grading-New Haul Road	Rollers	2	8.00	80	0.38
Grading-New Haul Road	Rubber Tired Dozers	0	0.00	247	0.40
Grading-New Haul Road	Scrapers	2	8.00	367	0.48
Grading-New Haul Road	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading-Channelize Creek and Excavate Channel	Excavators	3	8.00	158	0.38
Grading-Channelize Creek and Excavate Channel	Graders	0	0.00	187	0.41
Grading-Channelize Creek and Excavate Channel	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Channelize Creek and Excavate Channel	Scrapers	0	0.00	367	0.48
Grading-Channelize Creek and Excavate Channel	Skid Steer Loaders	1	8.00	65	0.37
Grading-Channelize Creek and Excavate Channel	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Sediment Stockpiling	Crawler Tractors	1	8.00	212	0.43
Site Preparation-Sediment Stockpiling	Excavators	1	8.00	158	0.38
Site Preparation-Sediment Stockpiling	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Sediment Stockpiling	Skid Steer Loaders	1	8.00	65	0.37
Site Preparation-Sediment Stockpiling	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation-Offsite Transport	Rubber Tired Dozers	0	0.00	247	0.40

Site Preparation-Offsite Transport	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading-Conduct Sediment Removal	Excavators	2	8.00	158	0.38
Grading-Conduct Sediment Removal	Graders	0	0.00	187	0.41
Grading-Conduct Sediment Removal	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Conduct Sediment Removal	Scrapers	2	8.00	367	0.48
Grading-Conduct Sediment Removal	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Demobilization	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Demobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37

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
Site Preparation-Sorting	5	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Mobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-New Haul Road	9	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading-Channelize Creek and Excavate C	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Sediment Stockpiling	4	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Offsite Transport	0	0.00	0.00	3,333.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-Conduct Sediment Removal	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Demobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation-Sorting - 2019

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	1.8292	14.8473	15.3323	0.0261		0.8807	0.8807		0.8704	0.8704		2,482.6652	2,482.6652	0.3010		2,490.1896
Total	**1.8292**	**14.8473**	**15.3323**	**0.0261**	**0.0000**	**0.8807**	**0.8807**	**0.0000**	**0.8704**	**0.8704**		**2,482.6652**	**2,482.6652**	**0.3010**		**2,490.1896**

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	0.0000	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
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	0.0000	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**

3.2 Site Preparation-Sorting - 2019

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	1.8292	14.8473	15.3323	0.0261		0.8807	0.8807		0.8704	0.8704	0.0000	2,482.6651	2,482.6651	0.3010		2,490.1896
Total	**1.8292**	**14.8473**	**15.3323**	**0.0261**	**0.0000**	**0.8807**	**0.8807**	**0.0000**	**0.8704**	**0.8704**	**0.0000**	**2,482.6651**	**2,482.6651**	**0.3010**		**2,490.1896**

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	0.0000	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
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	0.0000	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**

3.3 Site Preparation-Mobilization - 2019

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	0.0000	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**

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	0.0338	1.0748	0.1731	3.3500e-003	0.0778	5.6900e-003	0.0835	0.0213	5.4400e-003	0.0268		352.2569	352.2569	9.2400e-003		352.4880
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	0.0000	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	**0.0338**	**1.0748**	**0.1731**	**3.3500e-003**	**0.0778**	**5.6900e-003**	**0.0835**	**0.0213**	**5.4400e-003**	**0.0268**		**352.2569**	**352.2569**	**9.2400e-003**		**352.4880**

3.3 Site Preparation-Mobilization - 2019

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	0.0000	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**		**0.0000**

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	0.0338	1.0748	0.1731	3.3500e-003	0.0778	5.6900e-003	0.0835	0.0213	5.4400e-003	0.0268		352.2569	352.2569	9.2400e-003		352.4880
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	0.0000	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	**0.0338**	**1.0748**	**0.1731**	**3.3500e-003**	**0.0778**	**5.6900e-003**	**0.0835**	**0.0213**	**5.4400e-003**	**0.0268**		**352.2569**	**352.2569**	**9.2400e-003**		**352.4880**

3.4 Grading-New Haul Road - 2019

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					2.6513	0.0000	2.6513	0.2863	0.0000	0.2863			0.0000			0.0000
Off-Road	4.1531	47.9975	32.6883	0.0579		2.2056	2.2056		2.0291	2.0291		5,730.0306	5,730.0306	1.8129		5,775.3536
Total	**4.1531**	**47.9975**	**32.6883**	**0.0579**	**2.6513**	**2.2056**	**4.8568**	**0.2863**	**2.0291**	**2.3154**		**5,730.0306**	**5,730.0306**	**1.8129**		**5,775.3536**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	3.6416	0.0160	3.6576	0.3840	0.0153	0.3994		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**10.8848**	**0.0172**	**10.9020**	**1.1365**	**0.0164**	**1.1529**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.4 Grading-New Haul Road - 2019

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					1.1931	0.0000	1.1931	0.1288	0.0000	0.1288			0.0000			0.0000
Off-Road	4.1531	47.9975	32.6883	0.0579		2.2056	2.2056		2.0291	2.0291	0.0000	5,730.0306	5,730.0306	1.8129		5,775.3536
Total	**4.1531**	**47.9975**	**32.6883**	**0.0579**	**1.1931**	**2.2056**	**3.3986**	**0.1288**	**2.0291**	**2.1579**	**0.0000**	**5,730.0306**	**5,730.0306**	**1.8129**		**5,775.3536**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	2.2720	0.0160	2.2880	0.2471	0.0153	0.2624		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**6.7762**	**0.0172**	**6.7934**	**0.7256**	**0.0164**	**0.7421**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	1.3324	13.8469	15.7851	0.0238		0.7517	0.7517		0.6916	0.6916		2,353.0731	2,353.0731	0.7445		2,371.6853
Total	**1.3324**	**13.8469**	**15.7851**	**0.0238**	**0.0000**	**0.7517**	**0.7517**	**0.0000**	**0.6916**	**0.6916**		**2,353.0731**	**2,353.0731**	**0.7445**		**2,371.6853**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	3.6416	0.0160	3.6576	0.3840	0.0153	0.3994		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**10.8848**	**0.0172**	**10.9020**	**1.1365**	**0.0164**	**1.1529**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	1.3324	13.8469	15.7851	0.0238		0.7517	0.7517		0.6916	0.6916	0.0000	2,353.0731	2,353.0731	0.7445		2,371.6853
Total	**1.3324**	**13.8469**	**15.7851**	**0.0238**	**0.0000**	**0.7517**	**0.7517**	**0.0000**	**0.6916**	**0.6916**	**0.0000**	**2,353.0731**	**2,353.0731**	**0.7445**		**2,371.6853**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	2.2720	0.0160	2.2880	0.2471	0.0153	0.2624		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**6.7762**	**0.0172**	**6.7934**	**0.7256**	**0.0164**	**0.7421**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	1.1884	14.1399	9.5357	0.0182		0.6385	0.6385		0.5874	0.5874		1,800.5631	1,800.5631	0.5697		1,814.8050
Total	**1.1884**	**14.1399**	**9.5357**	**0.0182**	**0.5303**	**0.6385**	**1.1687**	**0.0573**	**0.5874**	**0.6446**		**1,800.5631**	**1,800.5631**	**0.5697**		**1,814.8050**

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	0.0000	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
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	0.0000	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**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	1.1884	14.1399	9.5357	0.0182		0.6385	0.6385		0.5874	0.5874	0.0000	1,800.5631	1,800.5631	0.5697		1,814.8050
Total	**1.1884**	**14.1399**	**9.5357**	**0.0182**	**0.2386**	**0.6385**	**0.8771**	**0.0258**	**0.5874**	**0.6131**	**0.0000**	**1,800.5631**	**1,800.5631**	**0.5697**		**1,814.8050**

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	0.0000	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
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	0.0000	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**

3.7 Site Preparation-Offsite Transport - 2019

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	0.0000	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**

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	0.4829	15.3522	2.4725	0.0479	38.4662	0.0812	38.5474	4.0297	0.0777	4.1074		5,031.7385	5,031.7385	0.1320		5,035.0395
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	0.0000	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	**0.4829**	**15.3522**	**2.4725**	**0.0479**	**38.4662**	**0.0812**	**38.5474**	**4.0297**	**0.0777**	**4.1074**		**5,031.7385**	**5,031.7385**	**0.1320**		**5,035.0395**

3.7 Site Preparation-Offsite Transport - 2019

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	0.0000	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**		**0.0000**

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	0.4829	15.3522	2.4725	0.0479	23.9751	0.0812	24.0563	2.5806	0.0777	2.6583		5,031.7385	5,031.7385	0.1320		5,035.0395
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	0.0000	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	**0.4829**	**15.3522**	**2.4725**	**0.0479**	**23.9751**	**0.0812**	**24.0563**	**2.5806**	**0.0777**	**2.6583**		**5,031.7385**	**5,031.7385**	**0.1320**		**5,035.0395**

3.8 Grading-Conduct Sediment Removal - 2019

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					2.1210	0.0000	2.1210	0.2290	0.0000	0.2290			0.0000			0.0000
Off-Road	3.1176	35.8662	27.2546	0.0468		1.5828	1.5828		1.4561	1.4561		4,636.9639	4,636.9639	1.4671		4,673.6410
Total	**3.1176**	**35.8662**	**27.2546**	**0.0468**	**2.1210**	**1.5828**	**3.7038**	**0.2290**	**1.4561**	**1.6852**		**4,636.9639**	**4,636.9639**	**1.4671**		**4,673.6410**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	3.6416	0.0160	3.6576	0.3840	0.0153	0.3994		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**10.8848**	**0.0172**	**10.9020**	**1.1365**	**0.0164**	**1.1529**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.8 Grading-Conduct Sediment Removal - 2019

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					0.9545	0.0000	0.9545	0.1031	0.0000	0.1031			0.0000			0.0000
Off-Road	3.1176	35.8662	27.2546	0.0468		1.5828	1.5828		1.4561	1.4561	0.0000	4,636.9639	4,636.9639	1.4671		4,673.6410
Total	**3.1176**	**35.8662**	**27.2546**	**0.0468**	**0.9545**	**1.5828**	**2.5372**	**0.1031**	**1.4561**	**1.5592**	**0.0000**	**4,636.9639**	**4,636.9639**	**1.4671**		**4,673.6410**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	2.2720	0.0160	2.2880	0.2471	0.0153	0.2624		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**6.7762**	**0.0172**	**6.7934**	**0.7256**	**0.0164**	**0.7421**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.9 Site Preparation-Demobilization - 2019

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	0.0000	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**

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	7.6100e-003	0.2418	0.0390	7.5000e-004	0.6059	1.2800e-003	0.6072	0.0635	1.2200e-003	0.0647		79.2578	79.2578	2.0800e-003		79.3098
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	0.0000	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	**7.6100e-003**	**0.2418**	**0.0390**	**7.5000e-004**	**0.6059**	**1.2800e-003**	**0.6072**	**0.0635**	**1.2200e-003**	**0.0647**		**79.2578**	**79.2578**	**2.0800e-003**		**79.3098**

3.9 Site Preparation-Demobilization - 2019

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	0.0000	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**		**0.0000**

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	7.6100e-003	0.2418	0.0390	7.5000e-004	0.3777	1.2800e-003	0.3789	0.0407	1.2200e-003	0.0419		79.2578	79.2578	2.0800e-003		79.3098
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	0.0000	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	**7.6100e-003**	**0.2418**	**0.0390**	**7.5000e-004**	**0.3777**	**1.2800e-003**	**0.3789**	**0.0407**	**1.2200e-003**	**0.0419**		**79.2578**	**79.2578**	**2.0800e-003**		**79.3098**

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
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
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
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
User Defined Recreational	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901
User Defined Recreational	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901

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					
Other Non-Asphalt Surfaces	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
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**

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					
Other Non-Asphalt Surfaces	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
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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Unmitigated	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123

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	13.7707					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.3758					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.1000e-004	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Total	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**		**0.0123**

6.2 Area by SubCategory

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					
Architectural Coating	13.7707					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.3758					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.1000e-004	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Total	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**		**0.0123**

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 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Greenhorn Sed Removal at Rollins Reservoir - 50k

Nevada County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.00	Acre	3.00	130,680.00	0
User Defined Recreational	49.70	User Defined Unit	49.70	2,164,932.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	80
Climate Zone	1			**Operational Year**	2020
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

Greenhorn Sed Removal at Rollins Reservoir - 50k - Nevada County, Winter

Project Characteristics - The construction emissions represents the operational emissions since the project will be implemented annually as maintenance.

Land Use - Acreage taken from CEQA Project Description for areas of disturbance.

Construction Phase - Construction details based on CEQA Project Description information. Sorting and Offsite Transport are split into two separate construction phases while Channelizing Creek Bed and Excavate Dewatering Channel are combined.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - No construction equipment usage. Haul trip only during this phase.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Trips and VMT - Assumptions: 20 haul trips to mobilize/demobilize equipment, ~3,333 haul trips to remove 50k tons of sediment with 15 ton capacity truck, 6 daily vendor trips, and 6 workers will commute daily averaging 40 miles roundtrip.

On-road Fugitive Dust - The only known unpaved road is the road entering into the site from You Bet Road.

Grading -

Energy Use -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	40.00	131.00
tblConstructionPhase	NumDays	40.00	9.00
tblConstructionPhase	NumDays	110.00	6.00
tblConstructionPhase	NumDays	110.00	9.00
tblConstructionPhase	NumDays	40.00	105.00
tblConstructionPhase	NumDays	40.00	105.00

Greenhorn Sed Removal at Rollins Reservoir - 50k - Nevada County, Winter

tblConstructionPhase	NumDays	110.00	105.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblLandUse	LandUseSquareFeet	0.00	2,164,932.00
tblLandUse	LotAcreage	0.00	49.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Grading-New Haul Road
tblOffRoadEquipment	PhaseName		Site Preparation-Sediment Stockpiling
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Site Preparation-Sediment Stockpiling
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Grading-New Haul Road
tblOffRoadEquipment	PhaseName		Grading-Channelize Creek and Excavate Channel
tblOffRoadEquipment	PhaseName		Site Preparation-Sediment Stockpiling
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,333.00

tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	6.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00

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					
2019	6.8069	82.6757	55.9373	0.1448	52.6082	3.2027	55.8109	5.5159	3.0103	8.5262	0.0000	14,551.9651	14,551.9651	2.5079	0.0000	14,614.6614
Maximum	**6.8069**	**82.6757**	**55.9373**	**0.1448**	**52.6082**	**3.2027**	**55.8109**	**5.5159**	**3.0103**	**8.5262**	**0.0000**	**14,551.9651**	**14,551.9651**	**2.5079**	**0.0000**	**14,614.6614**

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					
2019	6.8069	82.6757	55.9373	0.1448	32.3220	3.2027	35.5247	3.4757	3.0103	6.4859	0.0000	14,551.9651	14,551.9651	2.5079	0.0000	14,614.6614
Maximum	**6.8069**	**82.6757**	**55.9373**	**0.1448**	**32.3220**	**3.2027**	**35.5247**	**3.4757**	**3.0103**	**6.4859**	**0.0000**	**14,551.9651**	**14,551.9651**	**2.5079**	**0.0000**	**14,614.6614**

	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**	**38.56**	**0.00**	**36.35**	**36.99**	**0.00**	**23.93**	**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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
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	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
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	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

	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	Site Preparation-Sorting	Site Preparation	7/1/2019	11/29/2019	6	131	Phase 2 Sorting
2	Site Preparation-Mobilization	Site Preparation	7/1/2019	7/10/2019	6	9	Phase 1 Mobilization
3	Grading-New Haul Road	Grading	7/15/2019	7/20/2019	6	6	Phase 1 Establish New Haul Road
4	Grading-Channelize Creek and Excavate Channel	Grading	7/21/2019	7/31/2019	6	9	Phase 1 Channelize Creek Bed and Excavate Dewatering Channel
5	Site Preparation-Sediment Stockpiling	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Transport to Stockpile
6	Site Preparation-Offsite Transport	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Offsite Transport
7	Grading-Conduct Sediment Removal	Grading	8/1/2019	11/30/2019	6	105	Phase 2 Conduct Sediment Removal
8	Site Preparation-Demobilization	Site Preparation	11/15/2019	12/31/2019	6	40	Phase 3 Demobilization

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation-Sorting	Crushing/Proc. Equipment	1	8.00	85	0.78

Site Preparation-Sorting	Dumpers/Tenders	1	8.00	16	0.38
Site Preparation-Sorting	Excavators	1	8.00	158	0.38
Site Preparation-Sorting	Generator Sets	2	8.00	84	0.74
Site Preparation-Sorting	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation-Sorting	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation-Mobilization	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Mobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading-New Haul Road	Crawler Tractors	1	8.00	212	0.43
Grading-New Haul Road	Excavators	1	8.00	158	0.38
Grading-New Haul Road	Graders	0	0.00	187	0.41
Grading-New Haul Road	Rollers	2	8.00	80	0.38
Grading-New Haul Road	Rubber Tired Dozers	0	0.00	247	0.40
Grading-New Haul Road	Scrapers	2	8.00	367	0.48
Grading-New Haul Road	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading-Channelize Creek and Excavate Channel	Excavators	3	8.00	158	0.38
Grading-Channelize Creek and Excavate Channel	Graders	0	0.00	187	0.41
Grading-Channelize Creek and Excavate Channel	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Channelize Creek and Excavate Channel	Scrapers	0	0.00	367	0.48
Grading-Channelize Creek and Excavate Channel	Skid Steer Loaders	1	8.00	65	0.37
Grading-Channelize Creek and Excavate Channel	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Sediment Stockpiling	Crawler Tractors	1	8.00	212	0.43
Site Preparation-Sediment Stockpiling	Excavators	1	8.00	158	0.38
Site Preparation-Sediment Stockpiling	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Sediment Stockpiling	Skid Steer Loaders	1	8.00	65	0.37
Site Preparation-Sediment Stockpiling	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation-Offsite Transport	Rubber Tired Dozers	0	0.00	247	0.40

Site Preparation-Offsite Transport	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading-Conduct Sediment Removal	Excavators	2	8.00	158	0.38
Grading-Conduct Sediment Removal	Graders	0	0.00	187	0.41
Grading-Conduct Sediment Removal	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Conduct Sediment Removal	Scrapers	2	8.00	367	0.48
Grading-Conduct Sediment Removal	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Demobilization	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Demobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37

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
Site Preparation-Sorting	5	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Mobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-New Haul Road	9	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading-Channelize Creek and Excavate C	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Sediment Stockpiling	4	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Offsite Transport	0	0.00	0.00	3,333.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-Conduct Sediment Removal	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Demobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation-Sorting - 2019

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	1.8292	14.8473	15.3323	0.0261		0.8807	0.8807		0.8704	0.8704		2,482.6652	2,482.6652	0.3010		2,490.1896
Total	**1.8292**	**14.8473**	**15.3323**	**0.0261**	**0.0000**	**0.8807**	**0.8807**	**0.0000**	**0.8704**	**0.8704**		**2,482.6652**	**2,482.6652**	**0.3010**		**2,490.1896**

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	0.0000	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
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	0.0000	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**

3.2 Site Preparation-Sorting - 2019

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	1.8292	14.8473	15.3323	0.0261		0.8807	0.8807		0.8704	0.8704	0.0000	2,482.6651	2,482.6651	0.3010		2,490.1896
Total	**1.8292**	**14.8473**	**15.3323**	**0.0261**	**0.0000**	**0.8807**	**0.8807**	**0.0000**	**0.8704**	**0.8704**	**0.0000**	**2,482.6651**	**2,482.6651**	**0.3010**		**2,490.1896**

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	0.0000	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
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	0.0000	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**

3.3 Site Preparation-Mobilization - 2019

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	0.0000	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**

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	0.0346	1.1165	0.1872	3.3100e-003	0.0778	5.7500e-003	0.0835	0.0213	5.5000e-003	0.0268		347.5840	347.5840	0.0102		347.8394
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	0.0000	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	**0.0346**	**1.1165**	**0.1872**	**3.3100e-003**	**0.0778**	**5.7500e-003**	**0.0835**	**0.0213**	**5.5000e-003**	**0.0268**		**347.5840**	**347.5840**	**0.0102**		**347.8394**

3.3 Site Preparation-Mobilization - 2019

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	0.0000	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**		**0.0000**

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	0.0346	1.1165	0.1872	3.3100e-003	0.0778	5.7500e-003	0.0835	0.0213	5.5000e-003	0.0268		347.5840	347.5840	0.0102		347.8394
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	0.0000	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	**0.0346**	**1.1165**	**0.1872**	**3.3100e-003**	**0.0778**	**5.7500e-003**	**0.0835**	**0.0213**	**5.5000e-003**	**0.0268**		**347.5840**	**347.5840**	**0.0102**		**347.8394**

3.4 Grading-New Haul Road - 2019

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					2.6513	0.0000	2.6513	0.2863	0.0000	0.2863			0.0000			0.0000
Off-Road	4.1531	47.9975	32.6883	0.0579		2.2056	2.2056		2.0291	2.0291		5,730.0306	5,730.0306	1.8129		5,775.3536
Total	**4.1531**	**47.9975**	**32.6883**	**0.0579**	**2.6513**	**2.2056**	**4.8568**	**0.2863**	**2.0291**	**2.3154**		**5,730.0306**	**5,730.0306**	**1.8129**		**5,775.3536**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	3.6416	0.0161	3.6577	0.3840	0.0154	0.3995		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**10.8848**	**0.0173**	**10.9021**	**1.1365**	**0.0165**	**1.1530**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.4 Grading-New Haul Road - 2019

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					1.1931	0.0000	1.1931	0.1288	0.0000	0.1288			0.0000			0.0000
Off-Road	4.1531	47.9975	32.6883	0.0579		2.2056	2.2056		2.0291	2.0291	0.0000	5,730.0306	5,730.0306	1.8129		5,775.3536
Total	**4.1531**	**47.9975**	**32.6883**	**0.0579**	**1.1931**	**2.2056**	**3.3986**	**0.1288**	**2.0291**	**2.1579**	**0.0000**	**5,730.0306**	**5,730.0306**	**1.8129**		**5,775.3536**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	2.2720	0.0161	2.2881	0.2471	0.0154	0.2625		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**6.7762**	**0.0173**	**6.7935**	**0.7256**	**0.0165**	**0.7422**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	1.3324	13.8469	15.7851	0.0238		0.7517	0.7517		0.6916	0.6916		2,353.0731	2,353.0731	0.7445		2,371.6853
Total	**1.3324**	**13.8469**	**15.7851**	**0.0238**	**0.0000**	**0.7517**	**0.7517**	**0.0000**	**0.6916**	**0.6916**		**2,353.0731**	**2,353.0731**	**0.7445**		**2,371.6853**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	3.6416	0.0161	3.6577	0.3840	0.0154	0.3995		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**10.8848**	**0.0173**	**10.9021**	**1.1365**	**0.0165**	**1.1530**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	1.3324	13.8469	15.7851	0.0238		0.7517	0.7517		0.6916	0.6916	0.0000	2,353.0731	2,353.0731	0.7445		2,371.6853
Total	**1.3324**	**13.8469**	**15.7851**	**0.0238**	**0.0000**	**0.7517**	**0.7517**	**0.0000**	**0.6916**	**0.6916**	**0.0000**	**2,353.0731**	**2,353.0731**	**0.7445**		**2,371.6853**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	2.2720	0.0161	2.2881	0.2471	0.0154	0.2625		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**6.7762**	**0.0173**	**6.7935**	**0.7256**	**0.0165**	**0.7422**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	1.1884	14.1399	9.5357	0.0182		0.6385	0.6385		0.5874	0.5874		1,800.5631	1,800.5631	0.5697		1,814.8050
Total	**1.1884**	**14.1399**	**9.5357**	**0.0182**	**0.5303**	**0.6385**	**1.1687**	**0.0573**	**0.5874**	**0.6446**		**1,800.5631**	**1,800.5631**	**0.5697**		**1,814.8050**

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	0.0000	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
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	0.0000	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**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	1.1884	14.1399	9.5357	0.0182		0.6385	0.6385		0.5874	0.5874	0.0000	1,800.5631	1,800.5631	0.5697		1,814.8050
Total	**1.1884**	**14.1399**	**9.5357**	**0.0182**	**0.2386**	**0.6385**	**0.8771**	**0.0258**	**0.5874**	**0.6131**	**0.0000**	**1,800.5631**	**1,800.5631**	**0.5697**		**1,814.8050**

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	0.0000	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
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	0.0000	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**

3.7 Site Preparation-Offsite Transport - 2019

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	0.0000	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**

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	0.4937	15.9477	2.6740	0.0473	38.4662	0.0822	38.5484	4.0297	0.0786	4.1083		4,964.9886	4,964.9886	0.1460		4,968.6374
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	0.0000	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	**0.4937**	**15.9477**	**2.6740**	**0.0473**	**38.4662**	**0.0822**	**38.5484**	**4.0297**	**0.0786**	**4.1083**		**4,964.9886**	**4,964.9886**	**0.1460**		**4,968.6374**

3.7 Site Preparation-Offsite Transport - 2019

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	0.0000	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**		**0.0000**

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	0.4937	15.9477	2.6740	0.0473	23.9751	0.0822	24.0573	2.5806	0.0786	2.6592		4,964.9886	4,964.9886	0.1460		4,968.6374
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	0.0000	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	**0.4937**	**15.9477**	**2.6740**	**0.0473**	**23.9751**	**0.0822**	**24.0573**	**2.5806**	**0.0786**	**2.6592**		**4,964.9886**	**4,964.9886**	**0.1460**		**4,968.6374**

3.8 Grading-Conduct Sediment Removal - 2019

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					2.1210	0.0000	2.1210	0.2290	0.0000	0.2290			0.0000			0.0000
Off-Road	3.1176	35.8662	27.2546	0.0468		1.5828	1.5828		1.4561	1.4561		4,636.9639	4,636.9639	1.4671		4,673.6410
Total	**3.1176**	**35.8662**	**27.2546**	**0.0468**	**2.1210**	**1.5828**	**3.7038**	**0.2290**	**1.4561**	**1.6852**		**4,636.9639**	**4,636.9639**	**1.4671**		**4,673.6410**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	3.6416	0.0161	3.6577	0.3840	0.0154	0.3995		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**10.8848**	**0.0173**	**10.9021**	**1.1365**	**0.0165**	**1.1530**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.8 Grading-Conduct Sediment Removal - 2019

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					0.9545	0.0000	0.9545	0.1031	0.0000	0.1031			0.0000			0.0000
Off-Road	3.1176	35.8662	27.2546	0.0468		1.5828	1.5828		1.4561	1.4561	0.0000	4,636.9639	4,636.9639	1.4671		4,673.6410
Total	**3.1176**	**35.8662**	**27.2546**	**0.0468**	**0.9545**	**1.5828**	**2.5372**	**0.1031**	**1.4561**	**1.5592**	**0.0000**	**4,636.9639**	**4,636.9639**	**1.4671**		**4,673.6410**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	2.2720	0.0161	2.2881	0.2471	0.0154	0.2625		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**6.7762**	**0.0173**	**6.7935**	**0.7256**	**0.0165**	**0.7422**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.9 Site Preparation-Demobilization - 2019

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	0.0000	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**

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	7.7800e-003	0.2512	0.0421	7.4000e-004	0.6059	1.2900e-003	0.6072	0.0635	1.2400e-003	0.0647		78.2064	78.2064	2.3000e-003		78.2639
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	0.0000	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	**7.7800e-003**	**0.2512**	**0.0421**	**7.4000e-004**	**0.6059**	**1.2900e-003**	**0.6072**	**0.0635**	**1.2400e-003**	**0.0647**		**78.2064**	**78.2064**	**2.3000e-003**		**78.2639**

3.9 Site Preparation-Demobilization - 2019

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	0.0000	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**		**0.0000**

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	7.7800e-003	0.2512	0.0421	7.4000e-004	0.3777	1.2900e-003	0.3789	0.0407	1.2400e-003	0.0419		78.2064	78.2064	2.3000e-003		78.2639
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	0.0000	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	**7.7800e-003**	**0.2512**	**0.0421**	**7.4000e-004**	**0.3777**	**1.2900e-003**	**0.3789**	**0.0407**	**1.2400e-003**	**0.0419**		**78.2064**	**78.2064**	**2.3000e-003**		**78.2639**

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
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
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
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
User Defined Recreational	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901
User Defined Recreational	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901

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					
Other Non-Asphalt Surfaces	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
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**

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					
Other Non-Asphalt Surfaces	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
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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Unmitigated	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123

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	13.7707					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.3758					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.1000e-004	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Total	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**		**0.0123**

6.2 Area by SubCategory

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					
Architectural Coating	13.7707					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.3758					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.1000e-004	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Total	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**		**0.0123**

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 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Greenhorn Sed Removal at Rollins Reservoir - 200k

Nevada County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.00	Acre	3.00	130,680.00	0
User Defined Recreational	49.70	User Defined Unit	49.70	2,164,932.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	80
Climate Zone	1			**Operational Year**	2020
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

Greenhorn Sed Removal at Rollins Reservoir - 200k - Nevada County, Summer

Project Characteristics - The construction emissions represents the operational emissions since the project will be implemented annually as maintenance.

Land Use - Acreage taken from CEQA Project Description for areas of disturbance.

Construction Phase - Construction details based on CEQA Project Description information. Sorting and Offsite Transport are split into two separate construction phases while Channelizing Creek Bed and Excavate Dewatering Channel are combined.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - No construction equipment usage. Haul trip only during this phase.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Trips and VMT - Assumptions: 20 haul trips to mobilize/demobilize equipment, ~13,333 haul trips to remove 200k tons of sediment with 15 ton capacity truck, 6 daily vendor trips, and 6 workers will commute daily averaging 40 miles roundtrip.

On-road Fugitive Dust - The only known unpaved road is the road entering into the site from You Bet Road.

Grading -

Energy Use -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	40.00	131.00
tblConstructionPhase	NumDays	40.00	9.00
tblConstructionPhase	NumDays	110.00	6.00
tblConstructionPhase	NumDays	110.00	9.00
tblConstructionPhase	NumDays	40.00	105.00
tblConstructionPhase	NumDays	40.00	105.00

tblConstructionPhase	NumDays	110.00	105.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblLandUse	LandUseSquareFeet	0.00	2,164,932.00
tblLandUse	LotAcreage	0.00	49.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
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tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00

tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	13,333.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	6.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00

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					
2019	8.2301	128.0533	63.1877	0.2894	168.0184	3.4453	171.4637	17.6061	3.2424	20.8485	0.0000	29,737.8921	29,737.8921	2.8891	0.0000	29,810.1200
Maximum	**8.2301**	**128.0533**	**63.1877**	**0.2894**	**168.0184**	**3.4453**	**171.4637**	**17.6061**	**3.2424**	**20.8485**	**0.0000**	**29,737.8921**	**29,737.8921**	**2.8891**	**0.0000**	**29,810.1200**

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					
2019	8.2301	128.0533	63.1877	0.2894	104.2544	3.4453	107.6998	11.2181	3.2424	14.4605	0.0000	29,737.8920	29,737.8920	2.8891	0.0000	29,810.1200
Maximum	**8.2301**	**128.0533**	**63.1877**	**0.2894**	**104.2544**	**3.4453**	**107.6998**	**11.2181**	**3.2424**	**14.4605**	**0.0000**	**29,737.8920**	**29,737.8920**	**2.8891**	**0.0000**	**29,810.1200**

	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**	**37.95**	**0.00**	**37.19**	**36.28**	**0.00**	**30.64**	**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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
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	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
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	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

	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	Site Preparation-Sorting	Site Preparation	7/1/2019	11/29/2019	6	131	Phase 2 Sorting
2	Site Preparation-Mobilization	Site Preparation	7/1/2019	7/10/2019	6	9	Phase 1 Mobilization
3	Grading-New Haul Road	Grading	7/15/2019	7/20/2019	6	6	Phase 1 Establish New Haul Road
4	Grading-Channelize Creek and Excavate Channel	Grading	7/21/2019	7/31/2019	6	9	Phase 1 Channelize Creek Bed and Excavate Dewatering Channel
5	Site Preparation-Sediment Stockpiling	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Transport to Stockpile
6	Site Preparation-Offsite Transport	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Offsite Transport
7	Grading-Conduct Sediment Removal	Grading	8/1/2019	11/30/2019	6	105	Phase 2 Conduct Sediment Removal
8	Site Preparation-Demobilization	Site Preparation	11/15/2019	12/31/2019	6	40	Phase 3 Demobilization

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation-Sorting	Crushing/Proc. Equipment	1	8.00	85	0.78

Greenhorn Sed Removal at Rollins Reservoir - 200k - Nevada County, Summer

Site Preparation-Sorting	Dumpers/Tenders	1	8.00	16	0.38
Site Preparation-Sorting	Excavators	1	8.00	158	0.38
Site Preparation-Sorting	Generator Sets	2	8.00	84	0.74
Site Preparation-Sorting	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation-Sorting	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation-Mobilization	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Mobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading-New Haul Road	Crawler Tractors	1	8.00	212	0.43
Grading-New Haul Road	Excavators	1	8.00	158	0.38
Grading-New Haul Road	Graders	0	0.00	187	0.41
Grading-New Haul Road	Rollers	2	8.00	80	0.38
Grading-New Haul Road	Rubber Tired Dozers	0	0.00	247	0.40
Grading-New Haul Road	Scrapers	2	8.00	367	0.48
Grading-New Haul Road	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading-Channelize Creek and Excavate Channel	Excavators	3	8.00	158	0.38
Grading-Channelize Creek and Excavate Channel	Graders	0	0.00	187	0.41
Grading-Channelize Creek and Excavate Channel	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Channelize Creek and Excavate Channel	Scrapers	0	0.00	367	0.48
Grading-Channelize Creek and Excavate Channel	Skid Steer Loaders	1	8.00	65	0.37
Grading-Channelize Creek and Excavate Channel	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Sediment Stockpiling	Crawler Tractors	1	8.00	212	0.43
Site Preparation-Sediment Stockpiling	Excavators	1	8.00	158	0.38
Site Preparation-Sediment Stockpiling	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Sediment Stockpiling	Skid Steer Loaders	1	8.00	65	0.37
Site Preparation-Sediment Stockpiling	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation-Offsite Transport	Rubber Tired Dozers	0	0.00	247	0.40

Site Preparation-Offsite Transport	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading-Conduct Sediment Removal	Excavators	2	8.00	158	0.38
Grading-Conduct Sediment Removal	Graders	0	0.00	187	0.41
Grading-Conduct Sediment Removal	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Conduct Sediment Removal	Scrapers	2	8.00	367	0.48
Grading-Conduct Sediment Removal	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Demobilization	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Demobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37

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
Site Preparation-Sorting	5	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Mobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-New Haul Road	9	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading-Channelize Creek and Excavate C	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Sediment Stockpiling	4	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Offsite Transport	0	0.00	0.00	13,333.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-Conduct Sediment Removal	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Demobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation-Sorting - 2019

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	1.8292	14.8473	15.3323	0.0261		0.8807	0.8807		0.8704	0.8704		2,482.6652	2,482.6652	0.3010		2,490.1896
Total	**1.8292**	**14.8473**	**15.3323**	**0.0261**	**0.0000**	**0.8807**	**0.8807**	**0.0000**	**0.8704**	**0.8704**		**2,482.6652**	**2,482.6652**	**0.3010**		**2,490.1896**

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	0.0000	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
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	0.0000	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**

3.2 Site Preparation-Sorting - 2019

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	1.8292	14.8473	15.3323	0.0261		0.8807	0.8807		0.8704	0.8704	0.0000	2,482.6651	2,482.6651	0.3010		2,490.1896
Total	**1.8292**	**14.8473**	**15.3323**	**0.0261**	**0.0000**	**0.8807**	**0.8807**	**0.0000**	**0.8704**	**0.8704**	**0.0000**	**2,482.6651**	**2,482.6651**	**0.3010**		**2,490.1896**

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	0.0000	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
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	0.0000	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**

3.3 Site Preparation-Mobilization - 2019

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	0.0000	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**

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	0.0338	1.0748	0.1731	3.3500e-003	0.0778	5.6900e-003	0.0835	0.0213	5.4400e-003	0.0268		352.2569	352.2569	9.2400e-003		352.4880
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	0.0000	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	**0.0338**	**1.0748**	**0.1731**	**3.3500e-003**	**0.0778**	**5.6900e-003**	**0.0835**	**0.0213**	**5.4400e-003**	**0.0268**		**352.2569**	**352.2569**	**9.2400e-003**		**352.4880**

3.3 Site Preparation-Mobilization - 2019

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	0.0000	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**		**0.0000**

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	0.0338	1.0748	0.1731	3.3500e-003	0.0778	5.6900e-003	0.0835	0.0213	5.4400e-003	0.0268		352.2569	352.2569	9.2400e-003		352.4880
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	0.0000	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	**0.0338**	**1.0748**	**0.1731**	**3.3500e-003**	**0.0778**	**5.6900e-003**	**0.0835**	**0.0213**	**5.4400e-003**	**0.0268**		**352.2569**	**352.2569**	**9.2400e-003**		**352.4880**

3.4 Grading-New Haul Road - 2019

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					2.6513	0.0000	2.6513	0.2863	0.0000	0.2863			0.0000			0.0000
Off-Road	4.1531	47.9975	32.6883	0.0579		2.2056	2.2056		2.0291	2.0291		5,730.0306	5,730.0306	1.8129		5,775.3536
Total	**4.1531**	**47.9975**	**32.6883**	**0.0579**	**2.6513**	**2.2056**	**4.8568**	**0.2863**	**2.0291**	**2.3154**		**5,730.0306**	**5,730.0306**	**1.8129**		**5,775.3536**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	3.6416	0.0160	3.6576	0.3840	0.0153	0.3994		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**10.8848**	**0.0172**	**10.9020**	**1.1365**	**0.0164**	**1.1529**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.4 Grading-New Haul Road - 2019

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					1.1931	0.0000	1.1931	0.1288	0.0000	0.1288			0.0000			0.0000
Off-Road	4.1531	47.9975	32.6883	0.0579		2.2056	2.2056		2.0291	2.0291	0.0000	5,730.0306	5,730.0306	1.8129		5,775.3536
Total	**4.1531**	**47.9975**	**32.6883**	**0.0579**	**1.1931**	**2.2056**	**3.3986**	**0.1288**	**2.0291**	**2.1579**	**0.0000**	**5,730.0306**	**5,730.0306**	**1.8129**		**5,775.3536**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	2.2720	0.0160	2.2880	0.2471	0.0153	0.2624		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**6.7762**	**0.0172**	**6.7934**	**0.7256**	**0.0164**	**0.7421**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	1.3324	13.8469	15.7851	0.0238		0.7517	0.7517		0.6916	0.6916		2,353.0731	2,353.0731	0.7445		2,371.6853
Total	**1.3324**	**13.8469**	**15.7851**	**0.0238**	**0.0000**	**0.7517**	**0.7517**	**0.0000**	**0.6916**	**0.6916**		**2,353.0731**	**2,353.0731**	**0.7445**		**2,371.6853**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	3.6416	0.0160	3.6576	0.3840	0.0153	0.3994		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**10.8848**	**0.0172**	**10.9020**	**1.1365**	**0.0164**	**1.1529**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	1.3324	13.8469	15.7851	0.0238		0.7517	0.7517		0.6916	0.6916	0.0000	2,353.0731	2,353.0731	0.7445		2,371.6853
Total	**1.3324**	**13.8469**	**15.7851**	**0.0238**	**0.0000**	**0.7517**	**0.7517**	**0.0000**	**0.6916**	**0.6916**	**0.0000**	**2,353.0731**	**2,353.0731**	**0.7445**		**2,371.6853**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	2.2720	0.0160	2.2880	0.2471	0.0153	0.2624		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**6.7762**	**0.0172**	**6.7934**	**0.7256**	**0.0164**	**0.7421**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	1.1884	14.1399	9.5357	0.0182		0.6385	0.6385		0.5874	0.5874		1,800.5631	1,800.5631	0.5697		1,814.8050
Total	**1.1884**	**14.1399**	**9.5357**	**0.0182**	**0.5303**	**0.6385**	**1.1687**	**0.0573**	**0.5874**	**0.6446**		**1,800.5631**	**1,800.5631**	**0.5697**		**1,814.8050**

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	0.0000	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
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	0.0000	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**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	1.1884	14.1399	9.5357	0.0182		0.6385	0.6385		0.5874	0.5874	0.0000	1,800.5631	1,800.5631	0.5697		1,814.8050
Total	**1.1884**	**14.1399**	**9.5357**	**0.0182**	**0.2386**	**0.6385**	**0.8771**	**0.0258**	**0.5874**	**0.6131**	**0.0000**	**1,800.5631**	**1,800.5631**	**0.5697**		**1,814.8050**

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	0.0000	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
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	0.0000	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**

3.7 Site Preparation-Offsite Transport - 2019

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	0.0000	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**

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	1.9318	61.4136	9.8908	0.1916	153.8764	0.3249	154.2013	16.1199	0.3109	16.4307		20,128.4636	20,128.4636	0.5282		20,141.6688
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	0.0000	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	**1.9318**	**61.4136**	**9.8908**	**0.1916**	**153.8764**	**0.3249**	**154.2013**	**16.1199**	**0.3109**	**16.4307**		**20,128.4636**	**20,128.4636**	**0.5282**		**20,141.6688**

3.7 Site Preparation-Offsite Transport - 2019

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	0.0000	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**		**0.0000**

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	1.9318	61.4136	9.8908	0.1916	95.9076	0.3249	96.2325	10.3230	0.3109	10.6338		20,128.4636	20,128.4636	0.5282		20,141.6688
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	0.0000	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	**1.9318**	**61.4136**	**9.8908**	**0.1916**	**95.9076**	**0.3249**	**96.2325**	**10.3230**	**0.3109**	**10.6338**		**20,128.4636**	**20,128.4636**	**0.5282**		**20,141.6688**

3.8 Grading-Conduct Sediment Removal - 2019

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					2.1210	0.0000	2.1210	0.2290	0.0000	0.2290			0.0000			0.0000
Off-Road	3.1176	35.8662	27.2546	0.0468		1.5828	1.5828		1.4561	1.4561		4,636.9639	4,636.9639	1.4671		4,673.6410
Total	**3.1176**	**35.8662**	**27.2546**	**0.0468**	**2.1210**	**1.5828**	**3.7038**	**0.2290**	**1.4561**	**1.6852**		**4,636.9639**	**4,636.9639**	**1.4671**		**4,673.6410**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	3.6416	0.0160	3.6576	0.3840	0.0153	0.3994		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**10.8848**	**0.0172**	**10.9020**	**1.1365**	**0.0164**	**1.1529**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.8 Grading-Conduct Sediment Removal - 2019

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					0.9545	0.0000	0.9545	0.1031	0.0000	0.1031			0.0000			0.0000
Off-Road	3.1176	35.8662	27.2546	0.0468		1.5828	1.5828		1.4561	1.4561	0.0000	4,636.9639	4,636.9639	1.4671		4,673.6410
Total	**3.1176**	**35.8662**	**27.2546**	**0.0468**	**0.9545**	**1.5828**	**2.5372**	**0.1031**	**1.4561**	**1.5592**	**0.0000**	**4,636.9639**	**4,636.9639**	**1.4671**		**4,673.6410**

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	0.0000	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
Vendor	0.0665	1.4690	0.3297	4.0800e-003	2.2720	0.0160	2.2880	0.2471	0.0153	0.2624		427.2774	427.2774	0.0138		427.6222
Worker	0.0890	0.0757	0.8056	1.8400e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		182.7011	182.7011	7.3000e-003		182.8835
Total	**0.1555**	**1.5446**	**1.1354**	**5.9200e-003**	**6.7762**	**0.0172**	**6.7934**	**0.7256**	**0.0164**	**0.7421**		**609.9785**	**609.9785**	**0.0211**		**610.5057**

3.9 Site Preparation-Demobilization - 2019

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	0.0000	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**

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	7.6100e-003	0.2418	0.0390	7.5000e-004	0.6059	1.2800e-003	0.6072	0.0635	1.2200e-003	0.0647		79.2578	79.2578	2.0800e-003		79.3098
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	0.0000	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	**7.6100e-003**	**0.2418**	**0.0390**	**7.5000e-004**	**0.6059**	**1.2800e-003**	**0.6072**	**0.0635**	**1.2200e-003**	**0.0647**		**79.2578**	**79.2578**	**2.0800e-003**		**79.3098**

3.9 Site Preparation-Demobilization - 2019

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	0.0000	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**		**0.0000**

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	7.6100e-003	0.2418	0.0390	7.5000e-004	0.3777	1.2800e-003	0.3789	0.0407	1.2200e-003	0.0419		79.2578	79.2578	2.0800e-003		79.3098
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	0.0000	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	**7.6100e-003**	**0.2418**	**0.0390**	**7.5000e-004**	**0.3777**	**1.2800e-003**	**0.3789**	**0.0407**	**1.2200e-003**	**0.0419**		**79.2578**	**79.2578**	**2.0800e-003**		**79.3098**

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
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
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
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
User Defined Recreational	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901
User Defined Recreational	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901

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					
Other Non-Asphalt Surfaces	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
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**

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					
Other Non-Asphalt Surfaces	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
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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Unmitigated	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123

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	13.7707					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.3758					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.1000e-004	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Total	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**		**0.0123**

6.2 Area by SubCategory

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					
Architectural Coating	13.7707					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.3758					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.1000e-004	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Total	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**		**0.0123**

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 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Greenhorn Sed Removal at Rollins Reservoir - 200k

Nevada County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.00	Acre	3.00	130,680.00	0
User Defined Recreational	49.70	User Defined Unit	49.70	2,164,932.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	80
Climate Zone	1			**Operational Year**	2020
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

Greenhorn Sed Removal at Rollins Reservoir - 200k - Nevada County, Winter

Project Characteristics - The construction emissions represents the operational emissions since the project will be implemented annually as maintenance.

Land Use - Acreage taken from CEQA Project Description for areas of disturbance.

Construction Phase - Construction details based on CEQA Project Description information. Sorting and Offsite Transport are split into two separate construction phases while Channelizing Creek Bed and Excavate Dewatering Channel are combined.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - No construction equipment usage. Haul trip only during this phase.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Trips and VMT - Assumptions: 20 haul trips to mobilize/demobilize equipment, ~13,333 haul trips to remove 200k tons of sediment with 15 ton capacity truck, 6 daily vendor trips, and 6 workers will commute daily averaging 40 miles roundtrip.

On-road Fugitive Dust - The only known unpaved road is the road entering into the site from You Bet Road.

Grading -

Energy Use -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	40.00	131.00
tblConstructionPhase	NumDays	40.00	9.00
tblConstructionPhase	NumDays	110.00	6.00
tblConstructionPhase	NumDays	110.00	9.00
tblConstructionPhase	NumDays	40.00	105.00
tblConstructionPhase	NumDays	40.00	105.00

Greenhorn Sed Removal at Rollins Reservoir - 200k - Nevada County, Winter

tblConstructionPhase	NumDays	110.00	105.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblLandUse	LandUseSquareFeet	0.00	2,164,932.00
tblLandUse	LotAcreage	0.00	49.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00

tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	13,333.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	6.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00

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					
2019	8.2882	130.5236	63.9600	0.2866	168.0184	3.4493	171.4677	17.6061	3.2462	20.8523	0.0000	29,448.4205	29,448.4205	2.9458	0.0000	29,522.0644
Maximum	**8.2882**	**130.5236**	**63.9600**	**0.2866**	**168.0184**	**3.4493**	**171.4677**	**17.6061**	**3.2462**	**20.8523**	**0.0000**	**29,448.4205**	**29,448.4205**	**2.9458**	**0.0000**	**29,522.0644**

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					
2019	8.2882	130.5236	63.9600	0.2866	104.2544	3.4493	107.7037	11.2181	3.2462	14.4643	0.0000	29,448.4205	29,448.4205	2.9458	0.0000	29,522.0644
Maximum	**8.2882**	**130.5236**	**63.9600**	**0.2866**	**104.2544**	**3.4493**	**107.7037**	**11.2181**	**3.2462**	**14.4643**	**0.0000**	**29,448.4205**	**29,448.4205**	**2.9458**	**0.0000**	**29,522.0644**

	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**	**37.95**	**0.00**	**37.19**	**36.28**	**0.00**	**30.63**	**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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
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	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
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	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**	**0.0000**	**0.0123**

	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	Site Preparation-Sorting	Site Preparation	7/1/2019	11/29/2019	6	131	Phase 2 Sorting
2	Site Preparation-Mobilization	Site Preparation	7/1/2019	7/10/2019	6	9	Phase 1 Mobilization
3	Grading-New Haul Road	Grading	7/15/2019	7/20/2019	6	6	Phase 1 Establish New Haul Road
4	Grading-Channelize Creek and Excavate Channel	Grading	7/21/2019	7/31/2019	6	9	Phase 1 Channelize Creek Bed and Excavate Dewatering Channel
5	Site Preparation-Sediment Stockpiling	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Transport to Stockpile
6	Site Preparation-Offsite Transport	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Offsite Transport
7	Grading-Conduct Sediment Removal	Grading	8/1/2019	11/30/2019	6	105	Phase 2 Conduct Sediment Removal
8	Site Preparation-Demobilization	Site Preparation	11/15/2019	12/31/2019	6	40	Phase 3 Demobilization

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation-Sorting	Crushing/Proc. Equipment	1	8.00	85	0.78

Greenhorn Sed Removal at Rollins Reservoir - 200k - Nevada County, Winter

Site Preparation-Sorting	Dumpers/Tenders	1	8.00	16	0.38
Site Preparation-Sorting	Excavators	1	8.00	158	0.38
Site Preparation-Sorting	Generator Sets	2	8.00	84	0.74
Site Preparation-Sorting	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation-Sorting	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation-Mobilization	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Mobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading-New Haul Road	Crawler Tractors	1	8.00	212	0.43
Grading-New Haul Road	Excavators	1	8.00	158	0.38
Grading-New Haul Road	Graders	0	0.00	187	0.41
Grading-New Haul Road	Rollers	2	8.00	80	0.38
Grading-New Haul Road	Rubber Tired Dozers	0	0.00	247	0.40
Grading-New Haul Road	Scrapers	2	8.00	367	0.48
Grading-New Haul Road	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading-Channelize Creek and Excavate Channel	Excavators	3	8.00	158	0.38
Grading-Channelize Creek and Excavate Channel	Graders	0	0.00	187	0.41
Grading-Channelize Creek and Excavate Channel	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Channelize Creek and Excavate Channel	Scrapers	0	0.00	367	0.48
Grading-Channelize Creek and Excavate Channel	Skid Steer Loaders	1	8.00	65	0.37
Grading-Channelize Creek and Excavate Channel	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Sediment Stockpiling	Crawler Tractors	1	8.00	212	0.43
Site Preparation-Sediment Stockpiling	Excavators	1	8.00	158	0.38
Site Preparation-Sediment Stockpiling	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Sediment Stockpiling	Skid Steer Loaders	1	8.00	65	0.37
Site Preparation-Sediment Stockpiling	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation-Offsite Transport	Rubber Tired Dozers	0	0.00	247	0.40

Site Preparation-Offsite Transport	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading-Conduct Sediment Removal	Excavators	2	8.00	158	0.38
Grading-Conduct Sediment Removal	Graders	0	0.00	187	0.41
Grading-Conduct Sediment Removal	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Conduct Sediment Removal	Scrapers	2	8.00	367	0.48
Grading-Conduct Sediment Removal	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Demobilization	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Demobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37

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
Site Preparation-Sorting	5	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Mobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-New Haul Road	9	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading-Channelize Creek and Excavate C	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Sediment Stockpiling	4	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Offsite Transport	0	0.00	0.00	13,333.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-Conduct Sediment Removal	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Demobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation-Sorting - 2019

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	1.8292	14.8473	15.3323	0.0261		0.8807	0.8807		0.8704	0.8704		2,482.6652	2,482.6652	0.3010		2,490.1896
Total	**1.8292**	**14.8473**	**15.3323**	**0.0261**	**0.0000**	**0.8807**	**0.8807**	**0.0000**	**0.8704**	**0.8704**		**2,482.6652**	**2,482.6652**	**0.3010**		**2,490.1896**

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	0.0000	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
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	0.0000	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**

3.2 Site Preparation-Sorting - 2019

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	1.8292	14.8473	15.3323	0.0261		0.8807	0.8807		0.8704	0.8704	0.0000	2,482.6651	2,482.6651	0.3010		2,490.1896
Total	**1.8292**	**14.8473**	**15.3323**	**0.0261**	**0.0000**	**0.8807**	**0.8807**	**0.0000**	**0.8704**	**0.8704**	**0.0000**	**2,482.6651**	**2,482.6651**	**0.3010**		**2,490.1896**

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	0.0000	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
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	0.0000	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**

3.3 Site Preparation-Mobilization - 2019

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	0.0000	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**

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	0.0346	1.1165	0.1872	3.3100e-003	0.0778	5.7500e-003	0.0835	0.0213	5.5000e-003	0.0268		347.5840	347.5840	0.0102		347.8394
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	0.0000	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	**0.0346**	**1.1165**	**0.1872**	**3.3100e-003**	**0.0778**	**5.7500e-003**	**0.0835**	**0.0213**	**5.5000e-003**	**0.0268**		**347.5840**	**347.5840**	**0.0102**		**347.8394**

3.3 Site Preparation-Mobilization - 2019

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	0.0000	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**		**0.0000**

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	0.0346	1.1165	0.1872	3.3100e-003	0.0778	5.7500e-003	0.0835	0.0213	5.5000e-003	0.0268		347.5840	347.5840	0.0102		347.8394
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	0.0000	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	**0.0346**	**1.1165**	**0.1872**	**3.3100e-003**	**0.0778**	**5.7500e-003**	**0.0835**	**0.0213**	**5.5000e-003**	**0.0268**		**347.5840**	**347.5840**	**0.0102**		**347.8394**

3.4 Grading-New Haul Road - 2019

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					2.6513	0.0000	2.6513	0.2863	0.0000	0.2863			0.0000			0.0000
Off-Road	4.1531	47.9975	32.6883	0.0579		2.2056	2.2056		2.0291	2.0291		5,730.0306	5,730.0306	1.8129		5,775.3536
Total	**4.1531**	**47.9975**	**32.6883**	**0.0579**	**2.6513**	**2.2056**	**4.8568**	**0.2863**	**2.0291**	**2.3154**		**5,730.0306**	**5,730.0306**	**1.8129**		**5,775.3536**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	3.6416	0.0161	3.6577	0.3840	0.0154	0.3995		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**10.8848**	**0.0173**	**10.9021**	**1.1365**	**0.0165**	**1.1530**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.4 Grading-New Haul Road - 2019

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					1.1931	0.0000	1.1931	0.1288	0.0000	0.1288			0.0000			0.0000
Off-Road	4.1531	47.9975	32.6883	0.0579		2.2056	2.2056		2.0291	2.0291	0.0000	5,730.0306	5,730.0306	1.8129		5,775.3536
Total	**4.1531**	**47.9975**	**32.6883**	**0.0579**	**1.1931**	**2.2056**	**3.3986**	**0.1288**	**2.0291**	**2.1579**	**0.0000**	**5,730.0306**	**5,730.0306**	**1.8129**		**5,775.3536**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	2.2720	0.0161	2.2881	0.2471	0.0154	0.2625		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**6.7762**	**0.0173**	**6.7935**	**0.7256**	**0.0165**	**0.7422**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	1.3324	13.8469	15.7851	0.0238		0.7517	0.7517		0.6916	0.6916		2,353.0731	2,353.0731	0.7445		2,371.6853
Total	**1.3324**	**13.8469**	**15.7851**	**0.0238**	**0.0000**	**0.7517**	**0.7517**	**0.0000**	**0.6916**	**0.6916**		**2,353.0731**	**2,353.0731**	**0.7445**		**2,371.6853**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	3.6416	0.0161	3.6577	0.3840	0.0154	0.3995		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**10.8848**	**0.0173**	**10.9021**	**1.1365**	**0.0165**	**1.1530**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	1.3324	13.8469	15.7851	0.0238		0.7517	0.7517		0.6916	0.6916	0.0000	2,353.0731	2,353.0731	0.7445		2,371.6853
Total	**1.3324**	**13.8469**	**15.7851**	**0.0238**	**0.0000**	**0.7517**	**0.7517**	**0.0000**	**0.6916**	**0.6916**	**0.0000**	**2,353.0731**	**2,353.0731**	**0.7445**		**2,371.6853**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	2.2720	0.0161	2.2881	0.2471	0.0154	0.2625		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**6.7762**	**0.0173**	**6.7935**	**0.7256**	**0.0165**	**0.7422**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	1.1884	14.1399	9.5357	0.0182		0.6385	0.6385		0.5874	0.5874		1,800.5631	1,800.5631	0.5697		1,814.8050
Total	**1.1884**	**14.1399**	**9.5357**	**0.0182**	**0.5303**	**0.6385**	**1.1687**	**0.0573**	**0.5874**	**0.6446**		**1,800.5631**	**1,800.5631**	**0.5697**		**1,814.8050**

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	0.0000	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
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	0.0000	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**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	1.1884	14.1399	9.5357	0.0182		0.6385	0.6385		0.5874	0.5874	0.0000	1,800.5631	1,800.5631	0.5697		1,814.8050
Total	**1.1884**	**14.1399**	**9.5357**	**0.0182**	**0.2386**	**0.6385**	**0.8771**	**0.0258**	**0.5874**	**0.6131**	**0.0000**	**1,800.5631**	**1,800.5631**	**0.5697**		**1,814.8050**

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	0.0000	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
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	0.0000	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**

3.7 Site Preparation-Offsite Transport - 2019

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	0.0000	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**

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	1.9751	63.7956	10.6967	0.1891	153.8764	0.3287	154.2052	16.1199	0.3145	16.4344		19,861.4440	19,861.4440	0.5839		19,876.0405
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	0.0000	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	**1.9751**	**63.7956**	**10.6967**	**0.1891**	**153.8764**	**0.3287**	**154.2052**	**16.1199**	**0.3145**	**16.4344**		**19,861.4440**	**19,861.4440**	**0.5839**		**19,876.0405**

3.7 Site Preparation-Offsite Transport - 2019

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	0.0000	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**		**0.0000**

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	1.9751	63.7956	10.6967	0.1891	95.9076	0.3287	96.2363	10.3230	0.3145	10.6375		19,861.4440	19,861.4440	0.5839		19,876.0405
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	0.0000	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	**1.9751**	**63.7956**	**10.6967**	**0.1891**	**95.9076**	**0.3287**	**96.2363**	**10.3230**	**0.3145**	**10.6375**		**19,861.4440**	**19,861.4440**	**0.5839**		**19,876.0405**

3.8 Grading-Conduct Sediment Removal - 2019

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					2.1210	0.0000	2.1210	0.2290	0.0000	0.2290			0.0000			0.0000
Off-Road	3.1176	35.8662	27.2546	0.0468		1.5828	1.5828		1.4561	1.4561		4,636.9639	4,636.9639	1.4671		4,673.6410
Total	**3.1176**	**35.8662**	**27.2546**	**0.0468**	**2.1210**	**1.5828**	**3.7038**	**0.2290**	**1.4561**	**1.6852**		**4,636.9639**	**4,636.9639**	**1.4671**		**4,673.6410**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	3.6416	0.0161	3.6577	0.3840	0.0154	0.3995		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	7.2433	1.1900e-003	7.2445	0.7525	1.1000e-003	0.7536		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**10.8848**	**0.0173**	**10.9021**	**1.1365**	**0.0165**	**1.1530**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.8 Grading-Conduct Sediment Removal - 2019

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					0.9545	0.0000	0.9545	0.1031	0.0000	0.1031			0.0000			0.0000
Off-Road	3.1176	35.8662	27.2546	0.0468		1.5828	1.5828		1.4561	1.4561	0.0000	4,636.9639	4,636.9639	1.4671		4,673.6410
Total	**3.1176**	**35.8662**	**27.2546**	**0.0468**	**0.9545**	**1.5828**	**2.5372**	**0.1031**	**1.4561**	**1.5592**	**0.0000**	**4,636.9639**	**4,636.9639**	**1.4671**		**4,673.6410**

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	0.0000	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
Vendor	0.0686	1.5241	0.3630	4.0200e-003	2.2720	0.0161	2.2881	0.2471	0.0154	0.2625		420.8199	420.8199	0.0152		421.1985
Worker	0.1016	0.0994	0.7356	1.6900e-003	4.5042	1.1900e-003	4.5054	0.4786	1.1000e-003	0.4797		167.7582	167.7582	6.7100e-003		167.9259
Total	**0.1702**	**1.6235**	**1.0986**	**5.7100e-003**	**6.7762**	**0.0173**	**6.7935**	**0.7256**	**0.0165**	**0.7422**		**588.5781**	**588.5781**	**0.0219**		**589.1244**

3.9 Site Preparation-Demobilization - 2019

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	0.0000	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**

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	7.7800e-003	0.2512	0.0421	7.4000e-004	0.6059	1.2900e-003	0.6072	0.0635	1.2400e-003	0.0647		78.2064	78.2064	2.3000e-003		78.2639
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	0.0000	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	**7.7800e-003**	**0.2512**	**0.0421**	**7.4000e-004**	**0.6059**	**1.2900e-003**	**0.6072**	**0.0635**	**1.2400e-003**	**0.0647**		**78.2064**	**78.2064**	**2.3000e-003**		**78.2639**

3.9 Site Preparation-Demobilization - 2019

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	0.0000	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**		**0.0000**

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	7.7800e-003	0.2512	0.0421	7.4000e-004	0.3777	1.2900e-003	0.3789	0.0407	1.2400e-003	0.0419		78.2064	78.2064	2.3000e-003		78.2639
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	0.0000	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	**7.7800e-003**	**0.2512**	**0.0421**	**7.4000e-004**	**0.3777**	**1.2900e-003**	**0.3789**	**0.0407**	**1.2400e-003**	**0.0419**		**78.2064**	**78.2064**	**2.3000e-003**		**78.2639**

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
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
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
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
User Defined Recreational	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901
User Defined Recreational	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901

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					
Other Non-Asphalt Surfaces	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
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**

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					
Other Non-Asphalt Surfaces	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
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	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Unmitigated	60.1471	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123

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	13.7707					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.3758					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.1000e-004	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Total	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**		**0.0123**

6.2 Area by SubCategory

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					
Architectural Coating	13.7707					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.3758					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.1000e-004	5.0000e-005	5.4200e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0115	0.0115	3.0000e-005		0.0123
Total	**60.1471**	**5.0000e-005**	**5.4200e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0115**	**0.0115**	**3.0000e-005**		**0.0123**

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 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C

Nevada Irrigation District's Cultural Resources Policy (No. 6085)

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Nevada Irrigation District

Staff Report

for the Board of Directors of June 10, 2015

TO: Board of Directors

FROM: Gary King, Engineering Manager

DATE: June 1, 2015

SUBJECT: **Policy – Cultural Resources (Consent)**

ENGINEERING

RECOMMENDATION:
Adopt Resolution No. 2015-16 (Establishing Policy for Administration – Cultural Resources) as recommended by the Administrative Practices Committee on May 5, 2015.

BACKGROUND:
Cultural resources can be found during numerous District activities. These resources such as Indian pottery or mining equipment are relevant to the history of this area. If the District encounters these resources, staff will take reasonable efforts to protect and preserve resources. Once these materials are removed, they can be stored and then donated to a preservation organization with the potential of display to the public. Human remains if found have a more formal method which is indicated in the attached guideline.

Staff in collaboration with a professional archeologist has developed a guideline for dealing with either human or cultural remains. In addition, this guideline was discussed in the Engineering Committee on May 19, 2015 and will be used by staff and included as a guideline in future California Environmental Quality Act documents. The guideline has been provided as an information item as part of this request.

It is the recommendation of staff to approve the attached policy.

BUDGETARY IMPACT:
No budget impact

GDK

Nevada Irrigation District

POLICY MANUAL

POLICY TITLE: **Cultural Resources**
POLICY NUMBER: **6085**

The purpose of this policy is to outline efforts of the District to protect inadvertently discover cultural resources or human remains.

6085.1 Discovery of Cultural Resources

Archaeological materials: may include, but are not limited to, flaked stone tools (projectile point, biface, scraper, etc.) and debitage (flakes) made of chert, obsidian, etc., groundstone milling tools and fragments (mortar, pestle, handstone, millingstone, etc.), faunal bones, fire-affected rock, dark middens, house pit depressions and human interments.

Historic-era Resources: may include, but are not limited to, small cemeteries or burial plots, cut (square) nails, containers or miscellaneous hardware, glass fragments, cans with soldered seams or tops, ceramic or stoneware objects or fragments, milled or split lumber, earthworks, feature or structure remains and trash dumps.

The District will treat those materials in a manner consistent using guidelines developed by the District staff and appropriate professionals which will follow standards of the industry and regulatory requirements to manage the discovery of cultural resources.

6085.2 Discovery of Human Remains

According to Section 7050 of the California Health and Safety Code, it is a misdemeanor to knowingly disturb a human burial site. If human remains are encountered (or are suspected) during related activity, the District or its contractor will treat those remains or suspected remains in a dignified manner using guidelines developed by the District staff and appropriate professionals which will follow standards of the industry and regulatory requirements to manage the discovery of human remains.

Adopted: (Date) via Resolution No. 2015
Revised:

GUIDELINES FOR CULTURAL RESOURCES
MAY 11, 2015

Unanticipated Discovery of Cultural Resources

If subsurface cultural resources are inadvertently uncovered during Project ground disturbing activities

Archaeological materials: may include, but are not limited to, flaked stone tools (projectile point, biface, scraper, etc.) and debitage (flakes) made of chert, obsidian, etc., groundstone milling tools and fragments (mortar, pestle, handstone, millingstone, etc.), faunal bones, fire-affected rock, dark middens, house pit depressions and human interments.

Historic-era Resources: may include, but are not limited to, small cemeteries or burial plots, cut (square) nails, containers or miscellaneous hardware, glass fragments, cans with soldered seams or tops, ceramic or stoneware objects or fragments, milled or split lumber, earthworks, feature or structure remains and trash dumps. NID or its contractor shall complete the following steps:

1. Stop all work when cultural resources are encountered
2. Immediately contact the NID Project Manager
3. NID will relocate work within no less than 150 feet of the discovery or otherwise directed by the NID Qualified Professional Archaeologist; If NID resumes work in a location where cultural resources have been discovered and cleared
4. NID will have an onsite archeologist to confirm that no additional archaeological resources are in the area.
5. NID or its contractor shall secure the discovery location with traffic plates over the exposed site or a person watching the site until cleared by the archeologist
6. NID contractor will make every effort not to further harass or damage, touch, or remove any cultural resources materials
7. All spoils will remain in their current location until directed to be moved by NID staff or the archeologist.
8. NID or its contractor shall record the location and keep notes of all calls and events
9. NID or its contractor shall treat the find as confidential and do not publically disclose the location. Only authorized personnel, or individuals with the permission of NID (and the land owner if different from NID) shall be allowed on the archeological site
10. The NID archaeologist will assess the significance of the find. All materials collected and secured by NID at the offsite District location. The NID archeologist will not provide any materials to a tribal agency or other group unless directed by the District. All materials found will be secured and provided to an appropriate tribal or museum of selection at the discretion of the District. The District will make every effort to treat the sharing of materials such that the community is benefited by the find
11. No additional work shall take place within the immediate vicinity of the find until NID's chosen archaeologist has given approval and with the concurrence of SHPO ;

Unanticipated Discovery of Human Remains

Section 7050 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial site. If human remains are encountered (or are suspected) during any project-related activity, NID's contractor shall complete the following steps:

1. Immediately stop all work when human remains are encountered
2. Immediately contact the NID Project Manager or Department Manager
3. NID will contact a Qualified Professional Archaeologist (meeting the Secretary of the Interior's Qualifications) who will then notify the County Coroner immediately pursuant to PRC Section 7050.5;
4. NID or its contractor will relocate work if directed by NID within no less than 150 feet of the discovery or otherwise directed by the NID Qualified Professional Archaeologist;
5. NID will have the NID archeologist confirm that no additional archaeological resources are in the area. If NID resumes work in a location where human remains have been discovered and cleared, NID will have a Qualified Professional Archaeologist onsite to confirm that no additional human remains are in the area
6. NID's contractor shall not damage, touch, or remove any human remains or associated materials or remove associated spoils or pick through them;
7. Record the location and keep notes of all calls, site visits and events;
8. NID or its contractor shall treat the find as confidential and do not publically disclose the location. NID shall provide security to the area as needed. Only authorized personnel, or individuals with the permission of NID (and the land owner, if different from NID) shall be allowed onsite.
9. The County Coroner may assess the human remains. If the human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission (NAHC) within 24 hours of such identification. The NAHC shall identify the most likely descendant (MLD).
10. Once given the permission by NID (and the land owner if different from NID) the MLD shall be allowed onsite. The MLD shall complete their inspection and make their recommendation to NID for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98. MLD recommendations must be made within 48 hours of the NAHC notification to the MLD.
11. No additional work shall take place within the immediate vicinity of the find until NID's chosen archaeologist gives approval to resume work in that area.

APPENDIX D

Greenhouse Gas Emissions Modeling

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Greenhorn Sed Removal at Rollins Reservoir - 50k

Nevada County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.00	Acre	3.00	130,680.00	0
User Defined Recreational	49.70	User Defined Unit	49.70	2,164,932.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	80
Climate Zone	1			**Operational Year**	2020
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

Greenhorn Sed Removal at Rollins Reservoir - 50k - Nevada County, Annual

Project Characteristics - The construction emissions represents the operational emissions since the project will be implemented annually as maintenance.

Land Use - Acreage taken from CEQA Project Description for areas of disturbance.

Construction Phase - Construction details based on CEQA Project Description information. Sorting and Offsite Transport are split into two separate construction phases while Channelizing Creek Bed and Excavate Dewatering Channel are combined.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - No construction equipment usage. Haul trip only during this phase.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Trips and VMT - Assumptions: 20 haul trips to mobilize/demobilize equipment, ~3,333 haul trips to remove 50k tons of sediment with 15 ton capacity truck, 6 daily vendor trips, and 6 workers will commute daily averaging 40 miles roundtrip.

On-road Fugitive Dust - The only known unpaved road is the road entering into the site from You Bet Road.

Grading -

Energy Use -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	40.00	131.00
tblConstructionPhase	NumDays	40.00	9.00
tblConstructionPhase	NumDays	110.00	6.00
tblConstructionPhase	NumDays	110.00	9.00
tblConstructionPhase	NumDays	40.00	105.00
tblConstructionPhase	NumDays	40.00	105.00

tblConstructionPhase	NumDays	110.00	105.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblLandUse	LandUseSquareFeet	0.00	2,164,932.00
tblLandUse	LotAcreage	0.00	49.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Grading-New Haul Road
tblOffRoadEquipment	PhaseName		Site Preparation-Sediment Stockpiling
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Site Preparation-Sediment Stockpiling
tblOffRoadEquipment	PhaseName		Site Preparation-Sorting
tblOffRoadEquipment	PhaseName		Grading-New Haul Road
tblOffRoadEquipment	PhaseName		Grading-Channelize Creek and Excavate Channel
tblOffRoadEquipment	PhaseName		Site Preparation-Sediment Stockpiling
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,333.00

tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	6.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00

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					
2019	0.3996	4.7437	3.3059	8.2800e-003	2.2571	0.1897	2.4467	0.2392	0.1786	0.4178	0.0000	752.8837	752.8837	0.1307	0.0000	756.1509
Maximum	**0.3996**	**4.7437**	**3.3059**	**8.2800e-003**	**2.2571**	**0.1897**	**2.4467**	**0.2392**	**0.1786**	**0.4178**	**0.0000**	**752.8837**	**752.8837**	**0.1307**	**0.0000**	**756.1509**

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					
2019	0.3996	4.7437	3.3059	8.2800e-003	1.3860	0.1897	1.5757	0.1514	0.1786	0.3300	0.0000	752.8831	752.8831	0.1307	0.0000	756.1503
Maximum	**0.3996**	**4.7437**	**3.3059**	**8.2800e-003**	**1.3860**	**0.1897**	**1.5757**	**0.1514**	**0.1786**	**0.3300**	**0.0000**	**752.8831**	**752.8831**	**0.1307**	**0.0000**	**756.1503**

	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**	**38.59**	**0.00**	**35.60**	**36.69**	**0.00**	**21.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-1-2019**	**9-30-2019**	2.7586	2.7586
		Highest	2.7586	2.7586

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	10.9768	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-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	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	**10.9768**	**0.0000**	**4.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.4000e-004**	**9.4000e-004**	**0.0000**	**0.0000**	**1.0000e-003**

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	10.9768	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-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	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	**10.9768**	**0.0000**	**4.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.4000e-004**	**9.4000e-004**	**0.0000**	**0.0000**	**1.0000e-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

Greenhorn Sed Removal at Rollins Reservoir - 50k - Nevada County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation-Sorting	Site Preparation	7/1/2019	11/29/2019	6	131	Phase 2 Sorting
2	Site Preparation-Mobilization	Site Preparation	7/1/2019	7/10/2019	6	9	Phase 1 Mobilization
3	Grading-New Haul Road	Grading	7/15/2019	7/20/2019	6	6	Phase 1 Establish New Haul Road
4	Grading-Channelize Creek and Excavate Channel	Grading	7/21/2019	7/31/2019	6	9	Phase 1 Channelize Creek Bed and Excavate Dewatering Channel
5	Site Preparation-Sediment Stockpiling	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Transport to Stockpile
6	Site Preparation-Offsite Transport	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Offsite Transport
7	Grading-Conduct Sediment Removal	Grading	8/1/2019	11/30/2019	6	105	Phase 2 Conduct Sediment Removal
8	Site Preparation-Demobilization	Site Preparation	11/15/2019	12/31/2019	6	40	Phase 3 Demobilization

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation-Sorting	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation-Sorting	Dumpers/Tenders	1	8.00	16	0.38
Site Preparation-Sorting	Excavators	1	8.00	158	0.38
Site Preparation-Sorting	Generator Sets	2	8.00	84	0.74
Site Preparation-Sorting	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation-Sorting	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation-Mobilization	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Mobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37

Grading-New Haul Road	Crawler Tractors	1	8.00	212	0.43
Grading-New Haul Road	Excavators	1	8.00	158	0.38
Grading-New Haul Road	Graders	0	0.00	187	0.41
Grading-New Haul Road	Rollers	2	8.00	80	0.38
Grading-New Haul Road	Rubber Tired Dozers	0	0.00	247	0.40
Grading-New Haul Road	Scrapers	2	8.00	367	0.48
Grading-New Haul Road	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading-Channelize Creek and Excavate Channel	Excavators	3	8.00	158	0.38
Grading-Channelize Creek and Excavate Channel	Graders	0	0.00	187	0.41
Grading-Channelize Creek and Excavate Channel	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Channelize Creek and Excavate Channel	Scrapers	0	0.00	367	0.48
Grading-Channelize Creek and Excavate Channel	Skid Steer Loaders	1	8.00	65	0.37
Grading-Channelize Creek and Excavate Channel	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Sediment Stockpiling	Crawler Tractors	1	8.00	212	0.43
Site Preparation-Sediment Stockpiling	Excavators	1	8.00	158	0.38
Site Preparation-Sediment Stockpiling	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Sediment Stockpiling	Skid Steer Loaders	1	8.00	65	0.37
Site Preparation-Sediment Stockpiling	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation-Offsite Transport	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Offsite Transport	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading-Conduct Sediment Removal	Excavators	2	8.00	158	0.38
Grading-Conduct Sediment Removal	Graders	0	0.00	187	0.41
Grading-Conduct Sediment Removal	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Conduct Sediment Removal	Scrapers	2	8.00	367	0.48
Grading-Conduct Sediment Removal	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Demobilization	Rubber Tired Dozers	0	0.00	247	0.40

Site Preparation-Demobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37

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
Site Preparation-Sorting	5	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Mobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-New Haul Road	9	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading-Channelize Creek and Excavate C	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Sediment Stockpiling	4	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Offsite Transport	0	0.00	0.00	3,333.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-Conduct Sediment Removal	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Demobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation-Sorting - 2019

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	0.1198	0.9725	1.0043	1.7100e-003		0.0577	0.0577		0.0570	0.0570	0.0000	147.5215	147.5215	0.0179	0.0000	147.9686
Total	**0.1198**	**0.9725**	**1.0043**	**1.7100e-003**	**0.0000**	**0.0577**	**0.0577**	**0.0000**	**0.0570**	**0.0570**	**0.0000**	**147.5215**	**147.5215**	**0.0179**	**0.0000**	**147.9686**

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	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
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	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
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**	**0.0000**	**0.0000**

3.2 Site Preparation-Sorting - 2019

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	0.1198	0.9725	1.0043	1.7100e-003		0.0577	0.0577		0.0570	0.0570	0.0000	147.5213	147.5213	0.0179	0.0000	147.9684
Total	**0.1198**	**0.9725**	**1.0043**	**1.7100e-003**	**0.0000**	**0.0577**	**0.0577**	**0.0000**	**0.0570**	**0.0570**	**0.0000**	**147.5213**	**147.5213**	**0.0179**	**0.0000**	**147.9684**

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	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
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	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
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**	**0.0000**	**0.0000**

3.3 Site Preparation-Mobilization - 2019

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	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**	**0.0000**	**0.0000**

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	1.5000e-004	5.0000e-003	8.1000e-004	2.0000e-005	3.4000e-004	3.0000e-005	3.6000e-004	9.0000e-005	2.0000e-005	1.2000e-004	0.0000	1.4300	1.4300	4.0000e-005	0.0000	1.4310
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	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
Total	**1.5000e-004**	**5.0000e-003**	**8.1000e-004**	**2.0000e-005**	**3.4000e-004**	**3.0000e-005**	**3.6000e-004**	**9.0000e-005**	**2.0000e-005**	**1.2000e-004**	**0.0000**	**1.4300**	**1.4300**	**4.0000e-005**	**0.0000**	**1.4310**

3.3 Site Preparation-Mobilization - 2019

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	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**	**0.0000**	**0.0000**

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	1.5000e-004	5.0000e-003	8.1000e-004	2.0000e-005	3.4000e-004	3.0000e-005	3.6000e-004	9.0000e-005	2.0000e-005	1.2000e-004	0.0000	1.4300	1.4300	4.0000e-005	0.0000	1.4310
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	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
Total	**1.5000e-004**	**5.0000e-003**	**8.1000e-004**	**2.0000e-005**	**3.4000e-004**	**3.0000e-005**	**3.6000e-004**	**9.0000e-005**	**2.0000e-005**	**1.2000e-004**	**0.0000**	**1.4300**	**1.4300**	**4.0000e-005**	**0.0000**	**1.4310**

3.4 Grading-New Haul Road - 2019

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					7.9500e-003	0.0000	7.9500e-003	8.6000e-004	0.0000	8.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1440	0.0981	1.7000e-004		6.6200e-003	6.6200e-003		6.0900e-003	6.0900e-003	0.0000	15.5946	15.5946	4.9300e-003	0.0000	15.7179
Total	**0.0125**	**0.1440**	**0.0981**	**1.7000e-004**	**7.9500e-003**	**6.6200e-003**	**0.0146**	**8.6000e-004**	**6.0900e-003**	**6.9500e-003**	**0.0000**	**15.5946**	**15.5946**	**4.9300e-003**	**0.0000**	**15.7179**

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	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
Vendor	2.0000e-004	4.5500e-003	1.0400e-003	1.0000e-005	8.5900e-003	5.0000e-005	8.6400e-003	9.2000e-004	5.0000e-005	9.6000e-004	0.0000	1.1555	1.1555	4.0000e-005	0.0000	1.1565
Worker	2.7000e-004	2.7000e-004	2.2100e-003	1.0000e-005	0.0171	0.0000	0.0171	1.7900e-003	0.0000	1.7900e-003	0.0000	0.4639	0.4639	2.0000e-005	0.0000	0.4644
Total	**4.7000e-004**	**4.8200e-003**	**3.2500e-003**	**2.0000e-005**	**0.0257**	**5.0000e-005**	**0.0257**	**2.7100e-003**	**5.0000e-005**	**2.7500e-003**	**0.0000**	**1.6194**	**1.6194**	**6.0000e-005**	**0.0000**	**1.6208**

3.4 Grading-New Haul Road - 2019

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					3.5800e-003	0.0000	3.5800e-003	3.9000e-004	0.0000	3.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1440	0.0981	1.7000e-004		6.6200e-003	6.6200e-003		6.0900e-003	6.0900e-003	0.0000	15.5946	15.5946	4.9300e-003	0.0000	15.7179
Total	**0.0125**	**0.1440**	**0.0981**	**1.7000e-004**	**3.5800e-003**	**6.6200e-003**	**0.0102**	**3.9000e-004**	**6.0900e-003**	**6.4800e-003**	**0.0000**	**15.5946**	**15.5946**	**4.9300e-003**	**0.0000**	**15.7179**

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	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
Vendor	2.0000e-004	4.5500e-003	1.0400e-003	1.0000e-005	5.3800e-003	5.0000e-005	5.4300e-003	6.0000e-004	5.0000e-005	6.4000e-004	0.0000	1.1555	1.1555	4.0000e-005	0.0000	1.1565
Worker	2.7000e-004	2.7000e-004	2.2100e-003	1.0000e-005	0.0106	0.0000	0.0107	1.1500e-003	0.0000	1.1500e-003	0.0000	0.4639	0.4639	2.0000e-005	0.0000	0.4644
Total	**4.7000e-004**	**4.8200e-003**	**3.2500e-003**	**2.0000e-005**	**0.0160**	**5.0000e-005**	**0.0161**	**1.7500e-003**	**5.0000e-005**	**1.7900e-003**	**0.0000**	**1.6194**	**1.6194**	**6.0000e-005**	**0.0000**	**1.6208**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	6.0000e-003	0.0623	0.0710	1.1000e-004		3.3800e-003	3.3800e-003		3.1100e-003	3.1100e-003	0.0000	9.6060	9.6060	3.0400e-003	0.0000	9.6820
Total	**6.0000e-003**	**0.0623**	**0.0710**	**1.1000e-004**	**0.0000**	**3.3800e-003**	**3.3800e-003**	**0.0000**	**3.1100e-003**	**3.1100e-003**	**0.0000**	**9.6060**	**9.6060**	**3.0400e-003**	**0.0000**	**9.6820**

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	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
Vendor	3.0000e-004	6.8300e-003	1.5600e-003	2.0000e-005	0.0129	7.0000e-005	0.0130	1.3800e-003	7.0000e-005	1.4400e-003	0.0000	1.7332	1.7332	6.0000e-005	0.0000	1.7347
Worker	4.0000e-004	4.1000e-004	3.3100e-003	1.0000e-005	0.0256	1.0000e-005	0.0256	2.6800e-003	0.0000	2.6900e-003	0.0000	0.6959	0.6959	3.0000e-005	0.0000	0.6966
Total	**7.0000e-004**	**7.2400e-003**	**4.8700e-003**	**3.0000e-005**	**0.0385**	**8.0000e-005**	**0.0386**	**4.0600e-003**	**7.0000e-005**	**4.1300e-003**	**0.0000**	**2.4291**	**2.4291**	**9.0000e-005**	**0.0000**	**2.4313**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	6.0000e-003	0.0623	0.0710	1.1000e-004		3.3800e-003	3.3800e-003		3.1100e-003	3.1100e-003	0.0000	9.6060	9.6060	3.0400e-003	0.0000	9.6820
Total	**6.0000e-003**	**0.0623**	**0.0710**	**1.1000e-004**	**0.0000**	**3.3800e-003**	**3.3800e-003**	**0.0000**	**3.1100e-003**	**3.1100e-003**	**0.0000**	**9.6060**	**9.6060**	**3.0400e-003**	**0.0000**	**9.6820**

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	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
Vendor	3.0000e-004	6.8300e-003	1.5600e-003	2.0000e-005	8.0700e-003	7.0000e-005	8.1400e-003	8.9000e-004	7.0000e-005	9.6000e-004	0.0000	1.7332	1.7332	6.0000e-005	0.0000	1.7347
Worker	4.0000e-004	4.1000e-004	3.3100e-003	1.0000e-005	0.0160	1.0000e-005	0.0160	1.7200e-003	0.0000	1.7200e-003	0.0000	0.6959	0.6959	3.0000e-005	0.0000	0.6966
Total	**7.0000e-004**	**7.2400e-003**	**4.8700e-003**	**3.0000e-005**	**0.0240**	**8.0000e-005**	**0.0241**	**2.6100e-003**	**7.0000e-005**	**2.6800e-003**	**0.0000**	**2.4291**	**2.4291**	**9.0000e-005**	**0.0000**	**2.4313**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.0278	0.0000	0.0278	3.0100e-003	0.0000	3.0100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0624	0.7423	0.5006	9.5000e-004		0.0335	0.0335		0.0308	0.0308	0.0000	85.7558	85.7558	0.0271	0.0000	86.4341
Total	**0.0624**	**0.7423**	**0.5006**	**9.5000e-004**	**0.0278**	**0.0335**	**0.0614**	**3.0100e-003**	**0.0308**	**0.0339**	**0.0000**	**85.7558**	**85.7558**	**0.0271**	**0.0000**	**86.4341**

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	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
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	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
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**	**0.0000**	**0.0000**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.0125	0.0000	0.0125	1.3500e-003	0.0000	1.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0624	0.7423	0.5006	9.5000e-004		0.0335	0.0335		0.0308	0.0308	0.0000	85.7557	85.7557	0.0271	0.0000	86.4340
Total	**0.0624**	**0.7423**	**0.5006**	**9.5000e-004**	**0.0125**	**0.0335**	**0.0461**	**1.3500e-003**	**0.0308**	**0.0322**	**0.0000**	**85.7557**	**85.7557**	**0.0271**	**0.0000**	**86.4340**

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	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
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	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
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**	**0.0000**	**0.0000**

3.7 Site Preparation-Offsite Transport - 2019

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	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**	**0.0000**	**0.0000**

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	0.0256	0.8331	0.1345	2.5000e-003	1.5871	4.2900e-003	1.5914	0.1681	4.1000e-003	0.1722	0.0000	238.3124	238.3124	6.5900e-003	0.0000	238.4772
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	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
Total	**0.0256**	**0.8331**	**0.1345**	**2.5000e-003**	**1.5871**	**4.2900e-003**	**1.5914**	**0.1681**	**4.1000e-003**	**0.1722**	**0.0000**	**238.3124**	**238.3124**	**6.5900e-003**	**0.0000**	**238.4772**

3.7 Site Preparation-Offsite Transport - 2019

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	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**	**0.0000**	**0.0000**

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	0.0256	0.8331	0.1345	2.5000e-003	0.9930	4.2900e-003	0.9973	0.1087	4.1000e-003	0.1128	0.0000	238.3124	238.3124	6.5900e-003	0.0000	238.4772
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	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
Total	**0.0256**	**0.8331**	**0.1345**	**2.5000e-003**	**0.9930**	**4.2900e-003**	**0.9973**	**0.1087**	**4.1000e-003**	**0.1128**	**0.0000**	**238.3124**	**238.3124**	**6.5900e-003**	**0.0000**	**238.4772**

3.8 Grading-Conduct Sediment Removal - 2019

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					0.1114	0.0000	0.1114	0.0120	0.0000	0.0120	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1637	1.8830	1.4309	2.4600e-003		0.0831	0.0831		0.0765	0.0765	0.0000	220.8456	220.8456	0.0699	0.0000	222.5924
Total	**0.1637**	**1.8830**	**1.4309**	**2.4600e-003**	**0.1114**	**0.0831**	**0.1944**	**0.0120**	**0.0765**	**0.0885**	**0.0000**	**220.8456**	**220.8456**	**0.0699**	**0.0000**	**222.5924**

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	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
Vendor	3.5300e-003	0.0797	0.0182	2.1000e-004	0.1503	8.4000e-004	0.1512	0.0161	8.1000e-004	0.0169	0.0000	20.2208	20.2208	6.9000e-004	0.0000	20.2380
Worker	4.6900e-003	4.7800e-003	0.0386	9.0000e-005	0.2985	6.0000e-005	0.2986	0.0313	6.0000e-005	0.0313	0.0000	8.1186	8.1186	3.2000e-004	0.0000	8.1266
Total	**8.2200e-003**	**0.0844**	**0.0568**	**3.0000e-004**	**0.4489**	**9.0000e-004**	**0.4498**	**0.0473**	**8.7000e-004**	**0.0482**	**0.0000**	**28.3394**	**28.3394**	**1.0100e-003**	**0.0000**	**28.3646**

3.8 Grading-Conduct Sediment Removal - 2019

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					0.0501	0.0000	0.0501	5.4100e-003	0.0000	5.4100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1637	1.8830	1.4309	2.4600e-003		0.0831	0.0831		0.0765	0.0765	0.0000	220.8453	220.8453	0.0699	0.0000	222.5922
Total	**0.1637**	**1.8830**	**1.4309**	**2.4600e-003**	**0.0501**	**0.0831**	**0.1332**	**5.4100e-003**	**0.0765**	**0.0819**	**0.0000**	**220.8453**	**220.8453**	**0.0699**	**0.0000**	**222.5922**

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	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
Vendor	3.5300e-003	0.0797	0.0182	2.1000e-004	0.0942	8.4000e-004	0.0950	0.0104	8.1000e-004	0.0112	0.0000	20.2208	20.2208	6.9000e-004	0.0000	20.2380
Worker	4.6900e-003	4.7800e-003	0.0386	9.0000e-005	0.1863	6.0000e-005	0.1863	0.0201	6.0000e-005	0.0201	0.0000	8.1186	8.1186	3.2000e-004	0.0000	8.1266
Total	**8.2200e-003**	**0.0844**	**0.0568**	**3.0000e-004**	**0.2804**	**9.0000e-004**	**0.2813**	**0.0305**	**8.7000e-004**	**0.0314**	**0.0000**	**28.3394**	**28.3394**	**1.0100e-003**	**0.0000**	**28.3646**

3.9 Site Preparation-Demobilization - 2019

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	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**	**0.0000**	**0.0000**

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	1.5000e-004	5.0000e-003	8.1000e-004	2.0000e-005	9.5200e-003	3.0000e-005	9.5500e-003	1.0100e-003	2.0000e-005	1.0300e-003	0.0000	1.4300	1.4300	4.0000e-005	0.0000	1.4310
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	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
Total	**1.5000e-004**	**5.0000e-003**	**8.1000e-004**	**2.0000e-005**	**9.5200e-003**	**3.0000e-005**	**9.5500e-003**	**1.0100e-003**	**2.0000e-005**	**1.0300e-003**	**0.0000**	**1.4300**	**1.4300**	**4.0000e-005**	**0.0000**	**1.4310**

3.9 Site Preparation-Demobilization - 2019

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	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**	**0.0000**	**0.0000**

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	1.5000e-004	5.0000e-003	8.1000e-004	2.0000e-005	5.9600e-003	3.0000e-005	5.9800e-003	6.5000e-004	2.0000e-005	6.8000e-004	0.0000	1.4300	1.4300	4.0000e-005	0.0000	1.4310
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	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
Total	**1.5000e-004**	**5.0000e-003**	**8.1000e-004**	**2.0000e-005**	**5.9600e-003**	**3.0000e-005**	**5.9800e-003**	**6.5000e-004**	**2.0000e-005**	**6.8000e-004**	**0.0000**	**1.4300**	**1.4300**	**4.0000e-005**	**0.0000**	**1.4310**

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
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
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
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
User Defined Recreational	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901
User Defined Recreational	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901

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					
Other Non-Asphalt Surfaces	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
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**

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					
Other Non-Asphalt Surfaces	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
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			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
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	10.9768	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-003
Unmitigated	10.9768	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-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	tons/yr										MT/yr					
Architectural Coating	2.5132					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.4636					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-003
Total	**10.9768**	**0.0000**	**4.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.4000e-004**	**9.4000e-004**	**0.0000**	**0.0000**	**1.0000e-003**

6.2 Area by SubCategory

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	2.5132					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.4636					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-003
Total	**10.9768**	**0.0000**	**4.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.4000e-004**	**9.4000e-004**	**0.0000**	**0.0000**	**1.0000e-003**

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			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
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			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
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			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
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			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
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 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Greenhorn Sed Removal at Rollins Reservoir - 200k

Nevada County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.00	Acre	3.00	130,680.00	0
User Defined Recreational	49.70	User Defined Unit	49.70	2,164,932.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	80
Climate Zone	1			**Operational Year**	2020
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 - The construction emissions represents the operational emissions since the project will be implemented annually as maintenance.

Land Use - Acreage taken from CEQA Project Description for areas of disturbance.

Construction Phase - Construction details based on CEQA Project Description information. Sorting and Offsite Transport are split into two separate construction phases while Channelizing Creek Bed and Excavate Dewatering Channel are combined.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - No construction equipment usage. Haul trip only during this phase.

Off-road Equipment - No construction equipment usage. Haul trips only.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Off-road Equipment - Construction equipment details based on CEQA Project Description information.

Trips and VMT - Assumptions: 20 haul trips to mobilize/demobilize equipment, ~13,333 haul trips to remove 200k tons of sediment with 15 ton capacity truck, 6 daily vendor trips, and 6 workers will commute daily averaging 40 miles roundtrip.

On-road Fugitive Dust - The only known unpaved road is the road entering into the site from You Bet Road.

Grading -

Energy Use -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	40.00	131.00
tblConstructionPhase	NumDays	40.00	9.00
tblConstructionPhase	NumDays	110.00	6.00
tblConstructionPhase	NumDays	110.00	9.00
tblConstructionPhase	NumDays	40.00	105.00
tblConstructionPhase	NumDays	40.00	105.00

tblConstructionPhase	NumDays	110.00	105.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblLandUse	LandUseSquareFeet	0.00	2,164,932.00
tblLandUse	LotAcreage	0.00	49.70
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	HaulingPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	98.00

tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	13,333.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripLength	6.60	20.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	6.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	6.00

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					
2019	0.4764	7.2433	3.7095	0.0158	7.0188	0.2025	7.2213	0.7434	0.1909	0.9343	0.0000	1,467.8924	1,467.8924	0.1505	0.0000	1,471.6539
Maximum	**0.4764**	**7.2433**	**3.7095**	**0.0158**	**7.0188**	**0.2025**	**7.2213**	**0.7434**	**0.1909**	**0.9343**	**0.0000**	**1,467.8924**	**1,467.8924**	**0.1505**	**0.0000**	**1,471.6539**

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					
2019	0.4764	7.2433	3.7095	0.0158	4.3654	0.2025	4.5680	0.4774	0.1909	0.6684	0.0000	1,467.8918	1,467.8918	0.1505	0.0000	1,471.6533
Maximum	**0.4764**	**7.2433**	**3.7095**	**0.0158**	**4.3654**	**0.2025**	**4.5680**	**0.4774**	**0.1909**	**0.6684**	**0.0000**	**1,467.8918**	**1,467.8918**	**0.1505**	**0.0000**	**1,471.6533**

	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**	**37.80**	**0.00**	**36.74**	**35.78**	**0.00**	**28.47**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-1-2019**	**9-30-2019**	4.0007	4.0007
		Highest	4.0007	4.0007

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	10.9768	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-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	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	**10.9768**	**0.0000**	**4.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.4000e-004**	**9.4000e-004**	**0.0000**	**0.0000**	**1.0000e-003**

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	10.9768	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-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	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	**10.9768**	**0.0000**	**4.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.4000e-004**	**9.4000e-004**	**0.0000**	**0.0000**	**1.0000e-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

Greenhorn Sed Removal at Rollins Reservoir - 200k - Nevada County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation-Sorting	Site Preparation	7/1/2019	11/29/2019	6	131	Phase 2 Sorting
2	Site Preparation-Mobilization	Site Preparation	7/1/2019	7/10/2019	6	9	Phase 1 Mobilization
3	Grading-New Haul Road	Grading	7/15/2019	7/20/2019	6	6	Phase 1 Establish New Haul Road
4	Grading-Channelize Creek and Excavate Channel	Grading	7/21/2019	7/31/2019	6	9	Phase 1 Channelize Creek Bed and Excavate Dewatering Channel
5	Site Preparation-Sediment Stockpiling	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Transport to Stockpile
6	Site Preparation-Offsite Transport	Site Preparation	8/1/2019	11/30/2019	6	105	Phase 2 Offsite Transport
7	Grading-Conduct Sediment Removal	Grading	8/1/2019	11/30/2019	6	105	Phase 2 Conduct Sediment Removal
8	Site Preparation-Demobilization	Site Preparation	11/15/2019	12/31/2019	6	40	Phase 3 Demobilization

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 3

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation-Sorting	Crushing/Proc. Equipment	1	8.00	85	0.78
Site Preparation-Sorting	Dumpers/Tenders	1	8.00	16	0.38
Site Preparation-Sorting	Excavators	1	8.00	158	0.38
Site Preparation-Sorting	Generator Sets	2	8.00	84	0.74
Site Preparation-Sorting	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation-Sorting	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Site Preparation-Mobilization	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Mobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37

Grading-New Haul Road	Crawler Tractors	1	8.00	212	0.43
Grading-New Haul Road	Excavators	1	8.00	158	0.38
Grading-New Haul Road	Graders	0	0.00	187	0.41
Grading-New Haul Road	Rollers	2	8.00	80	0.38
Grading-New Haul Road	Rubber Tired Dozers	0	0.00	247	0.40
Grading-New Haul Road	Scrapers	2	8.00	367	0.48
Grading-New Haul Road	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading-Channelize Creek and Excavate Channel	Excavators	3	8.00	158	0.38
Grading-Channelize Creek and Excavate Channel	Graders	0	0.00	187	0.41
Grading-Channelize Creek and Excavate Channel	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Channelize Creek and Excavate Channel	Scrapers	0	0.00	367	0.48
Grading-Channelize Creek and Excavate Channel	Skid Steer Loaders	1	8.00	65	0.37
Grading-Channelize Creek and Excavate Channel	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Sediment Stockpiling	Crawler Tractors	1	8.00	212	0.43
Site Preparation-Sediment Stockpiling	Excavators	1	8.00	158	0.38
Site Preparation-Sediment Stockpiling	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Sediment Stockpiling	Skid Steer Loaders	1	8.00	65	0.37
Site Preparation-Sediment Stockpiling	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation-Offsite Transport	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation-Offsite Transport	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading-Conduct Sediment Removal	Excavators	2	8.00	158	0.38
Grading-Conduct Sediment Removal	Graders	0	0.00	187	0.41
Grading-Conduct Sediment Removal	Rubber Tired Dozers	0	0.00	247	0.40
Grading-Conduct Sediment Removal	Scrapers	2	8.00	367	0.48
Grading-Conduct Sediment Removal	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation-Demobilization	Rubber Tired Dozers	0	0.00	247	0.40

Site Preparation-Demobilization	Tractors/Loaders/Backhoes	0	0.00	97	0.37

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
Site Preparation-Sorting	5	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Mobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-New Haul Road	9	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading-Channelize Creek and Excavate C	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Sediment Stockpiling	4	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Offsite Transport	0	0.00	0.00	13,333.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT
Grading-Conduct Sediment Removal	6	6.00	6.00	0.00	40.00	20.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation-Demobilization	0	0.00	0.00	20.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation-Sorting - 2019

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	0.1198	0.9725	1.0043	1.7100e-003		0.0577	0.0577		0.0570	0.0570	0.0000	147.5215	147.5215	0.0179	0.0000	147.9686
Total	**0.1198**	**0.9725**	**1.0043**	**1.7100e-003**	**0.0000**	**0.0577**	**0.0577**	**0.0000**	**0.0570**	**0.0570**	**0.0000**	**147.5215**	**147.5215**	**0.0179**	**0.0000**	**147.9686**

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	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
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	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
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**	**0.0000**	**0.0000**

3.2 Site Preparation-Sorting - 2019

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	0.1198	0.9725	1.0043	1.7100e-003		0.0577	0.0577		0.0570	0.0570	0.0000	147.5213	147.5213	0.0179	0.0000	147.9684
Total	**0.1198**	**0.9725**	**1.0043**	**1.7100e-003**	**0.0000**	**0.0577**	**0.0577**	**0.0000**	**0.0570**	**0.0570**	**0.0000**	**147.5213**	**147.5213**	**0.0179**	**0.0000**	**147.9684**

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	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
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	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
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**	**0.0000**	**0.0000**

3.3 Site Preparation-Mobilization - 2019

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	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**	**0.0000**	**0.0000**

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	1.5000e-004	5.0000e-003	8.1000e-004	2.0000e-005	3.4000e-004	3.0000e-005	3.6000e-004	9.0000e-005	2.0000e-005	1.2000e-004	0.0000	1.4300	1.4300	4.0000e-005	0.0000	1.4310
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	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
Total	**1.5000e-004**	**5.0000e-003**	**8.1000e-004**	**2.0000e-005**	**3.4000e-004**	**3.0000e-005**	**3.6000e-004**	**9.0000e-005**	**2.0000e-005**	**1.2000e-004**	**0.0000**	**1.4300**	**1.4300**	**4.0000e-005**	**0.0000**	**1.4310**

3.3 Site Preparation-Mobilization - 2019

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	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**	**0.0000**	**0.0000**

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	1.5000e-004	5.0000e-003	8.1000e-004	2.0000e-005	3.4000e-004	3.0000e-005	3.6000e-004	9.0000e-005	2.0000e-005	1.2000e-004	0.0000	1.4300	1.4300	4.0000e-005	0.0000	1.4310
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	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
Total	**1.5000e-004**	**5.0000e-003**	**8.1000e-004**	**2.0000e-005**	**3.4000e-004**	**3.0000e-005**	**3.6000e-004**	**9.0000e-005**	**2.0000e-005**	**1.2000e-004**	**0.0000**	**1.4300**	**1.4300**	**4.0000e-005**	**0.0000**	**1.4310**

3.4 Grading-New Haul Road - 2019

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					7.9500e-003	0.0000	7.9500e-003	8.6000e-004	0.0000	8.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1440	0.0981	1.7000e-004		6.6200e-003	6.6200e-003		6.0900e-003	6.0900e-003	0.0000	15.5946	15.5946	4.9300e-003	0.0000	15.7179
Total	**0.0125**	**0.1440**	**0.0981**	**1.7000e-004**	**7.9500e-003**	**6.6200e-003**	**0.0146**	**8.6000e-004**	**6.0900e-003**	**6.9500e-003**	**0.0000**	**15.5946**	**15.5946**	**4.9300e-003**	**0.0000**	**15.7179**

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	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
Vendor	2.0000e-004	4.5500e-003	1.0400e-003	1.0000e-005	8.5900e-003	5.0000e-005	8.6400e-003	9.2000e-004	5.0000e-005	9.6000e-004	0.0000	1.1555	1.1555	4.0000e-005	0.0000	1.1565
Worker	2.7000e-004	2.7000e-004	2.2100e-003	1.0000e-005	0.0171	0.0000	0.0171	1.7900e-003	0.0000	1.7900e-003	0.0000	0.4639	0.4639	2.0000e-005	0.0000	0.4644
Total	**4.7000e-004**	**4.8200e-003**	**3.2500e-003**	**2.0000e-005**	**0.0257**	**5.0000e-005**	**0.0257**	**2.7100e-003**	**5.0000e-005**	**2.7500e-003**	**0.0000**	**1.6194**	**1.6194**	**6.0000e-005**	**0.0000**	**1.6208**

3.4 Grading-New Haul Road - 2019

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					3.5800e-003	0.0000	3.5800e-003	3.9000e-004	0.0000	3.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0125	0.1440	0.0981	1.7000e-004		6.6200e-003	6.6200e-003		6.0900e-003	6.0900e-003	0.0000	15.5946	15.5946	4.9300e-003	0.0000	15.7179
Total	**0.0125**	**0.1440**	**0.0981**	**1.7000e-004**	**3.5800e-003**	**6.6200e-003**	**0.0102**	**3.9000e-004**	**6.0900e-003**	**6.4800e-003**	**0.0000**	**15.5946**	**15.5946**	**4.9300e-003**	**0.0000**	**15.7179**

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	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
Vendor	2.0000e-004	4.5500e-003	1.0400e-003	1.0000e-005	5.3800e-003	5.0000e-005	5.4300e-003	6.0000e-004	5.0000e-005	6.4000e-004	0.0000	1.1555	1.1555	4.0000e-005	0.0000	1.1565
Worker	2.7000e-004	2.7000e-004	2.2100e-003	1.0000e-005	0.0106	0.0000	0.0107	1.1500e-003	0.0000	1.1500e-003	0.0000	0.4639	0.4639	2.0000e-005	0.0000	0.4644
Total	**4.7000e-004**	**4.8200e-003**	**3.2500e-003**	**2.0000e-005**	**0.0160**	**5.0000e-005**	**0.0161**	**1.7500e-003**	**5.0000e-005**	**1.7900e-003**	**0.0000**	**1.6194**	**1.6194**	**6.0000e-005**	**0.0000**	**1.6208**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	6.0000e-003	0.0623	0.0710	1.1000e-004		3.3800e-003	3.3800e-003		3.1100e-003	3.1100e-003	0.0000	9.6060	9.6060	3.0400e-003	0.0000	9.6820
Total	**6.0000e-003**	**0.0623**	**0.0710**	**1.1000e-004**	**0.0000**	**3.3800e-003**	**3.3800e-003**	**0.0000**	**3.1100e-003**	**3.1100e-003**	**0.0000**	**9.6060**	**9.6060**	**3.0400e-003**	**0.0000**	**9.6820**

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	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
Vendor	3.0000e-004	6.8300e-003	1.5600e-003	2.0000e-005	0.0129	7.0000e-005	0.0130	1.3800e-003	7.0000e-005	1.4400e-003	0.0000	1.7332	1.7332	6.0000e-005	0.0000	1.7347
Worker	4.0000e-004	4.1000e-004	3.3100e-003	1.0000e-005	0.0256	1.0000e-005	0.0256	2.6800e-003	0.0000	2.6900e-003	0.0000	0.6959	0.6959	3.0000e-005	0.0000	0.6966
Total	**7.0000e-004**	**7.2400e-003**	**4.8700e-003**	**3.0000e-005**	**0.0385**	**8.0000e-005**	**0.0386**	**4.0600e-003**	**7.0000e-005**	**4.1300e-003**	**0.0000**	**2.4291**	**2.4291**	**9.0000e-005**	**0.0000**	**2.4313**

3.5 Grading-Channelize Creek and Excavate Channel - 2019

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	6.0000e-003	0.0623	0.0710	1.1000e-004		3.3800e-003	3.3800e-003		3.1100e-003	3.1100e-003	0.0000	9.6060	9.6060	3.0400e-003	0.0000	9.6820
Total	**6.0000e-003**	**0.0623**	**0.0710**	**1.1000e-004**	**0.0000**	**3.3800e-003**	**3.3800e-003**	**0.0000**	**3.1100e-003**	**3.1100e-003**	**0.0000**	**9.6060**	**9.6060**	**3.0400e-003**	**0.0000**	**9.6820**

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	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
Vendor	3.0000e-004	6.8300e-003	1.5600e-003	2.0000e-005	8.0700e-003	7.0000e-005	8.1400e-003	8.9000e-004	7.0000e-005	9.6000e-004	0.0000	1.7332	1.7332	6.0000e-005	0.0000	1.7347
Worker	4.0000e-004	4.1000e-004	3.3100e-003	1.0000e-005	0.0160	1.0000e-005	0.0160	1.7200e-003	0.0000	1.7200e-003	0.0000	0.6959	0.6959	3.0000e-005	0.0000	0.6966
Total	**7.0000e-004**	**7.2400e-003**	**4.8700e-003**	**3.0000e-005**	**0.0240**	**8.0000e-005**	**0.0241**	**2.6100e-003**	**7.0000e-005**	**2.6800e-003**	**0.0000**	**2.4291**	**2.4291**	**9.0000e-005**	**0.0000**	**2.4313**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.0278	0.0000	0.0278	3.0100e-003	0.0000	3.0100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0624	0.7423	0.5006	9.5000e-004		0.0335	0.0335		0.0308	0.0308	0.0000	85.7558	85.7558	0.0271	0.0000	86.4341
Total	**0.0624**	**0.7423**	**0.5006**	**9.5000e-004**	**0.0278**	**0.0335**	**0.0614**	**3.0100e-003**	**0.0308**	**0.0339**	**0.0000**	**85.7558**	**85.7558**	**0.0271**	**0.0000**	**86.4341**

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	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
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	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
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**	**0.0000**	**0.0000**

3.6 Site Preparation-Sediment Stockpiling - 2019

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					0.0125	0.0000	0.0125	1.3500e-003	0.0000	1.3500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0624	0.7423	0.5006	9.5000e-004		0.0335	0.0335		0.0308	0.0308	0.0000	85.7557	85.7557	0.0271	0.0000	86.4340
Total	**0.0624**	**0.7423**	**0.5006**	**9.5000e-004**	**0.0125**	**0.0335**	**0.0461**	**1.3500e-003**	**0.0308**	**0.0322**	**0.0000**	**85.7557**	**85.7557**	**0.0271**	**0.0000**	**86.4340**

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	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
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	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
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**	**0.0000**	**0.0000**

3.7 Site Preparation-Offsite Transport - 2019

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	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**	**0.0000**	**0.0000**

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	0.1024	3.3327	0.5380	0.0100	6.3488	0.0171	6.3659	0.6723	0.0164	0.6887	0.0000	953.3210	953.3210	0.0264	0.0000	953.9801
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	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
Total	**0.1024**	**3.3327**	**0.5380**	**0.0100**	**6.3488**	**0.0171**	**6.3659**	**0.6723**	**0.0164**	**0.6887**	**0.0000**	**953.3210**	**953.3210**	**0.0264**	**0.0000**	**953.9801**

3.7 Site Preparation-Offsite Transport - 2019

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	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**	**0.0000**	**0.0000**

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	0.1024	3.3327	0.5380	0.0100	3.9724	0.0171	3.9896	0.4347	0.0164	0.4511	0.0000	953.3210	953.3210	0.0264	0.0000	953.9801
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	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
Total	**0.1024**	**3.3327**	**0.5380**	**0.0100**	**3.9724**	**0.0171**	**3.9896**	**0.4347**	**0.0164**	**0.4511**	**0.0000**	**953.3210**	**953.3210**	**0.0264**	**0.0000**	**953.9801**

3.8 Grading-Conduct Sediment Removal - 2019

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					0.1114	0.0000	0.1114	0.0120	0.0000	0.0120	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1637	1.8830	1.4309	2.4600e-003		0.0831	0.0831		0.0765	0.0765	0.0000	220.8456	220.8456	0.0699	0.0000	222.5924
Total	**0.1637**	**1.8830**	**1.4309**	**2.4600e-003**	**0.1114**	**0.0831**	**0.1944**	**0.0120**	**0.0765**	**0.0885**	**0.0000**	**220.8456**	**220.8456**	**0.0699**	**0.0000**	**222.5924**

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	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
Vendor	3.5300e-003	0.0797	0.0182	2.1000e-004	0.1503	8.4000e-004	0.1512	0.0161	8.1000e-004	0.0169	0.0000	20.2208	20.2208	6.9000e-004	0.0000	20.2380
Worker	4.6900e-003	4.7800e-003	0.0386	9.0000e-005	0.2985	6.0000e-005	0.2986	0.0313	6.0000e-005	0.0313	0.0000	8.1186	8.1186	3.2000e-004	0.0000	8.1266
Total	**8.2200e-003**	**0.0844**	**0.0568**	**3.0000e-004**	**0.4489**	**9.0000e-004**	**0.4498**	**0.0473**	**8.7000e-004**	**0.0482**	**0.0000**	**28.3394**	**28.3394**	**1.0100e-003**	**0.0000**	**28.3646**

3.8 Grading-Conduct Sediment Removal - 2019

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					0.0501	0.0000	0.0501	5.4100e-003	0.0000	5.4100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1637	1.8830	1.4309	2.4600e-003		0.0831	0.0831		0.0765	0.0765	0.0000	220.8453	220.8453	0.0699	0.0000	222.5922
Total	**0.1637**	**1.8830**	**1.4309**	**2.4600e-003**	**0.0501**	**0.0831**	**0.1332**	**5.4100e-003**	**0.0765**	**0.0819**	**0.0000**	**220.8453**	**220.8453**	**0.0699**	**0.0000**	**222.5922**

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	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
Vendor	3.5300e-003	0.0797	0.0182	2.1000e-004	0.0942	8.4000e-004	0.0950	0.0104	8.1000e-004	0.0112	0.0000	20.2208	20.2208	6.9000e-004	0.0000	20.2380
Worker	4.6900e-003	4.7800e-003	0.0386	9.0000e-005	0.1863	6.0000e-005	0.1863	0.0201	6.0000e-005	0.0201	0.0000	8.1186	8.1186	3.2000e-004	0.0000	8.1266
Total	**8.2200e-003**	**0.0844**	**0.0568**	**3.0000e-004**	**0.2804**	**9.0000e-004**	**0.2813**	**0.0305**	**8.7000e-004**	**0.0314**	**0.0000**	**28.3394**	**28.3394**	**1.0100e-003**	**0.0000**	**28.3646**

3.9 Site Preparation-Demobilization - 2019

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	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**	**0.0000**	**0.0000**

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	1.5000e-004	5.0000e-003	8.1000e-004	2.0000e-005	9.5200e-003	3.0000e-005	9.5500e-003	1.0100e-003	2.0000e-005	1.0300e-003	0.0000	1.4300	1.4300	4.0000e-005	0.0000	1.4310
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	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
Total	**1.5000e-004**	**5.0000e-003**	**8.1000e-004**	**2.0000e-005**	**9.5200e-003**	**3.0000e-005**	**9.5500e-003**	**1.0100e-003**	**2.0000e-005**	**1.0300e-003**	**0.0000**	**1.4300**	**1.4300**	**4.0000e-005**	**0.0000**	**1.4310**

3.9 Site Preparation-Demobilization - 2019

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	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**	**0.0000**	**0.0000**

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	1.5000e-004	5.0000e-003	8.1000e-004	2.0000e-005	5.9600e-003	3.0000e-005	5.9800e-003	6.5000e-004	2.0000e-005	6.8000e-004	0.0000	1.4300	1.4300	4.0000e-005	0.0000	1.4310
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	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
Total	**1.5000e-004**	**5.0000e-003**	**8.1000e-004**	**2.0000e-005**	**5.9600e-003**	**3.0000e-005**	**5.9800e-003**	**6.5000e-004**	**2.0000e-005**	**6.8000e-004**	**0.0000**	**1.4300**	**1.4300**	**4.0000e-005**	**0.0000**	**1.4310**

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
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
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
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
User Defined Recreational	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901
User Defined Recreational	0.424008	0.043716	0.245079	0.148024	0.041041	0.007155	0.014640	0.065027	0.001791	0.000746	0.006285	0.000584	0.001901

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					
Other Non-Asphalt Surfaces	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
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**

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					
Other Non-Asphalt Surfaces	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
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			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
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	10.9768	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-003
Unmitigated	10.9768	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-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	tons/yr										MT/yr					
Architectural Coating	2.5132					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.4636					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-003
Total	**10.9768**	**0.0000**	**4.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.4000e-004**	**9.4000e-004**	**0.0000**	**0.0000**	**1.0000e-003**

6.2 Area by SubCategory

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	2.5132					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.4636					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.4000e-004	9.4000e-004	0.0000	0.0000	1.0000e-003
Total	**10.9768**	**0.0000**	**4.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.4000e-004**	**9.4000e-004**	**0.0000**	**0.0000**	**1.0000e-003**

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			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
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			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
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			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
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			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
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 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX E

Sediment Characterization Report, 2019

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SEDIMENT CHARACTERIZATION REPORT

FOR

GREENHORN SEDIMENT REMOVAL AT ROLLINS RESERVOIR

NEVADA COUNTY, CALIFORNIA

PREPARED FOR:

NEVADA IRRIGATION DISTRICT
ENGINEERING DEPARTMENT
1036 WEST MAIN STREET
GRASS VALLEY, CA 95945

792 SEARLS AVENUE
NEVADA CITY, CALIFORNIA 95959
PROJECT NO. 5264.00

Project No. 5264.00
March 25, 2019

Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

Attention: Gary King, PE, Engineering Manager

Reference: ***Greenhorn Sediment Removal at Rollins Reservoir***
Nevada Irrigation District FATR #8515
Nevada County, California

Subject: ***Sediment Characterization Report***

Dear Mr. King:

On behalf of the Nevada Irrigation District (NID), NV5 prepared this report to summarize site investigation procedures and to present the results of sediment characterization for the Greenhorn Sediment Removal at Rollins Reservoir Project. The site investigation was performed in general accordance with the scope of work presented in the *Revised Proposal for Sediment Characterization, Greenhorn Sediment Removal at Rollins Reservoir* (NV5; February 28, 2019).

NV5 appreciates the opportunity to perform sediment characterization in support of the maintenance of our local reservoirs. Please contact the undersigned with any questions or comments regarding the investigation.

Sincerely,

NV5

Mars Nelson Tredwell
Staff Geologist

Jason W. Muir, C.E. 60167
Associate Engineer

REGISTERED PROFESSIONAL ENGINEER
JASON W. MUIR
No. 60167
Exp. 06 / 20
CIVIL
STATE OF CALIFORNIA

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ACRONYMS AND ABBREVIATIONS

ATL	Advanced Technology Laboratories, Inc.
CalEPA	California Environmental Protection Agency
CAM	California Assessment Manual
CCR	California Code of Regulations
CFR	Code of Federal Regulations
CTR	California Toxics Rule
CWC	California Water Code
DTSC	California Department of Toxic Substances Control
DTSC-SL	DTSC Screening Level
ELAP	Environmental Laboratory Accreditation Program
EPA	United States Environmental Protection Agency
MCL	Maximum Contaminant Level
MDL	method detection limit
mg/kg	milligram per kilogram
MQO	measurement quality objective
MS	matrix spike
MSD	matrix spike duplicate
NID	Nevada Irrigation District
Non 15	Non Chapter 15 Program
NTR	National Toxics Rule
OEHHA	Office of Environmental Health Hazard Assessment
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PQL	practical quantitation limit
RL	laboratory reporting limit
RPD	relative percent difference
RSL	USEPA Regional Screening Level
RWQCB	California Regional Water Quality Control Board
SL	screening level
STLC	Soluble Threshold Limit Concentration
SVOC	semivolatile organic compound
SWRCB	California State Water Resources Control Board
Title 22	Title 22 of the California Code of Regulations
TPH	total petroleum hydrocarbons
TTLC	Total Threshold Limit Concentration
USGS	United States Geological Survey
WDR	Waste Discharge Requirement
%REC	percent recovery

1 INTRODUCTION

On behalf of the Nevada Irrigation District (NID), NV5 prepared this report to summarize the methodology and findings of sediment characterization performed at the Greenhorn Creek inlet of Rollins Reservoir in Nevada County, California. The site investigation was performed in general accordance with the scope of work presented in our *Revised Proposal for Sediment Characterization, Greenhorn Sediment Removal at Rollins Reservoir* (NV5; February 28, 2019).

1.1 PURPOSE

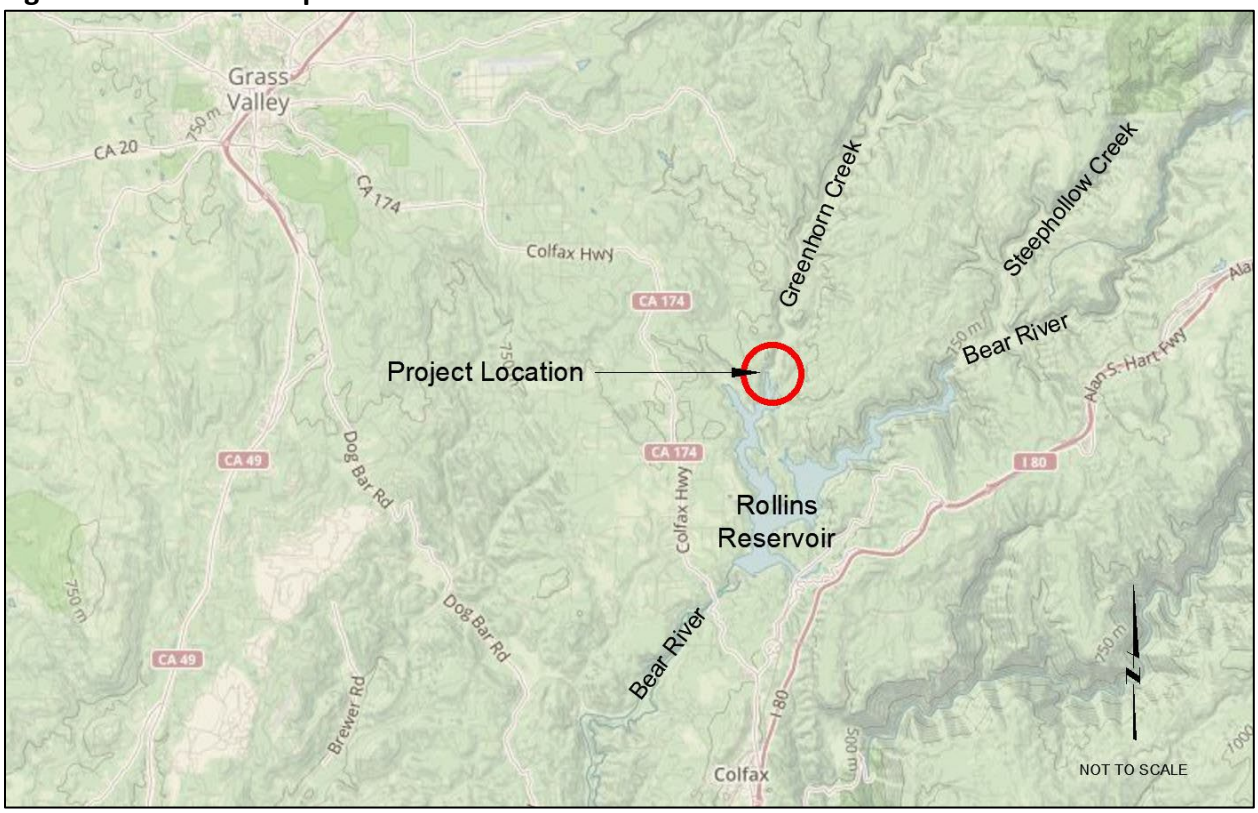
The purpose of the investigation was to obtain bulk sediment samples and to test the samples for total and soluble concentrations of inorganic constituents (metals) and total concentrations of organic constituents. Findings of the sediment characterization are intended to facilitate project planning and permitting.

The purpose of the sediment removal project is to restore and maintain the reservoir's historical water storage capacity; reduce the transport of sediment further into the reservoir; restore recreational opportunities and boating access; and improve aquatic habitat.

1.2 SITE LOCATION

The site is located in unincorporated Nevada County, California, approximately six miles north of the City of Colfax on the Greenhorn arm of Rollins Reservoir. The site is located within Sections 10 and 11 of Township 15 North, Range 9 East, on the Chicago Park 7.5-minute USGS topographic quadrangle.

Figure 1 – Location Map

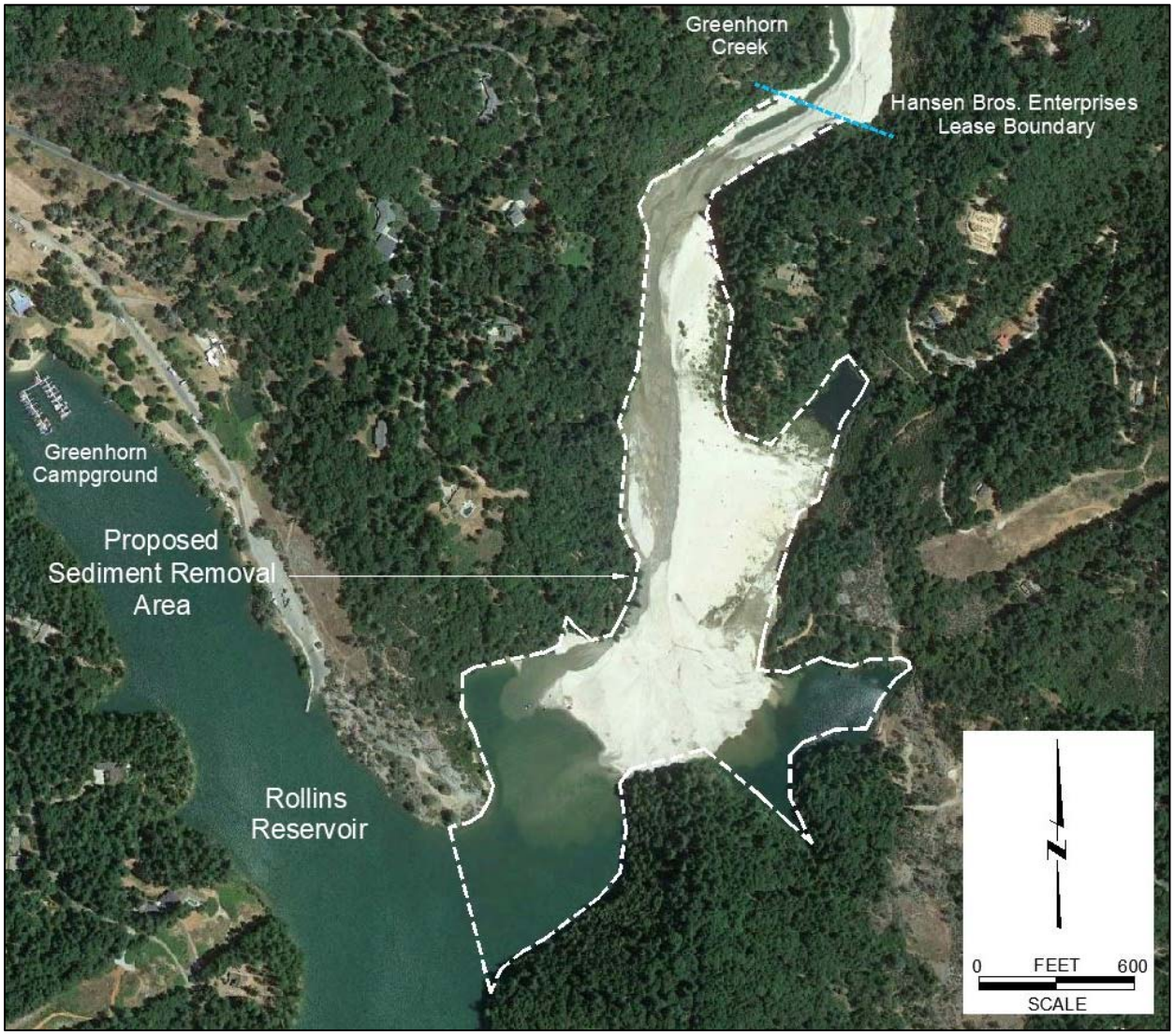


Base map from United States Geological Survey (https://ngmdb.usgs.gov/topoview/)

1.3 SITE DESCRIPTION

The proposed sediment removal area comprises approximately 50 acres of the lower Greenhorn arm of Rollins Reservoir between the main body of the reservoir (to the south) and the Hansen Bros. Enterprises lease area (to the north).

Figure 2 – Site Map



Base map from Google Earth; aerial image from June 26, 2018

1.4 BACKGROUND

NID (2017) reports that since the construction of Rollins Reservoir Dam in 1965, an estimated 10,000 acre-feet of the original 65,998 acre-feet water storage capacity (17%) has been lost. Sediment continues to be deposited in the Greenhorn arm and is subsequently transported into the reservoir during winter high-flow events. NID estimates that up to approximately 200,000 tons (three acre-feet) of material could be removed from the Greenhorn arm of Rollins Reservoir per year, depending on market demand for aggregate materials. A typical year (based on similar activities) would likely include removal of approximately 50,000 tons.

Photo 1 – Greenhorn arm of Rollins Reservoir

March 4, 2019, view to south

1.5 RATIONALE FOR SAMPLING STRATEGY

The sediment sampling and laboratory analysis are intended to provide information regarding inorganic and organic constituents in near-surface sediment to facilitate planning and permitting. The laboratory results are evaluated by comparison to common regulatory benchmarks.

Twelve discrete sediment samples were obtained from within the upper three feet of the sediment surface using hand tools. The sediment removal area was divided into three sub-areas (north, central and south) each measuring approximately 16 to 17 acres. One composite sample was prepared for each sub-area by combining equal parts by weight of four discrete samples obtained from that sub-area. The three composite samples were shipped to a California-certified laboratory for analysis of metals and organic constituents.

1.6 REGULATORY FRAMEWORK

The California EPA (CalEPA), including the State Water Resources Control Board (SWRCB) and the Department of Toxic Substances Control (DTSC), is responsible for protection of public health and the environment. The SWRCB and its nine Regional Water Quality Control Boards (RWQCBs) have the responsibility for the coordination and control of water quality, including the protection of the beneficial uses of the waters of the state. The site is located within the SWRCB's Central Valley Region. DTSC has the responsibility of managing the state's hazardous waste program to protect public health and the environment.

1.6.1 Water Quality

The regulatory framework governing protection of water quality in California is described in the Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California, which is also known as the State Implementation Policy (SWRCB 2005). Pursuant to the State Implementation Policy, the following water quality objectives and criteria are potentially applicable based on state and federal regulation.

Federal Water Quality Criteria

Federal water quality criteria are set forth in the National Toxics Rule (NTR; EPA 1995) and in the California Toxics Rule (CTR; EPA 2000), which is promulgated by the EPA in 40 CFR 131.38.

Basin Plan Objectives

Water quality objectives are identified in the Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin (RWQCB 2018). The Basin Plan does not specify beneficial uses specifically for Greenhorn Creek or Rollins Reservoir, but lists the following existing and potential beneficial uses for the Bear River:

- Municipal and domestic supply;
- Agricultural water supply;
- Electrical power generation;
- Water contact and non-contact recreation;
- Warm and cold freshwater habitat;
- Potential warm/cold water migration of aquatic organisms (such as anadromous fish);
- Potential warm/cold water spawning, reproduction and/or early development of fish; and
- Wildlife habitat.

Water quality objectives corresponding to these beneficial uses include Maximum Contaminant Levels (MCLs) for drinking water specified in Title 22 of the California Code of Regulations (22 CCR), CTR values for protection of human health and aquatic life, and agricultural water quality objectives. The Basin Plan defines water quality objectives for metals as dissolved concentrations except for selenium, molybdenum, and boron, which are defined as total concentrations.

Ambient Water Quality Criteria

EPA ambient water quality recommended criteria and other criteria are commonly used by the RWQCB to interpret narrative objectives in the Basin Plan, such as Office of Environmental Health Hazard Assessment (OEHHA) fish consumption benchmarks, federal and state antidegradation requirements, and waterway-specific benchmarks.

Waste Disposal to Land

The California Water Code (CWC), Division 7, Chapter 4, Article 4, Sections 13260 through 13274, pertains to Waste Discharge Requirements (WDRs) issued by the RWQCB. State regulations pertaining to the treatment, storage, processing, or disposal of solid waste are found in California Code of Regulations (CCR) Title 27, beginning with Section 20005. Pursuant to Title 27 Section 20090, certain activities are exempt from Title 27.

The RWQCB Non Chapter 15 (Non 15) Program regulates point discharges that are exempt from Title 27 pursuant to Subsection 20090 and are not subject to the Federal Water Pollution Control Act. The Non 15 Program also regulates the discharge of wastes classified as inert pursuant to Section 20230 of Title 27. Section 20230 defines inert waste as solid waste that does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives; and does not contain significant quantities of decomposable waste.

Inert wastes do not need to be discharged at classified waste disposal units, and the RWQCB can prescribe individual or general WDRs for discharges of inert wastes.

1.6.2 Human Health

Screening levels related to protection of human health in the case of routine, long term exposure by direct pathways (i.e., ingestion, inhalation and dermal contact) commonly include EPA Regional Screening Levels (RSLs) and DTSC Screening Levels (DTSC-SLs). For inorganics, background concentrations are also used as a basis for comparison.

RSLs and DTSC-SLs include inorganic constituent concentrations that are based on the protection of public health. In California, DTSC-SLs are commonly used in lieu of RSLs when DTSC uses toxicity criteria that are different than the toxicity criteria used by EPA.

The RSLs and DTSC-SLs are considered conservative. Under most circumstances, the presence of a chemical in media at concentrations less than the corresponding RSL or DTSC-SL can be assumed not to pose a significant, long-term (chronic) threat to human health. The presence of a chemical or inorganic constituent at a concentration in excess of a screening level does not necessarily indicate that adverse impacts to human health are occurring or will occur; however, further evaluation of potential human health concerns are generally appropriate if screening values are exceeded.

1.7 LIMITATIONS AND EXCEPTIONS

NV5 performed this work in accordance with present, regional, generally accepted standards of care. This report does not represent a legal opinion. No warranty, expressed or implied, including any implied warranty of merchantability or fitness for the purpose is made or intended in connection with the work.

The findings of this report are valid as of the present date. However, changes in the conditions of the property can occur with the passage of time. The changes may be due to natural processes or to the works of man, on the project site or adjacent properties. Changes in regulations, interpretations, and/or enforcement policies may occur at any time.

Concentrations detected in the samples collected during the site investigation may not be representative of conditions between the locations sampled. Other forms of contamination may be present within the site that the investigation did not detect. Professional judgment and interpretation are inherent in the process and uncertainty is inevitable. Therefore, the findings presented in this report may need to be revised based on the results of future sampling and analysis.

2 INVESTIGATION METHODOLOGY

The investigation was performed on March 4, 2019. The investigation methodology is summarized below. Sample locations are depicted on Figure 1.3.

Because the sampling event was performed during high water conditions in March 2019, the site was accessed by boat from the south. The southern sediment sample locations were submerged, and therefore these samples were collected beneath the water surface. The northern sample locations were accessed on foot, walking north from the creek inlet.

2.1 SEDIMENT SAMPLING

Sediment samples were collected as grab samples (independent, discrete samples) from twelve locations (19GHC1-1 through 1-4; 19GHC2-1 through 2-4; and 19GHC3-1 through 3-4) via foot and boat using a hand-actuated slide hammer fitted with a 4-foot long, stainless steel sampling shoe lined with 2-inch diameter clear polyvinyl chloride (PVC) sleeves. In general, samples were obtained from the upper three feet of the sediment deposit.

Because the depth of water at sample location 19GHC3-4 was greater than six feet, a steel clamshell sampler was used instead of the drive sampler. The sample collected with the clamshell sampler was obtained from the upper foot of the sediment deposit.

Photo 2 – Sample location 19GHC1-1

March 4, 2019

The discrete samples were transferred to laboratory-supplied glass jars and were placed in pre-chilled, thermally-insulated container for transport to the NV5 laboratory in Nevada City, where they were composited and packaged for shipping.

Discrete sediment samples 19GHC1-1 through 19GHC1-4 were composited in equal parts by weight to prepare composite sample 19GHC-1 (northern third of sediment removal area). Likewise, discrete sediment samples 19GHC2-1 through 19GHC2-4 were used to prepare composite sample 19GHC-2 (central), and discrete sediment samples 19GHC3-1 through 19GHC3-4 were used to prepare composite sample 19GHC-3 (southern).

The composite samples were placed on ice in a thermally-insulated container and were shipped via overnight mail to the laboratory. Sample handling and shipment were performed under chain-of-custody documentation. Equipment decontamination procedures are described in the following section.

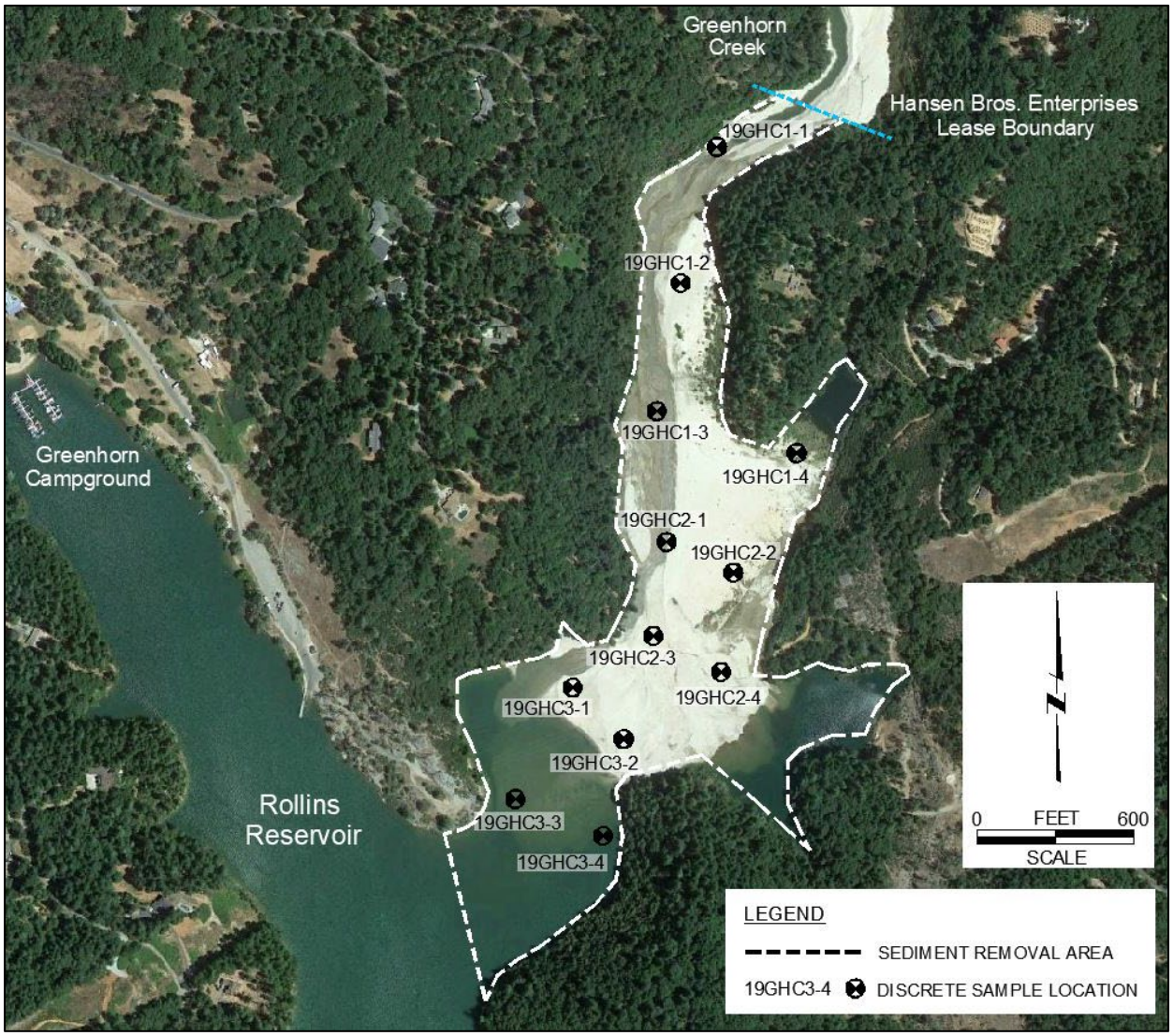
Photo 3 – Sample location 19GHC1-2

March 4, 2019

2.2 SAMPLE LOCATIONS

Sample locations are depicted on the Figure 3. Sample coordinates are listed in the following Table 2.1.

Figure 3 – Sample Location Map



Base map from Google Earth; aerial image from June 26, 2018

Table 2.1 – Sample Location Coordinates

Sample Number	Latitude	Longitude
19GHC1-1	39.170230°	-120.947151°
19GHC1-2	39.168789°	-120.947627°
19GHC1-3	39.167451°	-120.947947°
19GHC1-4	39.167015°	-120.946065°
19GHC2-1	39.166112°	-120.947814°
19GHC2-2	39.165767°	-120.946901°
19GHC2-3	39.165107°	-120.947978°
19GHC2-4	39.164732°	-120.947088°
19GHC3-1	39.164574°	-120.949064°

Table 2.1 – Sample Location Coordinates

19GHC3-2	39.164035°	-120.948384°
19GHC-3-3	39.163430°	-120.949829°
19GHC-3-4	39.163055°	-120.948657°

Notes:
Coordinates are approximate and were not determined by survey methods.

2.3 DECONTAMINATION

The laboratory testing program included analysis of inorganic (metals) and organic constituents. Single-use sample containers and equipment were used when possible to reduce the chance of cross-contamination. When reusable equipment was employed, decontamination was performed prior to sampling and between composite sample locations to remove potential contaminants from the sampling equipment.

The PVC sample liners were decontaminated prior to the sampling event by using laboratory-grade liquid soap (Liquinox™), a dilute nitric acid wash and triple rinsing with tap water and deionized water. The steel sampling equipment was decontaminated before its first use and between composite sample locations by washing with Liquinox™ and rinsing with tap water.

2.4 LABORATORY ANALYSIS

The laboratory testing program included analysis of the three composite sediment samples 19GHC-1, 19GHC-2 and 19GHC-3 for inorganic and organic constituents as described in the following sections.

Analysis was performed by Advanced Technology Laboratories (ATL; Environmental Laboratory Accreditation Program [ELAP] certification number 1838) of Signal Hill, California. ATL subcontracted the analysis of hexavalent chromium (CrVI; EPA Method 7199) to American Scientific Laboratories, LLC (ELAP certification number 2200).

2.5 Inorganics Analysis

The composite sediment samples were analyzed for the heavy metals listed in the RWQCB General Order for Maintenance Dredging (R5-2009-0085), including total CAM 17 (Title 22) metals, total aluminum, and hexavalent chromium.

Table 2.2 – Laboratory Testing Program, Inorganics, Total Concentrations

Analysis	Method
Total CAM 17 (Title 22) Metals	EPA 6010B
Total Mercury	EPA 7471A
Total Aluminum	EPA 6010B
Total Hexavalent Chromium	EPA 7199A

Notes:
CAM = California Assessment Manual
EPA = United States Environmental Protection Agency
Title 22 Metals = Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Mo, Ni, Se, Ag, Tl, V, Zn

Extraction testing was performed for waste characterization purposes using the Title 22 Waste Extraction Test (WET) with the standard citrate buffer and the Toxicity Characteristic Leaching Procedure (TCLP). The extractant solutions were analyzed for CAM 17 (Title 22) metals (including mercury).

Table 2.3 – Laboratory Testing Program, Inorganics, Extractable Concentrations

Analysis	Method
WET CAM 17 (Title 22) Metals	CCR Ch11 Article 5 App II (extraction) EPA 6010B/7471A (analysis)
TCLP CAM 17 (Title 22) Metals	EPA 1311 (extraction) EPA 6010B/7471A (analysis)

Notes:
CAM = California Assessment Manual
TCLP = Toxicity Characteristic Leaching Potential
Title 22 Metals = Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Mo, Ni, Se, Ag, Tl, V, Zn
EPA = United States Environmental Protection Agency
WET = Title 22 Waste Extraction Test, standard citrate buffered extractant solution

2.5.1 Organics Analysis

Organics analysis consisted of semi-volatile organic compounds (SVOCs); total petroleum hydrocarbons (TPH) in the gas, diesel, and motor oil ranges; polychlorinated biphenyls (PCBs); and polycyclic aromatic hydrocarbons (PAHs), as summarized below.

Table 2.4 – Laboratory Testing Program, Organics

Analysis	Method
Semi-volatile organic compounds (SVOCs)	EPA 8270C
TPH Gas, Diesel, Motor Oil	EPA 8015B Modified
Polychlorinated biphenyls (PCBs)	EPA 8082
Polycyclic aromatic hydrocarbons (PAHs)	EPA 8270C

Notes:
EPA = United States Environmental Protection Agency
TPH = total petroleum hydrocarbons

3 DATA VALIDATION

Investigation data were reviewed to assess the accuracy of data recording, processing and transmittal. Based on the findings of the data validation, the data were accepted for use. Data validation procedures and criteria are summarized below.

No field quality control (QC) samples (e.g., field replicates or blanks) were obtained. Laboratory QC data are presented in the laboratory report (Appendix A) and are summarized below. Laboratory measurement quality objectives (MQOs) are defined by the contract laboratory.

3.1 PRECISION

The precision of laboratory analysis is assessed by comparing the analytical results with laboratory duplicate results for inorganic analysis. For laboratory precision, general MQOs include:

- Relative percent difference (RPD) between duplicate blank spikes less than or equal to 20%.
- RPD between laboratory duplicate samples less than or equal to 30% for analyte concentrations greater than or equal to five times the MDL, and the absolute concentration difference less than or equal to the MDL for analyte concentrations less than five times the MDL.
- RPD between MSD samples less than or equal to 20%.

No duplicate blank spikes or laboratory duplicate samples were analyzed. MS/MSD recoveries were within the acceptable RPD range.

3.2 ACCURACY

NV5 assessed the accuracy of laboratory results by reviewing method blank, reagent and preparation blank, and MS/MSD results. The percent recovery (%REC or %R as shown in the following equation) of MS samples was calculated using the following equation:

$$\%R_i = \left(\frac{Y_i}{X_i}\right) \times 100$$

where:

$\%R_i$ = percent recovery for compound i

Y_i = measured analyte concentration in sample i (measured - original sample concentration)

X_i = known analyte concentration in sample i

For matrix spikes, the %REC calculation typically takes into account correcting the matrix spike concentration for the naturally occurring amounts (as measured in the unspiked sample). The calculation may be represented by the following equation:

$$\%R = \frac{(A - B)}{K} \times 100$$

where:

%R = percent recovery

A = measured value or concentration in the matrix spike

B = measured value or concentration in the unspiked sample

K = known or accepted/true value or concentration in the matrix spike without native amounts present

For laboratory accuracy, the MQOs are:

- Detections less than the RL for field blanks.
- Detections less than ½ the RL for laboratory blanks.
- %REC between 80 and 120%.

Quality control flags are summarized below. These flags did not signify a negative impact on data usability.

- No field blank samples were collected or analyzed.
- %REC for LCS and MS samples were within acceptable limits.
- MSD recoveries for thallium and mercury were outside of acceptance limits, and the analytical batch was validated by the LCS.
- Mercury was detected in a laboratory blank sample at a concentration of 0.032 ug/L.
- The RPD for mercury MSD was outside the acceptance criteria and the analytical batch was validated by the LCS.
- MSD recovery for 2,4-dinitrophenol was outside the acceptance limit due to possible matrix interference. The analytical batch was validated by the LCS.

3.3 REPRESENTATIVENESS

Representativeness expresses the degree to which sample data accurately and precisely represent the characteristics of a population, variations in parameters at a sampling point, or an environmental condition that they are intended to represent. NV5 and the contract laboratory addressed the representativeness of data by consistent application of established field and laboratory procedures. Nevertheless, concentrations may vary between and beyond the location sampled.

Sample holding times were verified and chain-of-custody forms were checked for completeness. Temperature of samples was measured upon receipt by the laboratory if applicable. Laboratory blank samples were evaluated for the presence of contaminants. No significant discrepancies were identified.

3.4 COMPARABILITY

The comparability objective determines whether analytical conditions are sufficiently uniform for each analytical run to ensure that all reported data will be consistent. Comparability is addressed by using similar analytical methods from one investigation to the next. All samples were analyzed by EPA methods pursuant to standard practice.

3.5 COMPLETENESS

The chain-of-custody documentation associated with the sample shipment was reviewed for completeness. Samples were received in good condition and the sample designations and requested analyses matched the sampling and analysis matrix.

3.6 SENSITIVITY

The laboratory method detection limit (MDL) is the minimum concentration of an analyte that can be reliably distinguished from background noise for a specific analytical method. The reporting limit (RL), or practical quantitation limit (PQL), represents the lowest concentration of an analyte that can be accurately and reproducibly quantified in a sample matrix. The screening levels described herein are typically several times the MDL to allow for reproducibility.

NV5 verified the sensitivity of laboratory analysis by comparing the RLs and MDLs reported by the laboratory to the associated screening levels:

- The RL for arsenic (1.3 mg/kg) exceeds the screening level for arsenic in residential soil (0.11 mg/kg) and commercial soil (0.36 mg/kg), but does not exceed the regional background level (typically up to 17 mg/kg). The MDL for arsenic is 0.15 mg/kg.
- The RL for thallium (1.3 mg/kg) exceeds the screening level for thallium in residential soil (0.78 mg/kg). The MDL for thallium is 0.49 mg/kg, and no thallium was detected.
- The RL (0.5 mg/kg) for hexavalent chromium (CrVI) exceeds the screening level for CrVI in residential soil (0.3 mg/kg). CrVI was not detected.

NV5 does not expect these conditions to significantly impact the investigation data.

4 INVESTIGATION RESULTS

Laboratory results for composite samples 19GHC-1, 19GHC-2 and 19GHC-3 are summarized below. Concentrations are reported by dry sediment weight. Total and extractable metals concentrations and benchmark values are presented in the attached Tables 1 and 2. The laboratory report and chain-of-custody documentation are presented in Appendix A.

4.1 INORGANIC CONSTITUENTS IN SEDIMENT SAMPLES

4.1.1 Total Metals Concentrations

Results of total metals analysis and benchmark concentrations for human health are presented in Table 1. Total metals concentrations detected in the sediment samples are compared to the screening levels for human health (DTSC-SLs and RSLs) described in Section 1.6.2. The detected total metals concentrations are below the corresponding DTSC-SLs and RSLs for commercial and residential soil, with the exception of arsenic, as described below.

Total arsenic was detected in samples 19GHC-1, 19GHC-2 and 19GHC-3 at concentrations of 1.6 to 5.4 mg/kg. These concentrations exceed the DTSC-SLs for residential soil (0.11 mg/kg) and commercial soil (0.36 mg/kg), but are within the range of background soil arsenic concentrations for the region (typically up to 17 mg/kg). The range of background soil arsenic concentrations was determined by NV5's statistical analysis of over 200 data points previously obtained by NV5 from sites in the region as part of DTSC's Voluntary Cleanup Program. Additional information regarding regional background concentrations can be provided upon request.

The total metals concentrations detected in the sediment samples are below the corresponding Total Threshold Limit Concentration (TTLC) values for designation of hazardous waste in California.

4.1.2 Extractable Metals Concentrations

Results of extraction testing and metals analysis are presented in Table 2. Extractions were performed by Title 22 Waste Extraction Test (WET) using the standard citrate buffer extractant solution and by Toxicity Characteristic Leaching Procedure (TCLP). Extractant solution metals analysis was performed by EPA Methods 6010B/7471A. The resulting extractable metals concentrations were compared to the Soluble Threshold Limit Concentration (STLC), which is used for designation of hazardous waste in California. None of the extractable metals concentrations exceeded the corresponding STLCs listed in Table 2.

4.2 ORGANIC CONSTITUENTS IN SEDIMENT SAMPLES

4.2.1 Petroleum Hydrocarbons

Total petroleum hydrocarbons (TPH) in the C10 to C18 carbon chain range (primarily diesel fuel range) were detected by EPA Method 8015B Modified in sample 19GHC-3 at a concentration of 28 mg/kg. The detected concentration is lower than the screening levels for mid-range aliphatic and aromatic petroleum hydrocarbons:

- TPH aliphatic, medium: RSL for residential soil = 96 mg/kg
- TPH aromatic, medium: RSL for residential soil = 110 mg/kg

TPH compounds in the C8 to C40 carbon chain range were otherwise not detected by EPA Method 8015B Modified at concentrations equal to or greater than the corresponding practical quantitation limits (PQLs; also known as reporting limits, or RLs). The RL is 13 mg/kg.

4.2.2 Semivolatile Organic Compounds

Semivolatle organic compounds (SVOCs) other than PAH compounds as discussed below were not detected by EPA Method 8270C at concentrations equal to or greater than the RLs. RLs for each VOC are listed in the laboratory report (Appendix A).

4.2.3 Polycyclic Aromatic Hydrocarbons

Polycyclic aromatic hydrocarbon (PAH) compounds were not detected by EPA Method 8270/SIM at concentrations equal to or greater than the corresponding RLs. RLs for each PAH compound are listed in the laboratory report (Appendix A).

Three PAH compounds were detected in composite sediment samples at concentrations between the RL and the method detection limit (MDL):

- Sample 19GHC-2: benzo(k)fluoranthene (0.84 ug/kg) and chrysene (0.77 ug/kg); and
- Sample 19GCH-3: fluoranthene (3.4 ug/kg).

These trace concentrations are estimates because they were detected below the practical quantitation limit (PQL). The estimated concentrations are lower than the corresponding screening levels:

- Benzo(k)fluoranthene: RSL for residential soil = 11 mg/kg = 11,000 ug/kg
- Chrysene: RSL for residential soil = 110 mg/kg = 110,000 ug/kg
- Fluoranthene: RSL for residential soil = 2,400 mg/kg = 2,400,000 ug/kg

4.2.4 Polychlorinated Biphenyls

Polychlorinated Biphenyls (PCBs) were not detected by EPA Method 8082 at concentrations equal to or greater than the corresponding RLs. The RL is 21 ug/kg.

5 FINDINGS AND CONCLUSIONS

NV5's opinion is that the investigation was performed in general accordance with our proposal dated February 28, 2019.

The chemical characterization of the sediment samples did not detect total concentrations of organic or inorganic constituents that exceeded the corresponding human health screening levels, except for total arsenic, and the total arsenic concentrations were not notably elevated with respect to regional background conditions.

NV5 concludes that land disposal of the sediment is likely to be acceptable from the standpoint of protection of human health and water quality provided that best management practices are implemented for erosion and sediment control. Depending upon the specific sediment management practices employed during the project, surface water sampling and analysis may be required to meet specific permitting requirements.

6 REFERENCES

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TABLES

Table 1 - Total Metals in Composite Sediment Samples
Greenhorn Sediment Removal at Rollins Reservoir
Nevada County, California

Parameter	CAS No.	EPA Method	Unit	MDL	RL	Total Metals			Benchmark Values			
						19GHC-1	19GHC-2	19GHC-3	Residential Soil	Commercial Soil	Basis for Benchmark Value	TTLC
Date Sampled						*03/04/19*	*03/04/19*	*03/04/19*				
Aluminum	7429-90-5	6010B	mg/kg	3.5	32	1600	3200	4000	*7.7E+04*	*1.1E+06*	*RSL*	*NE*
Antimony, metallic	7440-36-0	6010B	mg/kg	0.66	2.6	ND	ND	0.89 J	*31*	*470*	*RSL*	*500*
Arsenic, inorganic	7440-38-2	6010B	mg/kg	0.15	1.3	1.6	3.6	5.4	*0.11*	*0.36*	*DTSC-SL*	*500*
Barium	7440-39-3	6010B	mg/kg	0.15	1.3	11	29	40	*15,000*	*2.2E+05*	*RSL*	*10,000*
Beryllium and compounds	7440-41-7	6010B	mg/kg	0.04	1.3	ND	ND	ND	*15*	*210*	*DTSC-SL*	*75*
Cadmium	7440-43-9	6010B	mg/kg	0.18	1.3	ND	ND	ND	*5.2*	*7.3*	*DTSC-SL*	*100*
Chromium, total (1)	16065-83-1	6010B	mg/kg	0.33	1.3	4.1	8.4	12	*36,000*	*1.7E+05*	*DTSC-SL*	*2,500*
Cobalt	7440-48-4	6010B	mg/kg	0.08	1.3	1.1 J	2.6	4.2	*23*	*350*	*RSL*	*8,000*
Copper	7440-50-8	6010B	mg/kg	0.24	2.6	3.1	7.0	11	*3,100*	*47,000*	*RSL*	*2,500*
Hexavalent Chromium	18540-29-9	6010B	mg/kg	na	0.5	ND	ND	ND	*0.3*	*6.3*	*RSL*	*500*
Lead and compounds	7439-92-1	6010B	mg/kg	0.23	1.3	0.66 J	1.7	2.2	*80*	*320*	*DTSC-SL*	*1,000*
Mercury, elemental	7439-97-6	7471A	mg/kg	0.009	0.13	0.04 J	0.08 J	0.27	*1.0*	*4.4*	*DTSC-SL*	*20*
Molybdenum	7439-98-7	6010B	mg/kg	0.16	1.3	0.16 J	0.40 J	0.45 J	*390*	*5,800*	*RSL*	*3,500*
Nickel, soluble salts	7440-02-0	6010B	mg/kg	0.23	1.3	2.8	5.0	7.6	*490*	*3,100*	*DTSC-SL*	*2,000*
Selenium	7782-49-2	6010B	mg/kg	0.52	1.3	ND	ND	ND	*390*	*5,800*	*RSL*	*100*
Silver	7440-22-4	6010B	mg/kg	0.15	1.3	ND	ND	ND	*390*	*1,500*	*RSL*	*500*
Thallium, soluble salts	7440-28-0	6010B	mg/kg	0.49	1.3	ND	ND	ND	*0.78*	*12*	*RSL*	*700*
Vanadium and compounds	7440-62-2	6010B	mg/kg	0.08	1.3	6.7	15	22	*390*	*1,000*	*DTSC-SL*	*2,400*
Zinc and compounds	7440-66-6	6010B	mg/kg	0.19	1.3	8.2	10	15	*23,000*	*3.5E+05*	*RSL*	*5,000*

Notes:
1 Total chromium (CAS No. 7440-47-3) results compared to RSLs for Chromium III (CAS No. 16065-83-1)
CAS = Chemical Abstracts Service registry number
DTSC-SL = California Department of Toxic Substances Control (DTSC) Screening Level (SL), Human Health Risk Assessment (HHRA) Note 3 (DTSC; June 2018)
MDL = method detection limit
mg/kg = milligrams per kilogram
ND = not detected above listed MDL
RL = laboratory reporting limit
RSL = USEPA Region 9 Regional Screening Level (November 2018)
TTLC = total threshold limit concentration
NE = not established
J = analyte detected between MDL and RL, the value listed is estimated

Table 2 - Extractable Metals in Composite Sediment Samples
Greenhorn Sediment Removal at Rollins Reservoir
Nevada County, California

Parameter	CAS No.	EPA Method	Unit	WET Metals					TCLP Metals					STLC
				MDL	RL	19GHC-1	19GHC-2	19GHC-3	MDL	RL	19GHC-1	19GHC-2	19GHC-3	
Date Sampled						*03/04/19*	*03/04/19*	*03/04/19*			*03/04/19*	*03/04/19*	*03/04/19*	
Antimony, metallic	7440-36-0	6010B	mg/L	0.18	2.0	ND	ND	ND	0.044	0.5	ND	ND	ND	*15*
Arsenic, inorganic	7440-38-2	6010B	mg/L	0.16	1.0	ND	ND	ND	0.039	0.25	ND	ND	ND	*5*
Barium	7440-39-3	6010B	mg/L	0.053	1.0	0.48 J	1.1	1.6	0.013	0.25	1.1	1.2	1.2	*100*
Beryllium and compounds	7440-41-7	6010B	mg/L	0.033	1.0	ND	ND	ND	0.082	0.25	ND	ND	ND	*0.75*
Cadmium	7440-43-9	6010B	mg/L	0.048	1.0	ND	ND	ND	0.012	0.25	ND	ND	ND	*1*
Chromium, total (1)	16065-83-1	6010B	mg/L	0.039	1.0	ND	ND	4.7	0.010	0.25	ND	ND	ND	*5*
Cobalt	7440-48-4	6010B	mg/L	0.032	1.0	0.049 J	0.12 J	0.14 J	0.008	0.25	ND	ND	0.022 J	*80*
Copper	7440-50-8	6010B	mg/L	0.076	1.0	ND	0.084 J	0.15 J	0.019	0.25	ND	ND	ND	*25*
Lead and compounds	7439-92-1	6010B	mg/L	0.094	1.0	ND	ND	ND	0.024	0.25	ND	ND	ND	*5*
Mercury, elemental	7439-97-6	7471A	ug/L	0.16	1.0	ND	0.75 J	0.30 J	0.030	0.20	0.04 J	0.04 J	ND	*20*
Molybdenum	7439-98-7	6010B	mg/L	0.059	1.0	ND	ND	ND	0.015	0.25	ND	ND	ND	*350*
Nickel, soluble salts	7440-02-0	6010B	mg/L	0.092	1.0	ND	ND	0.21 J	0.023	0.25	ND	ND	ND	*20*
Selenium	7782-49-2	6010B	mg/L	0.190	1.0	ND	ND	ND	0.047	0.25	ND	ND	ND	*1*
Silver	7440-22-4	6010B	mg/L	0.047	1.0	ND	ND	ND	0.012	0.25	ND	ND	ND	*5*
Thallium, soluble salts	7440-28-0	6010B	mg/L	0.17	1.0	ND	ND	ND	0.043	0.25	ND	ND	ND	*7*
Vanadium and compounds	7440-62-2	6010B	mg/L	0.045	1.0	ND	0.070 J	0.13 J	0.011	0.25	ND	ND	ND	*24*
Zinc and compounds	7440-66-6	6010B	mg/L	0.11	1.0	0.25 J	0.12 J	0.14 J	0.029	0.25	0.20 J	0.18 J	0.16 J	*250*

Notes:
CAS = Chemical Abstracts Service registry number
J = analyte detected between MDL and RL, the value listed is estimated
MDL = method detection limit
mg/L = milligrams per liter
ND = not detected above listed MDL
NE = not established
RL = laboratory reporting limit
STLC = Soluble Threshold Limit Concentration
TCLP = Toxicity Characteristic Leaching Procedure
ug/L = micrograms per liter
WET = Title 22 Waste Extraction Test, standard citrate buffer extractant solution

APPENDIX A

Analytical Laboratory Reports

Chain-of-Custody Documentation

March 18, 2019

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792 Searls Avenue
Nevada City, CA 95959
Tel: (530) 478-1305
Fax:(530) 478-1019

ELAP No.: 1838
CSDLAC No.: 10196
ORELAP No.: CA300003

Re: ATL Work Order Number : 1900897

Client Reference : Greenhorn Sediment Removal Prject at Rollin Reservoir, PN19030

Enclosed are the results for sample(s) received on March 07, 2019 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

Eddie Rodriguez
Laboratory Director

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
19GHC-1	1900897-01	Sediment	3/04/19 15:30	3/07/19 9:09
19GHC-2	1900897-02	Sediment	3/04/19 14:00	3/07/19 9:09
19GHC-3	1900897-03	Sediment	3/04/19 12:00	3/07/19 9:09

CASE NARRATIVE

The sample for Hexavalent Chromium (EPA 7199) was subcontracted to American Scientific Laboratories, LLC with ELAP Cert. # 2200.

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
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Client Sample ID 19GHC-1
Lab ID: 1900897-01

Percent Moisture

Analyst: JL

Analyte	Result (% by Weight)	PQL (% by Weight)	MDL (% by Weight)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Percent Moisture	**22**	0.10	0.10	1	B9C0278	03/11/2019	03/11/19 14:48	

Total Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Aluminum	**1600**	32	3.5	1	B9C0249	03/11/2019	03/12/19 12:22	

Title 22 Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.6	0.65	1	B9C0248	03/11/2019	03/12/19 12:12	
Arsenic	**1.6**	1.3	0.15	1	B9C0248	03/11/2019	03/12/19 12:12	
Barium	**11**	1.3	0.15	1	B9C0248	03/11/2019	03/12/19 12:12	
Beryllium	ND	1.3	0.04	1	B9C0248	03/11/2019	03/12/19 12:12	
Cadmium	ND	1.3	0.18	1	B9C0248	03/11/2019	03/12/19 12:12	
Chromium	**4.1**	1.3	0.33	1	B9C0248	03/11/2019	03/12/19 12:12	
Cobalt	**1.1**	1.3	0.08	1	B9C0248	03/11/2019	03/12/19 12:12	J
Copper	**3.1**	2.6	0.24	1	B9C0248	03/11/2019	03/12/19 12:12	
Lead	**0.66**	1.3	0.23	1	B9C0248	03/11/2019	03/12/19 12:12	J
Molybdenum	**0.16**	1.3	0.16	1	B9C0248	03/11/2019	03/12/19 12:12	J
Nickel	**2.8**	1.3	0.23	1	B9C0248	03/11/2019	03/12/19 12:12	
Selenium	ND	1.3	0.52	1	B9C0248	03/11/2019	03/12/19 12:12	
Silver	ND	1.3	0.15	1	B9C0248	03/11/2019	03/12/19 12:12	
Thallium	ND	1.3	0.49	1	B9C0248	03/11/2019	03/12/19 12:12	
Vanadium	**6.7**	1.3	0.08	1	B9C0248	03/11/2019	03/12/19 12:12	
Zinc	**8.2**	1.3	0.19	1	B9C0248	03/11/2019	03/12/19 12:12	

TCLP Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	0.50	0.044	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Arsenic	ND	0.25	0.039	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Barium	**1.1**	0.25	0.013	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Beryllium	ND	0.25	0.0082	5	B9C0273	03/12/2019	03/12/19 12:48	D1

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Client Sample ID 19GHC-1
Lab ID: 1900897-01

TCLP Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Cadmium	ND	0.25	0.012	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Chromium	ND	0.25	0.0098	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Cobalt	ND	0.25	0.0079	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Copper	ND	0.25	0.019	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Lead	ND	0.25	0.024	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Molybdenum	ND	0.25	0.015	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Nickel	ND	0.25	0.023	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Selenium	ND	0.25	0.047	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Silver	ND	0.25	0.012	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Thallium	ND	0.25	0.043	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Vanadium	ND	0.25	0.011	5	B9C0273	03/12/2019	03/12/19 12:48	D1
Zinc	**0.20**	0.25	0.029	5	B9C0273	03/12/2019	03/12/19 12:48	D1, J

STLC Metals by ICP-AES by EPA 6010B

Analyst: GO

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.18	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Arsenic	ND	1.0	0.16	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Barium	**0.48**	1.0	0.053	20	B9C0245	03/11/2019	03/11/19 15:31	D1, J
Beryllium	ND	1.0	0.033	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Cadmium	ND	1.0	0.048	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Chromium	ND	1.0	0.039	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Cobalt	**0.049**	1.0	0.032	20	B9C0245	03/11/2019	03/11/19 15:31	D1, J
Copper	ND	1.0	0.076	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Lead	ND	1.0	0.094	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Molybdenum	ND	1.0	0.059	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Nickel	ND	1.0	0.092	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Selenium	ND	1.0	0.19	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Silver	ND	1.0	0.047	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Thallium	ND	1.0	0.17	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Vanadium	ND	1.0	0.045	20	B9C0245	03/11/2019	03/11/19 15:31	D1
Zinc	**0.25**	1.0	0.11	20	B9C0245	03/11/2019	03/11/19 15:31	D1, J

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Client Sample ID 19GHC-1
Lab ID: 1900897-01

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: KEK

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	**0.04**	0.13	0.009	1	B9C0250	03/11/2019	03/13/19 16:42	J

STLC Mercury by AA (Cold Vapor) EPA 7470A

Analyst: KEK

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	1.0	0.16	1	B9C0244	03/11/2019	03/13/19 15:24	

TCLP Mercury by AA (Cold Vapor) by EPA 7470A

Analyst: KEK

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	**0.04**	0.20	0.03	1	B9C0274	03/12/2019	03/13/19 13:08	J

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: HT

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C8-C10	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:12	
C10-C18	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:12	
C18-C28	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:12	
C28-C36	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:12	
C36-C40	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:12	
C8-C40 Total	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:12	
Surrogate: p-Terphenyl	*105 %*		*58 - 172*		B9C0373	03/14/2019	*03/14/19 17:12*	

Polychlorinated Biphenyls by EPA 8082

Analyst: KD

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Aroclor 1016	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:17	
Aroclor 1221	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:17	
Aroclor 1232	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:17	
Aroclor 1242	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:17	
Aroclor 1248	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:17	
Aroclor 1254	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:17	
Aroclor 1260	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:17	

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Nevada City , CA 95959	Reported :	03/18/2019

Client Sample ID 19GHC-1
Lab ID: 1900897-01

Polychlorinated Biphenyls by EPA 8082

Analyst: KD

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Aroclor 1262	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:17	
Aroclor 1268	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:17	
Surrogate: Decachlorobiphenyl	*77.9 %*		*18 - 136*		B9C0388	03/14/2019	*03/15/19 09:17*	
Surrogate: Tetrachloro-m-xylene	*86.8 %*		*30 - 130*		B9C0388	03/14/2019	*03/15/19 09:17*	

Semivolatile Organic Compounds by EPA 8270C

Analyst: SP

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,2,4-Trichlorobenzene	ND	420	91	1	B9C0387	03/14/2019	03/14/19 21:59	
1,2-Dichlorobenzene	ND	420	78	1	B9C0387	03/14/2019	03/14/19 21:59	
1,3-Dichlorobenzene	ND	420	83	1	B9C0387	03/14/2019	03/14/19 21:59	
1,4-Dichlorobenzene	ND	420	77	1	B9C0387	03/14/2019	03/14/19 21:59	
2,4,5-Trichlorophenol	ND	420	79	1	B9C0387	03/14/2019	03/14/19 21:59	
2,4,6-Trichlorophenol	ND	420	290	1	B9C0387	03/14/2019	03/14/19 21:59	
2,4-Dichlorophenol	ND	2100	150	1	B9C0387	03/14/2019	03/14/19 21:59	
2,4-Dimethylphenol	ND	420	150	1	B9C0387	03/14/2019	03/14/19 21:59	
2,4-Dinitrophenol	ND	2100	110	1	B9C0387	03/14/2019	03/14/19 21:59	
2,4-Dinitrotoluene	ND	420	59	1	B9C0387	03/14/2019	03/14/19 21:59	
2,6-Dinitrotoluene	ND	420	63	1	B9C0387	03/14/2019	03/14/19 21:59	
2-Chloronaphthalene	ND	420	75	1	B9C0387	03/14/2019	03/14/19 21:59	
2-Chlorophenol	ND	420	150	1	B9C0387	03/14/2019	03/14/19 21:59	
2-Methylnaphthalene	ND	420	86	1	B9C0387	03/14/2019	03/14/19 21:59	
2-Methylphenol	ND	420	86	1	B9C0387	03/14/2019	03/14/19 21:59	
2-Nitroaniline	ND	2100	260	1	B9C0387	03/14/2019	03/14/19 21:59	
2-Nitrophenol	ND	420	140	1	B9C0387	03/14/2019	03/14/19 21:59	
3,3´-Dichlorobenzidine	ND	850	360	1	B9C0387	03/14/2019	03/14/19 21:59	
3-Nitroaniline	ND	2100	57	1	B9C0387	03/14/2019	03/14/19 21:59	
4,6-Dinitro-2-methyphenol	ND	2100	390	1	B9C0387	03/14/2019	03/14/19 21:59	
4-Bromophenyl-phenylether	ND	420	64	1	B9C0387	03/14/2019	03/14/19 21:59	
4-Chloro-3-methylphenol	ND	850	140	1	B9C0387	03/14/2019	03/14/19 21:59	
4-Chloroaniline	ND	850	68	1	B9C0387	03/14/2019	03/14/19 21:59	
4-Chlorophenyl-phenylether	ND	420	61	1	B9C0387	03/14/2019	03/14/19 21:59	
4-Methylphenol	ND	420	85	1	B9C0387	03/14/2019	03/14/19 21:59	
4-Nitroaniline	ND	2100	370	1	B9C0387	03/14/2019	03/14/19 21:59	
4-Nitrophenol	ND	420	200	1	B9C0387	03/14/2019	03/14/19 21:59	
Acenaphthene	ND	420	62	1	B9C0387	03/14/2019	03/14/19 21:59	

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

Client Sample ID 19GHC-1
Lab ID: 1900897-01

Semivolatile Organic Compounds by EPA 8270C **Analyst: SP**

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Acenaphthylene	ND	420	66	1	B9C0387	03/14/2019	03/14/19 21:59	
Anthracene	ND	420	62	1	B9C0387	03/14/2019	03/14/19 21:59	
Benzidine (M)	ND	2100	1800	1	B9C0387	03/14/2019	03/14/19 21:59	
Benzo(a)anthracene	ND	420	50	1	B9C0387	03/14/2019	03/14/19 21:59	
Benzo(a)pyrene	ND	420	58	1	B9C0387	03/14/2019	03/14/19 21:59	
Benzo(b)fluoranthene	ND	420	71	1	B9C0387	03/14/2019	03/14/19 21:59	
Benzo(g,h,i)perylene	ND	420	48	1	B9C0387	03/14/2019	03/14/19 21:59	
Benzo(k)fluoranthene	ND	420	66	1	B9C0387	03/14/2019	03/14/19 21:59	
Benzoic acid	ND	2100	1100	1	B9C0387	03/14/2019	03/14/19 21:59	
Benzyl alcohol	ND	850	86	1	B9C0387	03/14/2019	03/14/19 21:59	
bis(2-chloroethoxy)methane	ND	420	76	1	B9C0387	03/14/2019	03/14/19 21:59	
bis(2-Chloroethyl)ether	ND	420	74	1	B9C0387	03/14/2019	03/14/19 21:59	
bis(2-chloroisopropyl)ether	ND	420	83	1	B9C0387	03/14/2019	03/14/19 21:59	
bis(2-ethylhexyl)phthalate	ND	420	110	1	B9C0387	03/14/2019	03/14/19 21:59	
Butylbenzylphthalate	ND	420	320	1	B9C0387	03/14/2019	03/14/19 21:59	
Chrysene	ND	420	55	1	B9C0387	03/14/2019	03/14/19 21:59	
Di-n-butylphthalate	ND	420	290	1	B9C0387	03/14/2019	03/14/19 21:59	
Di-n-octylphthalate	ND	420	62	1	B9C0387	03/14/2019	03/14/19 21:59	
Dibenz(a,h)anthracene	ND	420	56	1	B9C0387	03/14/2019	03/14/19 21:59	
Dibenzofuran	ND	420	70	1	B9C0387	03/14/2019	03/14/19 21:59	
Diethyl phthalate	ND	420	61	1	B9C0387	03/14/2019	03/14/19 21:59	
Dimethyl phthalate	ND	420	59	1	B9C0387	03/14/2019	03/14/19 21:59	
Fluoranthene	ND	420	61	1	B9C0387	03/14/2019	03/14/19 21:59	
Fluorene	ND	420	63	1	B9C0387	03/14/2019	03/14/19 21:59	
Hexachlorobenzene	ND	420	53	1	B9C0387	03/14/2019	03/14/19 21:59	
Hexachlorobutadiene	ND	850	79	1	B9C0387	03/14/2019	03/14/19 21:59	
Hexachlorocyclopentadiene	ND	850	82	1	B9C0387	03/14/2019	03/14/19 21:59	
Hexachloroethane	ND	420	91	1	B9C0387	03/14/2019	03/14/19 21:59	
Indeno(1,2,3-cd)pyrene	ND	420	56	1	B9C0387	03/14/2019	03/14/19 21:59	
Isophorone	ND	420	73	1	B9C0387	03/14/2019	03/14/19 21:59	
N-Nitroso-di-n propylamine	ND	420	84	1	B9C0387	03/14/2019	03/14/19 21:59	
N-Nitrosodiphenylamine	ND	420	62	1	B9C0387	03/14/2019	03/14/19 21:59	
Naphthalene	ND	420	77	1	B9C0387	03/14/2019	03/14/19 21:59	
Nitrobenzene	ND	420	86	1	B9C0387	03/14/2019	03/14/19 21:59	
Pentachlorophenol	ND	2100	240	1	B9C0387	03/14/2019	03/14/19 21:59	
Phenanthrene	ND	420	59	1	B9C0387	03/14/2019	03/14/19 21:59	
Phenol	ND	420	170	1	B9C0387	03/14/2019	03/14/19 21:59	

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Nevada City , CA 95959	Reported :	03/18/2019

Client Sample ID 19GHC-1
Lab ID: 1900897-01

Semivolatile Organic Compounds by EPA 8270C

Analyst: SP

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Pyrene	ND	420	68	1	B9C0387	03/14/2019	03/14/19 21:59	
Pyridine	ND	2100	340	1	B9C0387	03/14/2019	03/14/19 21:59	
Surrogate: 1,2-Dichlorobenzene-d4	*67.6 %*		*16 - 87*		B9C0387	03/14/2019	*03/14/19 21:59*	
Surrogate: 2,4,6-Tribromophenol	*121 %*		*0 - 148*		B9C0387	03/14/2019	*03/14/19 21:59*	
Surrogate: 2-Chlorophenol-d4	*82.3 %*		*17 - 96*		B9C0387	03/14/2019	*03/14/19 21:59*	
Surrogate: 2-Fluorobiphenyl	*71.0 %*		*16 - 107*		B9C0387	03/14/2019	*03/14/19 21:59*	
Surrogate: 2-Fluorophenol	*75.6 %*		*16 - 86*		B9C0387	03/14/2019	*03/14/19 21:59*	
Surrogate: 4-Terphenyl-d14	*94.7 %*		*3 - 156*		B9C0387	03/14/2019	*03/14/19 21:59*	
Surrogate: Nitrobenzene-d5	*73.1 %*		*16 - 99*		B9C0387	03/14/2019	*03/14/19 21:59*	
Surrogate: Phenol-d6	*79.4 %*		*17 - 90*		B9C0387	03/14/2019	*03/14/19 21:59*	

Semivolatile Organic Compounds by EPA 8270/SIM

Analyst: SP

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
2-Methylnaphthalene	ND	6.4	1.4	1	B9C0386	03/14/2019	03/14/19 21:13	
Acenaphthene	ND	6.4	1.0	1	B9C0386	03/14/2019	03/14/19 21:13	
Acenaphthylene	ND	6.4	1.2	1	B9C0386	03/14/2019	03/14/19 21:13	
Anthracene	ND	6.4	0.87	1	B9C0386	03/14/2019	03/14/19 21:13	
Benzo(a)anthracene	ND	6.4	0.82	1	B9C0386	03/14/2019	03/14/19 21:13	
Benzo(a)pyrene	ND	6.4	1.1	1	B9C0386	03/14/2019	03/14/19 21:13	
Benzo(b)fluoranthene	ND	6.4	1.0	1	B9C0386	03/14/2019	03/14/19 21:13	
Benzo(g,h,i)perylene	ND	6.4	1.3	1	B9C0386	03/14/2019	03/14/19 21:13	
Benzo(k)fluoranthene	ND	6.4	0.71	1	B9C0386	03/14/2019	03/14/19 21:13	
Chrysene	ND	6.4	0.78	1	B9C0386	03/14/2019	03/14/19 21:13	
Dibenz(a,h)anthracene	ND	6.4	1.4	1	B9C0386	03/14/2019	03/14/19 21:13	
Fluoranthene	ND	6.4	0.93	1	B9C0386	03/14/2019	03/14/19 21:13	
Fluorene	ND	6.4	0.98	1	B9C0386	03/14/2019	03/14/19 21:13	
Indeno(1,2,3-cd)pyrene	ND	6.4	1.6	1	B9C0386	03/14/2019	03/14/19 21:13	
Naphthalene	ND	6.4	1.2	1	B9C0386	03/14/2019	03/14/19 21:13	
Phenanthrene	ND	6.4	0.87	1	B9C0386	03/14/2019	03/14/19 21:13	
Pyrene	ND	6.4	0.89	1	B9C0386	03/14/2019	03/14/19 21:13	
Surrogate: 1,2-Dichlorobenzene-d4	*70.2 %*		*26 - 107*		B9C0386	03/14/2019	*03/14/19 21:13*	
Surrogate: 2-Fluorobiphenyl	*75.1 %*		*35 - 107*		B9C0386	03/14/2019	*03/14/19 21:13*	
Surrogate: Nitrobenzene-d5	*84.3 %*		*2 - 129*		B9C0386	03/14/2019	*03/14/19 21:13*	
Surrogate: 4-Terphenyl-d14	*83.7 %*		*48 - 123*		B9C0386	03/14/2019	*03/14/19 21:13*	

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Lab ID: 1900897-02

Percent Moisture

Analyst: JL

Analyte	Result (% by Weight)	PQL (% by Weight)	MDL % by Weight	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Percent Moisture	**21**	0.10	0.10	1	B9C0278	03/11/2019	03/11/19 14:48	

Total Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Aluminum	**2200**	32	3.4	1	B9C0249	03/11/2019	03/12/19 12:23	

Title 22 Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.5	0.65	1	B9C0248	03/11/2019	03/12/19 12:13	
Arsenic	**3.6**	1.3	0.15	1	B9C0248	03/11/2019	03/12/19 12:13	
Barium	**29**	1.3	0.15	1	B9C0248	03/11/2019	03/12/19 12:13	
Beryllium	ND	1.3	0.04	1	B9C0248	03/11/2019	03/12/19 12:13	
Cadmium	ND	1.3	0.18	1	B9C0248	03/11/2019	03/12/19 12:13	
Chromium	**8.4**	1.3	0.33	1	B9C0248	03/11/2019	03/12/19 12:13	
Cobalt	**2.6**	1.3	0.08	1	B9C0248	03/11/2019	03/12/19 12:13	
Copper	**7.0**	2.5	0.24	1	B9C0248	03/11/2019	03/12/19 12:13	
Lead	**1.7**	1.3	0.23	1	B9C0248	03/11/2019	03/12/19 12:13	
Molybdenum	**0.40**	1.3	0.16	1	B9C0248	03/11/2019	03/12/19 12:13	J
Nickel	**5.0**	1.3	0.23	1	B9C0248	03/11/2019	03/12/19 12:13	
Selenium	ND	1.3	0.51	1	B9C0248	03/11/2019	03/12/19 12:13	
Silver	ND	1.3	0.15	1	B9C0248	03/11/2019	03/12/19 12:13	
Thallium	ND	1.3	0.48	1	B9C0248	03/11/2019	03/12/19 12:13	
Vanadium	**15**	1.3	0.08	1	B9C0248	03/11/2019	03/12/19 12:13	
Zinc	**10**	1.3	0.19	1	B9C0248	03/11/2019	03/12/19 12:13	

TCLP Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	0.50	0.044	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Arsenic	ND	0.25	0.039	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Barium	**1.2**	0.25	0.013	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Beryllium	ND	0.25	0.0082	5	B9C0273	03/12/2019	03/12/19 12:51	D1

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TCLP Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Cadmium	ND	0.25	0.012	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Chromium	ND	0.25	0.0098	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Cobalt	ND	0.25	0.0079	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Copper	ND	0.25	0.019	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Lead	ND	0.25	0.024	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Molybdenum	ND	0.25	0.015	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Nickel	ND	0.25	0.023	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Selenium	ND	0.25	0.047	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Silver	ND	0.25	0.012	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Thallium	ND	0.25	0.043	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Vanadium	ND	0.25	0.011	5	B9C0273	03/12/2019	03/12/19 12:51	D1
Zinc	**0.18**	0.25	0.029	5	B9C0273	03/12/2019	03/12/19 12:51	J, D1

STLC Metals by ICP-AES by EPA 6010B

Analyst: GO

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.18	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Arsenic	ND	1.0	0.16	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Barium	**1.1**	1.0	0.053	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Beryllium	ND	1.0	0.033	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Cadmium	ND	1.0	0.048	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Chromium	ND	1.0	0.039	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Cobalt	**0.12**	1.0	0.032	20	B9C0245	03/11/2019	03/11/19 15:35	J, D1
Copper	**0.084**	1.0	0.076	20	B9C0245	03/11/2019	03/11/19 15:35	J, D1
Lead	ND	1.0	0.094	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Molybdenum	ND	1.0	0.059	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Nickel	ND	1.0	0.092	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Selenium	ND	1.0	0.19	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Silver	ND	1.0	0.047	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Thallium	ND	1.0	0.17	20	B9C0245	03/11/2019	03/11/19 15:35	D1
Vanadium	**0.070**	1.0	0.045	20	B9C0245	03/11/2019	03/11/19 15:35	J, D1
Zinc	**0.12**	1.0	0.11	20	B9C0245	03/11/2019	03/11/19 15:35	J, D1

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Mercury by AA (Cold Vapor) EPA 7471A

Analyst: KEK

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	**0.08**	0.13	0.009	1	B9C0250	03/11/2019	03/13/19 16:49	J

STLC Mercury by AA (Cold Vapor) EPA 7470A

Analyst: KEK

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	**0.75**	1.0	0.16	1	B9C0244	03/11/2019	03/13/19 15:32	J

TCLP Mercury by AA (Cold Vapor) by EPA 7470A

Analyst: KEK

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	**0.04**	0.20	0.03	1	B9C0274	03/12/2019	03/13/19 13:15	J

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: HT

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C8-C10	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:27	
C10-C18	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:27	
C18-C28	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:27	
C28-C36	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:27	
C36-C40	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:27	
C8-C40 Total	ND	13	13	1	B9C0373	03/14/2019	03/14/19 17:27	
Surrogate: p-Terphenyl	*105 %*		*58 - 172*		B9C0373	03/14/2019	*03/14/19 17:27*	

Polychlorinated Biphenyls by EPA 8082

Analyst: KD

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Aroclor 1016	ND	20	1.9	1	B9C0388	03/14/2019	03/15/19 09:35	
Aroclor 1221	ND	20	1.9	1	B9C0388	03/14/2019	03/15/19 09:35	
Aroclor 1232	ND	20	1.9	1	B9C0388	03/14/2019	03/15/19 09:35	
Aroclor 1242	ND	20	1.9	1	B9C0388	03/14/2019	03/15/19 09:35	
Aroclor 1248	ND	20	1.9	1	B9C0388	03/14/2019	03/15/19 09:35	
Aroclor 1254	ND	20	1.9	1	B9C0388	03/14/2019	03/15/19 09:35	
Aroclor 1260	ND	20	1.9	1	B9C0388	03/14/2019	03/15/19 09:35	

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Polychlorinated Biphenyls by EPA 8082

Analyst: KD

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Aroclor 1262	ND	20	1.9	1	B9C0388	03/14/2019	03/15/19 09:35	
Aroclor 1268	ND	20	1.9	1	B9C0388	03/14/2019	03/15/19 09:35	
Surrogate: Decachlorobiphenyl	*73.1 %*		*18 - 136*		B9C0388	03/14/2019	*03/15/19 09:35*	
Surrogate: Tetrachloro-m-xylene	*83.9 %*		*30 - 130*		B9C0388	03/14/2019	*03/15/19 09:35*	

Semivolatile Organic Compounds by EPA 8270C

Analyst: SP

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,2,4-Trichlorobenzene	ND	420	90	1	B9C0387	03/14/2019	03/14/19 22:24	
1,2-Dichlorobenzene	ND	420	77	1	B9C0387	03/14/2019	03/14/19 22:24	
1,3-Dichlorobenzene	ND	420	82	1	B9C0387	03/14/2019	03/14/19 22:24	
1,4-Dichlorobenzene	ND	420	76	1	B9C0387	03/14/2019	03/14/19 22:24	
2,4,5-Trichlorophenol	ND	420	78	1	B9C0387	03/14/2019	03/14/19 22:24	
2,4,6-Trichlorophenol	ND	420	280	1	B9C0387	03/14/2019	03/14/19 22:24	
2,4-Dichlorophenol	ND	2100	150	1	B9C0387	03/14/2019	03/14/19 22:24	
2,4-Dimethylphenol	ND	420	150	1	B9C0387	03/14/2019	03/14/19 22:24	
2,4-Dinitrophenol	ND	2100	110	1	B9C0387	03/14/2019	03/14/19 22:24	
2,4-Dinitrotoluene	ND	420	58	1	B9C0387	03/14/2019	03/14/19 22:24	
2,6-Dinitrotoluene	ND	420	62	1	B9C0387	03/14/2019	03/14/19 22:24	
2-Chloronaphthalene	ND	420	75	1	B9C0387	03/14/2019	03/14/19 22:24	
2-Chlorophenol	ND	420	150	1	B9C0387	03/14/2019	03/14/19 22:24	
2-Methylnaphthalene	ND	420	85	1	B9C0387	03/14/2019	03/14/19 22:24	
2-Methylphenol	ND	420	85	1	B9C0387	03/14/2019	03/14/19 22:24	
2-Nitroaniline	ND	2100	260	1	B9C0387	03/14/2019	03/14/19 22:24	
2-Nitrophenol	ND	420	130	1	B9C0387	03/14/2019	03/14/19 22:24	
3,3´-Dichlorobenzidine	ND	840	350	1	B9C0387	03/14/2019	03/14/19 22:24	
3-Nitroaniline	ND	2100	56	1	B9C0387	03/14/2019	03/14/19 22:24	
4,6-Dinitro-2-methyphenol	ND	2100	380	1	B9C0387	03/14/2019	03/14/19 22:24	
4-Bromophenyl-phenylether	ND	420	63	1	B9C0387	03/14/2019	03/14/19 22:24	
4-Chloro-3-methylphenol	ND	840	140	1	B9C0387	03/14/2019	03/14/19 22:24	
4-Chloroaniline	ND	840	67	1	B9C0387	03/14/2019	03/14/19 22:24	
4-Chlorophenyl-phenylether	ND	420	60	1	B9C0387	03/14/2019	03/14/19 22:24	
4-Methylphenol	ND	420	84	1	B9C0387	03/14/2019	03/14/19 22:24	
4-Nitroaniline	ND	2100	370	1	B9C0387	03/14/2019	03/14/19 22:24	
4-Nitrophenol	ND	420	190	1	B9C0387	03/14/2019	03/14/19 22:24	
Acenaphthene	ND	420	61	1	B9C0387	03/14/2019	03/14/19 22:24	

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Lab ID: 1900897-02

Semivolatile Organic Compounds by EPA 8270C **Analyst: SP**

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Acenaphthylene	ND	420	65	1	B9C0387	03/14/2019	03/14/19 22:24	
Anthracene	ND	420	62	1	B9C0387	03/14/2019	03/14/19 22:24	
Benzidine (M)	ND	2100	1800	1	B9C0387	03/14/2019	03/14/19 22:24	
Benzo(a)anthracene	ND	420	50	1	B9C0387	03/14/2019	03/14/19 22:24	
Benzo(a)pyrene	ND	420	57	1	B9C0387	03/14/2019	03/14/19 22:24	
Benzo(b)fluoranthene	ND	420	70	1	B9C0387	03/14/2019	03/14/19 22:24	
Benzo(g,h,i)perylene	ND	420	48	1	B9C0387	03/14/2019	03/14/19 22:24	
Benzo(k)fluoranthene	ND	420	65	1	B9C0387	03/14/2019	03/14/19 22:24	
Benzoic acid	ND	2100	1100	1	B9C0387	03/14/2019	03/14/19 22:24	
Benzyl alcohol	ND	840	85	1	B9C0387	03/14/2019	03/14/19 22:24	
bis(2-chloroethoxy)methane	ND	420	75	1	B9C0387	03/14/2019	03/14/19 22:24	
bis(2-Chloroethyl)ether	ND	420	73	1	B9C0387	03/14/2019	03/14/19 22:24	
bis(2-chloroisopropyl)ether	ND	420	82	1	B9C0387	03/14/2019	03/14/19 22:24	
bis(2-ethylhexyl)phthalate	ND	420	110	1	B9C0387	03/14/2019	03/14/19 22:24	
Butylbenzylphthalate	ND	420	310	1	B9C0387	03/14/2019	03/14/19 22:24	
Chrysene	ND	420	55	1	B9C0387	03/14/2019	03/14/19 22:24	
Di-n-butylphthalate	ND	420	290	1	B9C0387	03/14/2019	03/14/19 22:24	
Di-n-octylphthalate	ND	420	61	1	B9C0387	03/14/2019	03/14/19 22:24	
Dibenz(a,h)anthracene	ND	420	55	1	B9C0387	03/14/2019	03/14/19 22:24	
Dibenzofuran	ND	420	70	1	B9C0387	03/14/2019	03/14/19 22:24	
Diethyl phthalate	ND	420	60	1	B9C0387	03/14/2019	03/14/19 22:24	
Dimethyl phthalate	ND	420	58	1	B9C0387	03/14/2019	03/14/19 22:24	
Fluoranthene	ND	420	60	1	B9C0387	03/14/2019	03/14/19 22:24	
Fluorene	ND	420	62	1	B9C0387	03/14/2019	03/14/19 22:24	
Hexachlorobenzene	ND	420	52	1	B9C0387	03/14/2019	03/14/19 22:24	
Hexachlorobutadiene	ND	840	78	1	B9C0387	03/14/2019	03/14/19 22:24	
Hexachlorocyclopentadiene	ND	840	81	1	B9C0387	03/14/2019	03/14/19 22:24	
Hexachloroethane	ND	420	90	1	B9C0387	03/14/2019	03/14/19 22:24	
Indeno(1,2,3-cd)pyrene	ND	420	55	1	B9C0387	03/14/2019	03/14/19 22:24	
Isophorone	ND	420	73	1	B9C0387	03/14/2019	03/14/19 22:24	
N-Nitroso-di-n propylamine	ND	420	83	1	B9C0387	03/14/2019	03/14/19 22:24	
N-Nitrosodiphenylamine	ND	420	61	1	B9C0387	03/14/2019	03/14/19 22:24	
Naphthalene	ND	420	76	1	B9C0387	03/14/2019	03/14/19 22:24	
Nitrobenzene	ND	420	85	1	B9C0387	03/14/2019	03/14/19 22:24	
Pentachlorophenol	ND	2100	240	1	B9C0387	03/14/2019	03/14/19 22:24	
Phenanthrene	ND	420	59	1	B9C0387	03/14/2019	03/14/19 22:24	
Phenol	ND	420	170	1	B9C0387	03/14/2019	03/14/19 22:24	

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Lab ID: 1900897-02

Semivolatile Organic Compounds by EPA 8270C

Analyst: SP

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Pyrene	ND	420	67	1	B9C0387	03/14/2019	03/14/19 22:24	
Pyridine	ND	2100	340	1	B9C0387	03/14/2019	03/14/19 22:24	
Surrogate: 1,2-Dichlorobenzene-d4	*53.1 %*	*16 - 87*			B9C0387	03/14/2019	*03/14/19 22:24*	
Surrogate: 2,4,6-Tribromophenol	*98.2 %*	*0 - 148*			B9C0387	03/14/2019	*03/14/19 22:24*	
Surrogate: 2-Chlorophenol-d4	*63.6 %*	*17 - 96*			B9C0387	03/14/2019	*03/14/19 22:24*	
Surrogate: 2-Fluorobiphenyl	*57.4 %*	*16 - 107*			B9C0387	03/14/2019	*03/14/19 22:24*	
Surrogate: 2-Fluorophenol	*58.3 %*	*16 - 86*			B9C0387	03/14/2019	*03/14/19 22:24*	
Surrogate: 4-Terphenyl-d14	*77.7 %*	*3 - 156*			B9C0387	03/14/2019	*03/14/19 22:24*	
Surrogate: Nitrobenzene-d5	*56.2 %*	*16 - 99*			B9C0387	03/14/2019	*03/14/19 22:24*	
Surrogate: Phenol-d6	*61.4 %*	*17 - 90*			B9C0387	03/14/2019	*03/14/19 22:24*	

Semivolatile Organic Compounds by EPA 8270/SIM

Analyst: SP

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
2-Methylnaphthalene	ND	6.3	1.4	1	B9C0386	03/14/2019	03/14/19 21:39	
Acenaphthene	ND	6.3	1.0	1	B9C0386	03/14/2019	03/14/19 21:39	
Acenaphthylene	ND	6.3	1.1	1	B9C0386	03/14/2019	03/14/19 21:39	
Anthracene	ND	6.3	0.86	1	B9C0386	03/14/2019	03/14/19 21:39	
Benzo(a)anthracene	ND	6.3	0.81	1	B9C0386	03/14/2019	03/14/19 21:39	
Benzo(a)pyrene	ND	6.3	1.0	1	B9C0386	03/14/2019	03/14/19 21:39	
Benzo(b)fluoranthene	ND	6.3	1.0	1	B9C0386	03/14/2019	03/14/19 21:39	
Benzo(g,h,i)perylene	ND	6.3	1.3	1	B9C0386	03/14/2019	03/14/19 21:39	
Benzo(k)fluoranthene	**0.84**	6.3	0.70	1	B9C0386	03/14/2019	03/14/19 21:39	J
Chrysene	**0.77**	6.3	0.77	1	B9C0386	03/14/2019	03/14/19 21:39	J
Dibenz(a,h)anthracene	ND	6.3	1.3	1	B9C0386	03/14/2019	03/14/19 21:39	
Fluoranthene	ND	6.3	0.92	1	B9C0386	03/14/2019	03/14/19 21:39	
Fluorene	ND	6.3	0.97	1	B9C0386	03/14/2019	03/14/19 21:39	
Indeno(1,2,3-cd)pyrene	ND	6.3	1.6	1	B9C0386	03/14/2019	03/14/19 21:39	
Naphthalene	ND	6.3	1.2	1	B9C0386	03/14/2019	03/14/19 21:39	
Phenanthrene	ND	6.3	0.86	1	B9C0386	03/14/2019	03/14/19 21:39	
Pyrene	ND	6.3	0.88	1	B9C0386	03/14/2019	03/14/19 21:39	
Surrogate: 1,2-Dichlorobenzene-d4	*66.9 %*	*26 - 107*			B9C0386	03/14/2019	*03/14/19 21:39*	
Surrogate: 2-Fluorobiphenyl	*72.3 %*	*35 - 107*			B9C0386	03/14/2019	*03/14/19 21:39*	
Surrogate: Nitrobenzene-d5	*79.5 %*	*2 - 129*			B9C0386	03/14/2019	*03/14/19 21:39*	
Surrogate: 4-Terphenyl-d14	*82.6 %*	*48 - 123*			B9C0386	03/14/2019	*03/14/19 21:39*	

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

Client Sample ID 19GHC-3
Lab ID: 1900897-03

Percent Moisture

Analyst: JL

Analyte	Result (% by Weight)	PQL (% by Weight)	MDL % by Weight	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Percent Moisture	**23**	0.10	0.10	1	B9C0278	03/11/2019	03/11/19 14:48	

Total Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Aluminum	**4000**	32	3.5	1	B9C0249	03/11/2019	03/12/19 12:27	

Title 22 Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	**0.89**	2.6	0.66	1	B9C0248	03/11/2019	03/12/19 12:16	J
Arsenic	**5.4**	1.3	0.16	1	B9C0248	03/11/2019	03/12/19 12:16	
Barium	**40**	1.3	0.15	1	B9C0248	03/11/2019	03/12/19 12:16	
Beryllium	ND	1.3	0.04	1	B9C0248	03/11/2019	03/12/19 12:16	
Cadmium	ND	1.3	0.18	1	B9C0248	03/11/2019	03/12/19 12:16	
Chromium	**12**	1.3	0.33	1	B9C0248	03/11/2019	03/12/19 12:16	
Cobalt	**4.2**	1.3	0.08	1	B9C0248	03/11/2019	03/12/19 12:16	
Copper	**11**	2.6	0.24	1	B9C0248	03/11/2019	03/12/19 12:16	
Lead	**2.2**	1.3	0.24	1	B9C0248	03/11/2019	03/12/19 12:16	
Molybdenum	**0.45**	1.3	0.16	1	B9C0248	03/11/2019	03/12/19 12:16	J
Nickel	**7.6**	1.3	0.23	1	B9C0248	03/11/2019	03/12/19 12:16	
Selenium	ND	1.3	0.52	1	B9C0248	03/11/2019	03/12/19 12:16	
Silver	ND	1.3	0.15	1	B9C0248	03/11/2019	03/12/19 12:16	
Thallium	ND	1.3	0.49	1	B9C0248	03/11/2019	03/12/19 12:16	
Vanadium	**22**	1.3	0.08	1	B9C0248	03/11/2019	03/12/19 12:16	
Zinc	**15**	1.3	0.20	1	B9C0248	03/11/2019	03/12/19 12:16	

TCLP Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	0.50	0.044	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Arsenic	ND	0.25	0.039	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Barium	**1.2**	0.25	0.013	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Beryllium	ND	0.25	0.0082	5	B9C0273	03/12/2019	03/12/19 12:53	D1

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NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
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Nevada City , CA 95959	Reported :	03/18/2019

Client Sample ID 19GHC-3
Lab ID: 1900897-03

TCLP Metals by ICP-AES EPA 6010B

Analyst: GO

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Cadmium	ND	0.25	0.012	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Chromium	ND	0.25	0.0098	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Cobalt	**0.022**	0.25	0.0079	5	B9C0273	03/12/2019	03/12/19 12:53	J, D1
Copper	ND	0.25	0.019	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Lead	ND	0.25	0.024	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Molybdenum	ND	0.25	0.015	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Nickel	ND	0.25	0.023	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Selenium	ND	0.25	0.047	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Silver	ND	0.25	0.012	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Thallium	ND	0.25	0.043	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Vanadium	ND	0.25	0.011	5	B9C0273	03/12/2019	03/12/19 12:53	D1
Zinc	**0.16**	0.25	0.029	5	B9C0273	03/12/2019	03/12/19 12:53	J, D1

STLC Metals by ICP-AES by EPA 6010B

Analyst: GO

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Antimony	ND	2.0	0.18	20	B9C0245	03/11/2019	03/11/19 15:37	D1
Arsenic	ND	1.0	0.16	20	B9C0245	03/11/2019	03/11/19 15:37	D1
Barium	**1.6**	1.0	0.053	20	B9C0245	03/11/2019	03/11/19 15:37	D1
Beryllium	ND	1.0	0.033	20	B9C0245	03/11/2019	03/11/19 15:37	D1
Cadmium	ND	1.0	0.048	20	B9C0245	03/11/2019	03/11/19 15:37	D1
Chromium	**4.7**	1.0	0.039	20	B9C0245	03/11/2019	03/11/19 15:37	D1
Cobalt	**0.14**	1.0	0.032	20	B9C0245	03/11/2019	03/11/19 15:37	J, D1
Copper	**0.15**	1.0	0.076	20	B9C0245	03/11/2019	03/11/19 15:37	J, D1
Lead	ND	1.0	0.094	20	B9C0245	03/11/2019	03/11/19 15:37	D1
Molybdenum	ND	1.0	0.059	20	B9C0245	03/11/2019	03/11/19 15:37	D1
Nickel	**0.21**	1.0	0.092	20	B9C0245	03/11/2019	03/11/19 15:37	J, D1
Selenium	ND	1.0	0.19	20	B9C0245	03/11/2019	03/11/19 15:37	D1
Silver	ND	1.0	0.047	20	B9C0245	03/11/2019	03/11/19 15:37	D1
Thallium	ND	1.0	0.17	20	B9C0245	03/11/2019	03/11/19 15:37	D1
Vanadium	**0.13**	1.0	0.045	20	B9C0245	03/11/2019	03/11/19 15:37	J, D1
Zinc	**0.14**	1.0	0.11	20	B9C0245	03/11/2019	03/11/19 15:37	J, D1

Certificate of Analysis

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Lab ID: 1900897-03

Mercury by AA (Cold Vapor) EPA 7471A

Analyst: KEK

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	**0.27**	0.13	0.009	1	B9C0250	03/11/2019	03/13/19 16:51	

STLC Mercury by AA (Cold Vapor) EPA 7470A

Analyst: KEK

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	**0.30**	1.0	0.16	1	B9C0244	03/11/2019	03/13/19 15:33	J

TCLP Mercury by AA (Cold Vapor) by EPA 7470A

Analyst: KEK

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Mercury	ND	0.20	0.03	1	B9C0274	03/12/2019	03/13/19 13:22	

Hydrocarbon Chain Distribution by EPA 8015B (Modified)

Analyst: HT

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
C8-C10	ND	13	13	1	B9C0373	03/14/2019	03/14/19 16:57	
C10-C18	**28**	13	13	1	B9C0373	03/14/2019	03/14/19 16:57	
C18-C28	ND	13	13	1	B9C0373	03/14/2019	03/14/19 16:57	
C28-C36	ND	13	13	1	B9C0373	03/14/2019	03/14/19 16:57	
C36-C40	ND	13	13	1	B9C0373	03/14/2019	03/14/19 16:57	
C8-C40 Total	**28**	13	13	1	B9C0373	03/14/2019	03/14/19 16:57	
Surrogate: p-Terphenyl	*90.9 %*	*58 - 172*			B9C0373	03/14/2019	*03/14/19 16:57*	

Polychlorinated Biphenyls by EPA 8082

Analyst: KD

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Aroclor 1016	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:53	
Aroclor 1221	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:53	
Aroclor 1232	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:53	
Aroclor 1242	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:53	
Aroclor 1248	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:53	
Aroclor 1254	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:53	
Aroclor 1260	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:53	

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NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
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Polychlorinated Biphenyls by EPA 8082

Analyst: KD

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Aroclor 1262	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:53	
Aroclor 1268	ND	21	1.9	1	B9C0388	03/14/2019	03/15/19 09:53	
Surrogate: Decachlorobiphenyl	*67.7 %*		*18 - 136*		B9C0388	03/14/2019	*03/15/19 09:53*	
Surrogate: Tetrachloro-m-xylene	*78.5 %*		*30 - 130*		B9C0388	03/14/2019	*03/15/19 09:53*	

Semivolatile Organic Compounds by EPA 8270C

Analyst: SP

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
1,2,4-Trichlorobenzene	ND	430	92	1	B9C0387	03/14/2019	03/14/19 21:33	
1,2-Dichlorobenzene	ND	430	78	1	B9C0387	03/14/2019	03/14/19 21:33	
1,3-Dichlorobenzene	ND	430	84	1	B9C0387	03/14/2019	03/14/19 21:33	
1,4-Dichlorobenzene	ND	430	78	1	B9C0387	03/14/2019	03/14/19 21:33	
2,4,5-Trichlorophenol	ND	430	80	1	B9C0387	03/14/2019	03/14/19 21:33	
2,4,6-Trichlorophenol	ND	430	290	1	B9C0387	03/14/2019	03/14/19 21:33	
2,4-Dichlorophenol	ND	2100	150	1	B9C0387	03/14/2019	03/14/19 21:33	
2,4-Dimethylphenol	ND	430	150	1	B9C0387	03/14/2019	03/14/19 21:33	
2,4-Dinitrophenol	ND	2100	110	1	B9C0387	03/14/2019	03/14/19 21:33	
2,4-Dinitrotoluene	ND	430	59	1	B9C0387	03/14/2019	03/14/19 21:33	
2,6-Dinitrotoluene	ND	430	63	1	B9C0387	03/14/2019	03/14/19 21:33	
2-Chloronaphthalene	ND	430	76	1	B9C0387	03/14/2019	03/14/19 21:33	
2-Chlorophenol	ND	430	160	1	B9C0387	03/14/2019	03/14/19 21:33	
2-Methylnaphthalene	ND	430	86	1	B9C0387	03/14/2019	03/14/19 21:33	
2-Methylphenol	ND	430	87	1	B9C0387	03/14/2019	03/14/19 21:33	
2-Nitroaniline	ND	2100	260	1	B9C0387	03/14/2019	03/14/19 21:33	
2-Nitrophenol	ND	430	140	1	B9C0387	03/14/2019	03/14/19 21:33	
3,3´-Dichlorobenzidine	ND	860	360	1	B9C0387	03/14/2019	03/14/19 21:33	
3-Nitroaniline	ND	2100	58	1	B9C0387	03/14/2019	03/14/19 21:33	
4,6-Dinitro-2-methyphenol	ND	2100	390	1	B9C0387	03/14/2019	03/14/19 21:33	
4-Bromophenyl-phenylether	ND	430	64	1	B9C0387	03/14/2019	03/14/19 21:33	
4-Chloro-3-methylphenol	ND	860	140	1	B9C0387	03/14/2019	03/14/19 21:33	
4-Chloroaniline	ND	860	68	1	B9C0387	03/14/2019	03/14/19 21:33	
4-Chlorophenyl-phenylether	ND	430	62	1	B9C0387	03/14/2019	03/14/19 21:33	
4-Methylphenol	ND	430	86	1	B9C0387	03/14/2019	03/14/19 21:33	
4-Nitroaniline	ND	2100	370	1	B9C0387	03/14/2019	03/14/19 21:33	
4-Nitrophenol	ND	430	200	1	B9C0387	03/14/2019	03/14/19 21:33	
Acenaphthene	ND	430	63	1	B9C0387	03/14/2019	03/14/19 21:33	

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Nevada City , CA 95959	Reported :	03/18/2019

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Lab ID: 1900897-03

Semivolatile Organic Compounds by EPA 8270C **Analyst: SP**

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Acenaphthylene	ND	430	66	1	B9C0387	03/14/2019	03/14/19 21:33	
Anthracene	ND	430	63	1	B9C0387	03/14/2019	03/14/19 21:33	
Benzidine (M)	ND	2100	1900	1	B9C0387	03/14/2019	03/14/19 21:33	
Benzo(a)anthracene	ND	430	51	1	B9C0387	03/14/2019	03/14/19 21:33	
Benzo(a)pyrene	ND	430	59	1	B9C0387	03/14/2019	03/14/19 21:33	
Benzo(b)fluoranthene	ND	430	72	1	B9C0387	03/14/2019	03/14/19 21:33	
Benzo(g,h,i)perylene	ND	430	49	1	B9C0387	03/14/2019	03/14/19 21:33	
Benzo(k)fluoranthene	ND	430	67	1	B9C0387	03/14/2019	03/14/19 21:33	
Benzoic acid	ND	2100	1200	1	B9C0387	03/14/2019	03/14/19 21:33	
Benzyl alcohol	ND	860	87	1	B9C0387	03/14/2019	03/14/19 21:33	
bis(2-chloroethoxy)methane	ND	430	77	1	B9C0387	03/14/2019	03/14/19 21:33	
bis(2-Chloroethyl)ether	ND	430	74	1	B9C0387	03/14/2019	03/14/19 21:33	
bis(2-chloroisopropyl)ether	ND	430	84	1	B9C0387	03/14/2019	03/14/19 21:33	
bis(2-ethylhexyl)phthalate	ND	430	110	1	B9C0387	03/14/2019	03/14/19 21:33	
Butylbenzylphthalate	ND	430	320	1	B9C0387	03/14/2019	03/14/19 21:33	
Chrysene	ND	430	56	1	B9C0387	03/14/2019	03/14/19 21:33	
Di-n-butylphthalate	ND	430	290	1	B9C0387	03/14/2019	03/14/19 21:33	
Di-n-octylphthalate	ND	430	62	1	B9C0387	03/14/2019	03/14/19 21:33	
Dibenz(a,h)anthracene	ND	430	56	1	B9C0387	03/14/2019	03/14/19 21:33	
Dibenzofuran	ND	430	71	1	B9C0387	03/14/2019	03/14/19 21:33	
Diethyl phthalate	ND	430	61	1	B9C0387	03/14/2019	03/14/19 21:33	
Dimethyl phthalate	ND	430	59	1	B9C0387	03/14/2019	03/14/19 21:33	
Fluoranthene	ND	430	61	1	B9C0387	03/14/2019	03/14/19 21:33	
Fluorene	ND	430	64	1	B9C0387	03/14/2019	03/14/19 21:33	
Hexachlorobenzene	ND	430	53	1	B9C0387	03/14/2019	03/14/19 21:33	
Hexachlorobutadiene	ND	860	79	1	B9C0387	03/14/2019	03/14/19 21:33	
Hexachlorocyclopentadiene	ND	860	82	1	B9C0387	03/14/2019	03/14/19 21:33	
Hexachloroethane	ND	430	92	1	B9C0387	03/14/2019	03/14/19 21:33	
Indeno(1,2,3-cd)pyrene	ND	430	56	1	B9C0387	03/14/2019	03/14/19 21:33	
Isophorone	ND	430	74	1	B9C0387	03/14/2019	03/14/19 21:33	
N-Nitroso-di-n propylamine	ND	430	84	1	B9C0387	03/14/2019	03/14/19 21:33	
N-Nitrosodiphenylamine	ND	430	62	1	B9C0387	03/14/2019	03/14/19 21:33	
Naphthalene	ND	430	77	1	B9C0387	03/14/2019	03/14/19 21:33	
Nitrobenzene	ND	430	87	1	B9C0387	03/14/2019	03/14/19 21:33	
Pentachlorophenol	ND	2100	240	1	B9C0387	03/14/2019	03/14/19 21:33	
Phenanthrene	ND	430	60	1	B9C0387	03/14/2019	03/14/19 21:33	
Phenol	ND	430	170	1	B9C0387	03/14/2019	03/14/19 21:33	

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Lab ID: 1900897-03

Semivolatile Organic Compounds by EPA 8270C

Analyst: SP

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
Pyrene	ND	430	69	1	B9C0387	03/14/2019	03/14/19 21:33	
Pyridine	ND	2100	340	1	B9C0387	03/14/2019	03/14/19 21:33	
Surrogate: 1,2-Dichlorobenzene-d4	*53.0 %*		*16 - 87*		B9C0387	03/14/2019	*03/14/19 21:33*	
Surrogate: 2,4,6-Tribromophenol	*101 %*		*0 - 148*		B9C0387	03/14/2019	*03/14/19 21:33*	
Surrogate: 2-Chlorophenol-d4	*64.3 %*		*17 - 96*		B9C0387	03/14/2019	*03/14/19 21:33*	
Surrogate: 2-Fluorobiphenyl	*55.1 %*		*16 - 107*		B9C0387	03/14/2019	*03/14/19 21:33*	
Surrogate: 2-Fluorophenol	*58.6 %*		*16 - 86*		B9C0387	03/14/2019	*03/14/19 21:33*	
Surrogate: 4-Terphenyl-d14	*75.7 %*		*3 - 156*		B9C0387	03/14/2019	*03/14/19 21:33*	
Surrogate: Nitrobenzene-d5	*55.6 %*		*16 - 99*		B9C0387	03/14/2019	*03/14/19 21:33*	
Surrogate: Phenol-d6	*62.3 %*		*17 - 90*		B9C0387	03/14/2019	*03/14/19 21:33*	

Semivolatile Organic Compounds by EPA 8270/SIM

Analyst: SP

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
2-Methylnaphthalene	ND	6.5	1.5	1	B9C0386	03/14/2019	03/14/19 22:06	
Acenaphthene	ND	6.5	1.0	1	B9C0386	03/14/2019	03/14/19 22:06	
Acenaphthylene	ND	6.5	1.2	1	B9C0386	03/14/2019	03/14/19 22:06	
Anthracene	ND	6.5	0.88	1	B9C0386	03/14/2019	03/14/19 22:06	
Benzo(a)anthracene	ND	6.5	0.83	1	B9C0386	03/14/2019	03/14/19 22:06	
Benzo(a)pyrene	ND	6.5	1.1	1	B9C0386	03/14/2019	03/14/19 22:06	
Benzo(b)fluoranthene	ND	6.5	1.0	1	B9C0386	03/14/2019	03/14/19 22:06	
Benzo(g,h,i)perylene	ND	6.5	1.3	1	B9C0386	03/14/2019	03/14/19 22:06	
Benzo(k)fluoranthene	ND	6.5	0.72	1	B9C0386	03/14/2019	03/14/19 22:06	
Chrysene	ND	6.5	0.78	1	B9C0386	03/14/2019	03/14/19 22:06	
Dibenz(a,h)anthracene	ND	6.5	1.4	1	B9C0386	03/14/2019	03/14/19 22:06	
Fluoranthene	**3.4**	6.5	0.94	1	B9C0386	03/14/2019	03/14/19 22:06	J
Fluorene	ND	6.5	0.99	1	B9C0386	03/14/2019	03/14/19 22:06	
Indeno(1,2,3-cd)pyrene	ND	6.5	1.7	1	B9C0386	03/14/2019	03/14/19 22:06	
Naphthalene	ND	6.5	1.2	1	B9C0386	03/14/2019	03/14/19 22:06	
Phenanthrene	ND	6.5	0.88	1	B9C0386	03/14/2019	03/14/19 22:06	
Pyrene	ND	6.5	0.90	1	B9C0386	03/14/2019	03/14/19 22:06	
Surrogate: 1,2-Dichlorobenzene-d4	*68.8 %*		*26 - 107*		B9C0386	03/14/2019	*03/14/19 22:06*	
Surrogate: 2-Fluorobiphenyl	*75.1 %*		*35 - 107*		B9C0386	03/14/2019	*03/14/19 22:06*	
Surrogate: Nitrobenzene-d5	*86.6 %*		*2 - 129*		B9C0386	03/14/2019	*03/14/19 22:06*	
Surrogate: 4-Terphenyl-d14	*79.5 %*		*48 - 123*		B9C0386	03/14/2019	*03/14/19 22:06*	

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

QUALITY CONTROL SECTION

Percent Moisture - Quality Control

Analyte	Result % by Weight	PQL % by Weight	MDL % by Weight	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0278 - No_Prep_WC1_SED										
Duplicate (B9C0278-DUP1)				**Source: 1900897-03**	Prepared: 3/11/2019 Analyzed: 3/11/2019					
Percent Moisture	23.6485	0.10	0.10		22.9282			3.09	30	

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

Total Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0249 - EPA 3050B_SED										
Matrix Spike (B9C0249-MS1)			**Source: 1900897-02**		Prepared: 3/11/2019 Analyzed: 3/12/2019					
Aluminum	3044.78	32	3.4	1269.71	2207.23	66.0	0 - 257			
Matrix Spike Dup (B9C0249-MSD1)			**Source: 1900897-02**		Prepared: 3/11/2019 Analyzed: 3/12/2019					
Aluminum	3145.36	32	3.4	1269.71	2207.23	73.9	0 - 257	3.25	20	

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

Total Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg wet)	PQL (mg/kg wet)	MDL (mg/kg wet)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0249 - EPA 3050B_SED										
Blank (B9C0249-BLK1)					Prepared: 3/11/2019 Analyzed: 3/12/2019					
Aluminum	ND	25	2.7							
LCS (B9C0249-BS1)					Prepared: 3/11/2019 Analyzed: 3/12/2019					
Aluminum	863.012	25	2.7	1000.00		86.3	80 - 120			

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

Title 22 Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0248 - EPA 3050B_SED										
Matrix Spike (B9C0248-MS1)			**Source: 1900897-02**		Prepared: 3/11/2019 Analyzed: 3/12/2019					
Antimony	123.220	2.5	0.65	158.714	ND	77.6	21 - 102			
Arsenic	128.230	1.3	0.15	158.714	3.56751	78.5	49 - 96			
Barium	172.686	1.3	0.15	158.714	28.6565	90.7	26 - 121			
Beryllium	130.746	1.3	0.04	158.714	ND	82.4	51 - 96			
Cadmium	126.979	1.3	0.18	158.714	ND	80.0	46 - 93			
Chromium	148.766	1.3	0.33	158.714	8.36835	88.5	44 - 107			
Cobalt	135.630	1.3	0.08	158.714	2.58654	83.8	49 - 100			
Copper	142.174	2.5	0.24	158.714	6.97670	85.2	46 - 115			
Lead	127.571	1.3	0.23	158.714	1.71376	79.3	29 - 126			
Molybdenum	133.537	1.3	0.16	158.714	0.397057	83.9	48 - 99			
Nickel	135.520	1.3	0.23	158.714	5.03546	82.2	37 - 108			
Selenium	122.830	1.3	0.51	158.714	ND	77.4	48 - 95			
Silver	136.850	1.3	0.15	158.714	ND	86.2	53 - 99			
Thallium	122.264	1.3	0.48	158.714	ND	77.0	38 - 93			
Vanadium	158.434	1.3	0.08	158.714	14.5758	90.6	48 - 104			
Zinc	134.742	1.3	0.19	158.714	10.0951	78.5	24 - 111			
Matrix Spike Dup (B9C0248-MSD1)			**Source: 1900897-02**		Prepared: 3/11/2019 Analyzed: 3/12/2019					
Antimony	120.940	2.5	0.65	158.714	ND	76.2	21 - 102	1.87	20	
Arsenic	127.770	1.3	0.15	158.714	3.56751	78.3	49 - 96	0.359	20	
Barium	160.244	1.3	0.15	158.714	28.6565	82.9	26 - 121	7.47	20	
Beryllium	129.368	1.3	0.04	158.714	ND	81.5	51 - 96	1.06	20	
Cadmium	123.727	1.3	0.18	158.714	ND	78.0	46 - 93	2.59	20	
Chromium	144.839	1.3	0.33	158.714	8.36835	86.0	44 - 107	2.68	20	
Cobalt	132.567	1.3	0.08	158.714	2.58654	81.9	49 - 100	2.28	20	
Copper	140.607	2.5	0.24	158.714	6.97670	84.2	46 - 115	1.11	20	
Lead	125.777	1.3	0.23	158.714	1.71376	78.2	29 - 126	1.42	20	
Molybdenum	131.671	1.3	0.16	158.714	0.397057	82.7	48 - 99	1.41	20	
Nickel	132.419	1.3	0.23	158.714	5.03546	80.3	37 - 108	2.32	20	
Selenium	122.010	1.3	0.51	158.714	ND	76.9	48 - 95	0.669	20	
Silver	134.102	1.3	0.15	158.714	ND	84.5	53 - 99	2.03	20	
Thallium	121.739	1.3	0.48	158.714	ND	76.7	38 - 93	0.430	20	
Vanadium	154.494	1.3	0.08	158.714	14.5758	88.2	48 - 104	2.52	20	
Zinc	129.621	1.3	0.19	158.714	10.0951	75.3	24 - 111	3.87	20	

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

Title 22 Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg wet)	PQL (mg/kg wet)	MDL (mg/kg wet)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0248 - EPA 3050B_SED										
Blank (B9C0248-BLK1)						Prepared: 3/11/2019 Analyzed: 3/12/2019				
Antimony	ND	2.0	0.51							
Arsenic	ND	1.0	0.12							
Barium	ND	1.0	0.12							
Beryllium	ND	1.0	0.03							
Cadmium	ND	1.0	0.14							
Chromium	ND	1.0	0.26							
Cobalt	ND	1.0	0.07							
Copper	ND	2.0	0.19							
Lead	ND	1.0	0.18							
Molybdenum	ND	1.0	0.12							
Nickel	ND	1.0	0.18							
Selenium	ND	1.0	0.40							
Silver	ND	1.0	0.12							
Thallium	ND	1.0	0.38							
Vanadium	ND	1.0	0.06							
Zinc	ND	1.0	0.15							
LCS (B9C0248-BS1)						Prepared: 3/11/2019 Analyzed: 3/12/2019				
Antimony	41.9262	2.0	0.51	50.0000		83.9	80 - 120			
Arsenic	40.5379	1.0	0.12	50.0000		81.1	80 - 120			
Barium	44.6544	1.0	0.12	50.0000		89.3	80 - 120			
Beryllium	42.6906	1.0	0.03	50.0000		85.4	80 - 120			
Cadmium	41.1327	1.0	0.14	50.0000		82.3	80 - 120			
Chromium	44.6883	1.0	0.26	50.0000		89.4	80 - 120			
Cobalt	43.9006	1.0	0.07	50.0000		87.8	80 - 120			
Copper	45.2270	2.0	0.19	50.0000		90.5	80 - 120			
Lead	41.4697	1.0	0.18	50.0000		82.9	80 - 120			
Molybdenum	43.0126	1.0	0.12	50.0000		86.0	80 - 120			
Nickel	43.1668	1.0	0.18	50.0000		86.3	80 - 120			
Selenium	40.8918	1.0	0.40	50.0000		81.8	80 - 120			
Silver	44.4512	1.0	0.12	50.0000		88.9	80 - 120			
Thallium	41.4186	1.0	0.38	50.0000		82.8	80 - 120			
Vanadium	45.3482	1.0	0.06	50.0000		90.7	80 - 120			
Zinc	40.7346	1.0	0.15	50.0000		81.5	80 - 120			

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

TCLP Metals by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0273 - EPA 3010A_SED										
Blank (B9C0273-BLK1)						Prepared: 3/12/2019 Analyzed: 3/12/2019				
Antimony	ND	0.10	0.0088							
Arsenic	ND	0.050	0.0078							
Barium	ND	0.050	0.0026							
Beryllium	ND	0.050	0.0016							
Cadmium	ND	0.050	0.0024							
Chromium	ND	0.050	0.0020							
Cobalt	ND	0.050	0.0016							
Copper	ND	0.050	0.0038							
Lead	ND	0.050	0.0047							
Molybdenum	ND	0.050	0.0030							
Nickel	ND	0.050	0.0046							
Selenium	ND	0.050	0.0093							
Silver	ND	0.050	0.0024							
Thallium	ND	0.050	0.0085							
Vanadium	ND	0.050	0.0022							
Zinc	ND	0.050	0.0057							
LCS (B9C0273-BS1)						Prepared: 3/12/2019 Analyzed: 3/12/2019				
Antimony	0.863892	0.10	0.0088	1.00000		86.4	80 - 120			
Arsenic	0.880550	0.050	0.0078	1.00000		88.1	80 - 120			
Barium	0.958343	0.050	0.0026	1.00000		95.8	80 - 120			
Beryllium	0.893044	0.050	0.0016	1.00000		89.3	80 - 120			
Cadmium	0.874404	0.050	0.0024	1.00000		87.4	80 - 120			
Chromium	0.950198	0.050	0.0020	1.00000		95.0	80 - 120			
Cobalt	0.943281	0.050	0.0016	1.00000		94.3	80 - 120			
Copper	0.938570	0.050	0.0038	1.00000		93.9	80 - 120			
Lead	0.865510	0.050	0.0047	1.00000		86.6	80 - 120			
Molybdenum	0.946290	0.050	0.0030	1.00000		94.6	80 - 120			
Nickel	0.930603	0.050	0.0046	1.00000		93.1	80 - 120			
Selenium	0.876227	0.050	0.0093	1.00000		87.6	80 - 120			
Silver	0.945695	0.050	0.0024	1.00000		94.6	80 - 120			
Thallium	0.852256	0.050	0.0085	1.00000		85.2	80 - 120			
Vanadium	0.946175	0.050	0.0022	1.00000		94.6	80 - 120			
Zinc	0.901431	0.050	0.0057	1.00000		90.1	80 - 120			
Matrix Spike (B9C0273-MS1)			**Source: 1900897-01**			Prepared: 3/12/2019 Analyzed: 3/12/2019				
Antimony	2.13038	0.50	0.044	2.50000	ND	85.2	66 - 127			
Arsenic	2.22802	0.25	0.039	2.50000	ND	89.1	63 - 131			
Barium	3.65712	0.25	0.013	2.50000	1.08728	103	62 - 129			
Beryllium	2.24764	0.25	0.0082	2.50000	ND	89.9	66 - 126			
Cadmium	2.24750	0.25	0.012	2.50000	ND	89.9	59 - 124			
Chromium	2.34162	0.25	0.0098	2.50000	ND	93.7	63 - 127			

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

TCLP Metals by ICP-AES EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0273 - EPA 3010A_SED (continued)										
Matrix Spike (B9C0273-MS1) - Continued			**Source: 1900897-01**		Prepared: 3/12/2019 Analyzed: 3/12/2019					
Cobalt	2.29869	0.25	0.0079	2.50000	ND	91.9	62 - 125			
Copper	2.31686	0.25	0.019	2.50000	ND	92.7	59 - 139			
Lead	2.16024	0.25	0.024	2.50000	ND	86.4	59 - 123			
Molybdenum	2.39046	0.25	0.015	2.50000	ND	95.6	30 - 169			
Nickel	2.25540	0.25	0.023	2.50000	ND	90.2	60 - 125			
Selenium	2.28416	0.25	0.047	2.50000	ND	91.4	55 - 136			
Silver	2.36167	0.25	0.012	2.50000	ND	94.5	58 - 139			
Thallium	2.04257	0.25	0.043	2.50000	ND	81.7	68 - 11			M1
Vanadium	2.34216	0.25	0.011	2.50000	ND	93.7	63 - 131			
Zinc	2.51014	0.25	0.029	2.50000	0.204746	92.2	50 - 131			
Matrix Spike Dup (B9C0273-MSD1)			**Source: 1900897-01**		Prepared: 3/12/2019 Analyzed: 3/12/2019					
Antimony	2.07660	0.50	0.044	2.50000	ND	83.1	66 - 127	2.56	20	
Arsenic	2.16313	0.25	0.039	2.50000	ND	86.5	63 - 131	2.96	20	
Barium	3.20885	0.25	0.013	2.50000	1.08728	84.9	62 - 129	13.1	20	
Beryllium	2.16498	0.25	0.0082	2.50000	ND	86.6	66 - 126	3.75	20	
Cadmium	2.17235	0.25	0.012	2.50000	ND	86.9	59 - 124	3.40	20	
Chromium	2.22474	0.25	0.0098	2.50000	ND	89.0	63 - 127	5.12	20	
Cobalt	2.21421	0.25	0.0079	2.50000	ND	88.6	62 - 125	3.74	20	
Copper	2.17337	0.25	0.019	2.50000	ND	86.9	59 - 139	6.39	20	
Lead	2.11438	0.25	0.024	2.50000	ND	84.6	59 - 123	2.15	20	
Molybdenum	2.32399	0.25	0.015	2.50000	ND	93.0	30 - 169	2.82	20	
Nickel	2.19721	0.25	0.023	2.50000	ND	87.9	60 - 125	2.61	20	
Selenium	2.18275	0.25	0.047	2.50000	ND	87.3	55 - 136	4.54	20	
Silver	2.22761	0.25	0.012	2.50000	ND	89.1	58 - 139	5.84	20	
Thallium	2.00925	0.25	0.043	2.50000	ND	80.4	68 - 11	1.64	20	M1
Vanadium	2.20993	0.25	0.011	2.50000	ND	88.4	63 - 131	5.81	20	
Zinc	2.35559	0.25	0.029	2.50000	0.204746	86.0	50 - 131	6.35	20	

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

STLC Metals by ICP-AES by EPA 6010B - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	MDL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0245 - STLC_SED Extraction										
Blank (B9C0245-BLK1)					Prepared: 3/11/2019 Analyzed: 3/11/2019					
Antimony	ND	2.0	0.18							
Arsenic	ND	1.0	0.16							
Barium	ND	1.0	0.053							
Beryllium	ND	1.0	0.033							
Cadmium	ND	1.0	0.048							
Chromium	ND	1.0	0.039							
Cobalt	ND	1.0	0.032							
Copper	ND	1.0	0.076							
Lead	ND	1.0	0.094							
Molybdenum	ND	1.0	0.059							
Nickel	ND	1.0	0.092							
Selenium	ND	1.0	0.19							
Silver	ND	1.0	0.047							
Thallium	ND	1.0	0.17							
Vanadium	ND	1.0	0.045							
Zinc	ND	1.0	0.11							
LCS (B9C0245-BS1)					Prepared: 3/11/2019 Analyzed: 3/11/2019					
Antimony	1.89630			2.00000		94.8	80 - 120			
Arsenic	2.11569			2.00000		106	80 - 120			
Barium	2.27009			2.00000		114	80 - 120			
Beryllium	1.95366			2.00000		97.7	80 - 120			
Cadmium	2.15768			2.00000		108	80 - 120			
Chromium	2.07617			2.00000		104	80 - 120			
Cobalt	2.11037			2.00000		106	80 - 120			
Copper	2.05278			2.00000		103	80 - 120			
Lead	1.89014			2.00000		94.5	80 - 120			
Molybdenum	1.99094			2.00000		99.5	80 - 120			
Nickel	2.15579			2.00000		108	80 - 120			
Selenium	2.02753			2.00000		101	80 - 120			
Silver	2.02839			2.00000		101	80 - 120			
Thallium	2.06597			2.00000		103	80 - 120			
Vanadium	2.13780			2.00000		107	80 - 120			
Zinc	2.14293			2.00000		107	80 - 120			
LCS Dup (B9C0245-BSD1)					Prepared: 3/11/2019 Analyzed: 3/11/2019					
Antimony	1.88382			2.00000		94.2	80 - 120	0.660	20	
Arsenic	1.85913			2.00000		93.0	80 - 120	12.9	20	
Barium	2.08453			2.00000		104	80 - 120	8.52	20	
Beryllium	1.79090			2.00000		89.5	80 - 120	8.69	20	
Cadmium	1.98192			2.00000		99.1	80 - 120	8.49	20	
Chromium	1.88882			2.00000		94.4	80 - 120	9.45	20	

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NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
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STLC Metals by ICP-AES by EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/L)	PQL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0245 - STLC_SED Extraction (continued)									
LCS Dup (B9C0245-BSD1) - Continued				Prepared: 3/11/2019 Analyzed: 3/11/2019					
Cobalt	1.95315		2.00000		97.7	80 - 120	7.74	20	
Copper	1.85589		2.00000		92.8	80 - 120	10.1	20	
Lead	1.73709		2.00000		86.9	80 - 120	8.44	20	
Molybdenum	1.84904		2.00000		92.5	80 - 120	7.39	20	
Nickel	1.98642		2.00000		99.3	80 - 120	8.18	20	
Selenium	1.81913		2.00000		91.0	80 - 120	10.8	20	
Silver	1.85280		2.00000		92.6	80 - 120	9.05	20	
Thallium	1.91281		2.00000		95.6	80 - 120	7.70	20	
Vanadium	1.92405		2.00000		96.2	80 - 120	10.5	20	
Zinc	1.99162		2.00000		99.6	80 - 120	7.32	20	

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NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
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Mercury by AA (Cold Vapor) EPA 7471A - Quality Control

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0250 - EPA 7471_SED										
Matrix Spike (B9C0250-MS1)			**Source: 1900897-01**		Prepared: 3/11/2019 Analyzed: 3/13/2019					
Mercury	1.21328	0.13	0.009	1.07120	0.040102	110	70 - 130			
Matrix Spike Dup (B9C0250-MSD1)			**Source: 1900897-01**		Prepared: 3/11/2019 Analyzed: 3/13/2019					
Mercury	1.24313	0.13	0.009	1.07120	0.040102	112	70 - 130	2.43	20	

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Mercury by AA (Cold Vapor) EPA 7471A - Quality Control

Analyte	Result (mg/kg wet)	PQL (mg/kg wet)	MDL (mg/kg wet)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0250 - EPA 7471_SED										
Blank (B9C0250-BLK1)					Prepared: 3/11/2019 Analyzed: 3/13/2019					
Mercury	ND	0.10	0.007							
LCS (B9C0250-BS1)					Prepared: 3/11/2019 Analyzed: 3/13/2019					
Mercury	0.808367	0.10	0.007	0.833333		97.0	80 - 120			

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Mercury by AA (Cold Vapor) EPA 7471A - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0250 - EPA 7471_SED									
Post Spike (B9C0250-PS1)			**Source: 1900897-01**	Prepared: 3/11/2019 Analyzed: 3/13/2019					
Mercury	7.5236E-3		5.00000E-3	0.000374	143	85 - 115			M1

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NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
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STLC Mercury by AA (Cold Vapor) EPA 7470A - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0244 - EPA 245.1/7470_SED										
Blank (B9C0244-BLK1)					Prepared: 3/11/2019 Analyzed: 3/13/2019					
Mercury	ND	0.20	0.03							
LCS (B9C0244-BS1)					Prepared: 3/11/2019 Analyzed: 3/13/2019					
Mercury	9.90872	0.20	0.03	10.0000		99.1	80 - 120			
Matrix Spike (B9C0244-MS1)			**Source: 1900897-01**		Prepared: 3/11/2019 Analyzed: 3/13/2019					
Mercury	37.7691	1.0	0.16	50.0000	ND	75.5	70 - 130			
Matrix Spike Dup (B9C0244-MSD1)			**Source: 1900897-01**		Prepared: 3/11/2019 Analyzed: 3/13/2019					
Mercury	51.5943	1.0	0.16	50.0000	ND	103	70 - 130	30.9	20	R
Post Spike (B9C0244-PS1)			**Source: 1900897-01**		Prepared: 3/11/2019 Analyzed: 3/13/2019					
Mercury	5.08485			5.00000	0.010771	101	85 - 115			

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TCLP Mercury by AA (Cold Vapor) by EPA 7470A - Quality Control

Analyte	Result (ug/L)	PQL (ug/L)	MDL (ug/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0274 - EPA 245.1/7470_SED										
Blank (B9C0274-BLK1)					Prepared: 3/12/2019 Analyzed: 3/13/2019					
Mercury	0.031761	0.20	0.03							J
LCS (B9C0274-BS1)					Prepared: 3/12/2019 Analyzed: 3/13/2019					
Mercury	9.02804	0.20	0.03	10.0000		90.3	80 - 120			
Matrix Spike (B9C0274-MS1)			**Source: 1900897-01**		Prepared: 3/12/2019 Analyzed: 3/13/2019					
Mercury	9.59204	0.20	0.03	10.0000	0.037391	95.5	70 - 130			
Matrix Spike Dup (B9C0274-MSD1)			**Source: 1900897-01**		Prepared: 3/12/2019 Analyzed: 3/13/2019					
Mercury	9.48722	0.20	0.03	10.0000	0.037391	94.5	70 - 130	1.10	20	
Post Spike (B9C0274-PS1)			**Source: 1900897-01**		Prepared: 3/12/2019 Analyzed: 3/13/2019					
Mercury	4.87316			5.00000	0.037391	96.7	85 - 115			

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NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
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Hydrocarbon Chain Distribution by EPA 8015B (Modified) - Quality Control

Analyte	Result (mg/kg dry)	PQL (mg/kg dry)	MDL (mg/kg dry)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0373 - GCSEMI_DRO_SED										
Matrix Spike (B9C0373-MS1)			**Source: 1900897-01**		Prepared: 3/14/2019 Analyzed: 3/14/2019					
DRO	1270.54	13	13	1285.44	ND	98.8	61 - 171			
Surrogate: p-Terphenyl	*107.4*			*102.836*		*104*	*58 - 172*			
Matrix Spike Dup (B9C0373-MSD1)			**Source: 1900897-01**		Prepared: 3/14/2019 Analyzed: 3/14/2019					
DRO	1340.95	13	13	1285.44	ND	104	61 - 171	5.39	20	
Surrogate: p-Terphenyl	*101.5*			*102.836*		*98.7*	*58 - 172*			

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NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
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Hydrocarbon Chain Distribution by EPA 8015B (Modified) - Quality Control

Analyte	Result (mg/kg wet)	PQL (mg/kg wet)	MDL (mg/kg wet)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0373 - GCSEMI_DRO_SED										
Blank (B9C0373-BLK1)					Prepared: 3/14/2019 Analyzed: 3/14/2019					
C8-C10	ND	10	10							
C10-C18	ND	10	10							
C18-C28	ND	10	10							
C28-C36	ND	10	10							
C36-C40	ND	10	10							
C8-C40 Total	ND	10	10							
Surrogate: p-Terphenyl	*82.07*			*80.0000*		*103*	*58 - 172*			
LCS (B9C0373-BS1)					Prepared: 3/14/2019 Analyzed: 3/14/2019					
DRO	966.830	10	10	1000.00		96.7	71 - 165			
Surrogate: p-Terphenyl	*75.94*			*80.0000*		*94.9*	*58 - 172*			

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Nevada City , CA 95959	Reported :	03/18/2019

Polychlorinated Biphenyls by EPA 8082 - Quality Control

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0388 - GCSEMI_PCB/PEST_SED										
Matrix Spike (B9C0388-MS1)			**Source: 1900897-02**		Prepared: 3/14/2019 Analyzed: 3/15/2019					
Aroclor 1016	181.534	20	1.9	211.619	ND	85.8	36 - 127			
Aroclor 1260	197.590	20	1.9	211.619	ND	93.4	31 - 142			
Surrogate: Decachlorobiphenyl	*14.97*			*21.1619*		*70.7*	*18 - 136*			
Surrogate: Tetrachloro-m-xylene	*19.44*			*21.1619*		*91.9*	*30 - 130*			
Matrix Spike Dup (B9C0388-MSD1)			**Source: 1900897-02**		Prepared: 3/14/2019 Analyzed: 3/15/2019					
Aroclor 1016	156.082	20	1.9	211.619	ND	73.8	36 - 127	15.1	20	
Aroclor 1260	173.766	20	1.9	211.619	ND	82.1	31 - 142	12.8	20	
Surrogate: Decachlorobiphenyl	*17.41*			*21.1619*		*82.3*	*18 - 136*			
Surrogate: Tetrachloro-m-xylene	*16.84*			*21.1619*		*79.6*	*30 - 130*			

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NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
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Nevada City , CA 95959	Reported :	03/18/2019

Polychlorinated Biphenyls by EPA 8082 - Quality Control

Analyte	Result (ug/kg wet)	PQL (ug/kg wet)	MDL (ug/kg wet)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0388 - GCSEMI_PCB/PEST_SED										
Blank (B9C0388-BLK1)					Prepared: 3/14/2019 Analyzed: 3/14/2019					
Aroclor 1016	ND	16	1.5							
Aroclor 1221	ND	16	1.5							
Aroclor 1232	ND	16	1.5							
Aroclor 1242	ND	16	1.5							
Aroclor 1248	ND	16	1.5							
Aroclor 1254	ND	16	1.5							
Aroclor 1260	ND	16	1.5							
Aroclor 1262	ND	16	1.5							
Aroclor 1268	ND	16	1.5							
Surrogate: Decachlorobiphenyl	*10.63*			*16.6667*		*63.8*	*18 - 136*			
Surrogate: Tetrachloro-m-xylene	*13.56*			*16.6667*		*81.3*	*30 - 130*			
LCS (B9C0388-BS1)					Prepared: 3/14/2019 Analyzed: 3/15/2019					
Aroclor 1016	121.773	16	1.5	166.667		73.1	73 - 111			
Aroclor 1260	134.936	16	1.5	166.667		81.0	75 - 125			
Surrogate: Decachlorobiphenyl	*10.89*			*16.6667*		*65.3*	*18 - 136*			
Surrogate: Tetrachloro-m-xylene	*13.22*			*16.6667*		*79.3*	*30 - 130*			

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NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
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Nevada City , CA 95959	Reported :	03/18/2019

Semivolatile Organic Compounds by EPA 8270C - Quality Control

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0387 - MSSEMI_SED										
Matrix Spike (B9C0387-MS1)			**Source: 1900897-03**		Prepared: 3/14/2019 Analyzed: 3/14/2019					
1,2,4-Trichlorobenzene	2927.57	430	92	4324.97	ND	67.7	27 - 96			
1,2-Dichlorobenzene	2883.46	430	78	4324.97	ND	66.7	25 - 87			
1,3-Dichlorobenzene	2864.43	430	84	4324.97	ND	66.2	24 - 84			
1,4-Dichlorobenzene	2803.45	430	78	4324.97	ND	64.8	25 - 85			
2,4,5-Trichlorophenol	3978.11	430	80	4324.97	ND	92.0	29 - 122			
2,4,6-Trichlorophenol	3485.50	430	290	4324.97	ND	80.6	21 - 127			
2,4-Dichlorophenol	3450.46	2100	150	4324.97	ND	79.8	24 - 115			
2,4-Dimethylphenol	3630.81	430	150	4324.97	ND	83.9	19 - 124			
2,4-Dinitrophenol	5097.84	2100	110	4324.97	ND	118	0 - 118			
2,4-Dinitrotoluene	3864.36	430	59	4324.97	ND	89.3	35 - 112			
2,6-Dinitrotoluene	3846.20	430	63	4324.97	ND	88.9	15 - 137			
2-Chloronaphthalene	3345.80	430	76	4324.97	ND	77.4	35 - 95			
2-Chlorophenol	3232.48	430	160	4324.97	ND	74.7	22 - 100			
2-Methylnaphthalene	3388.18	430	86	4324.97	ND	78.3	17 - 123			
2-Methylphenol	3607.89	430	87	4324.97	ND	83.4	28 - 100			
2-Nitroaniline	3984.16	2100	260	4324.97	ND	92.1	34 - 120			
2-Nitrophenol	3666.28	430	140	4324.97	ND	84.8	22 - 116			
3,3´-Dichlorobenzidine	3852.69	860	360	4324.97	ND	89.1	9 - 117			
3-Nitroaniline	4382.50	2100	58	4324.97	ND	101	29 - 116			
4,6-Dinitro-2-methyphenol	4783.85	2100	390	4324.97	ND	111	21 - 126			
4-Bromophenyl-phenylether	3769.65	430	64	4324.97	ND	87.2	36 - 108			
4-Chloro-3-methylphenol	3781.76	860	140	4324.97	ND	87.4	32 - 116			
4-Chloroaniline	3743.70	860	68	4324.97	ND	86.6	22 - 115			
4-Chlorophenyl-phenylether	3247.19	430	62	4324.97	ND	75.1	36 - 104			
4-Methylphenol	3697.85	430	86	4324.97	ND	85.5	32 - 98			
4-Nitroaniline	4235.45	2100	370	4324.97	ND	97.9	37 - 116			
4-Nitrophenol	3751.91	430	200	4324.97	ND	86.8	0 - 148			
Acenaphthene	3412.40	430	63	4324.97	ND	78.9	35 - 108			
Acenaphthylene	3502.80	430	66	4324.97	ND	81.0	35 - 108			
Anthracene	3565.94	430	63	4324.97	ND	82.4	40 - 114			
Benzidine (M)	3896.80	2100	1900	4324.97	ND	90.1	0 - 161			
Benzo(a)anthracene	3396.83	430	51	4324.97	ND	78.5	42 - 113			
Benzo(a)pyrene	3567.24	430	59	4324.97	ND	82.5	38 - 117			
Benzo(b)fluoranthene	3602.70	430	72	4324.97	ND	83.3	35 - 117			
Benzo(g,h,i)perylene	3827.17	430	49	4324.97	ND	88.5	32 - 121			
Benzo(k)fluoranthene	3432.30	430	67	4324.97	ND	79.4	34 - 119			
Benzoic acid	3401.59	2100	1200	4324.97	ND	78.6	19 - 133			
Benzyl alcohol	3694.39	860	87	4324.97	ND	85.4	24 - 102			
bis(2-chloroethoxy)methane	3137.34	430	77	4324.97	ND	72.5	27 - 88			
bis(2-Chloroethyl)ether	2852.32	430	74	4324.97	ND	65.9	26 - 82			
bis(2-chloroisopropyl)ether	3154.64	430	84	4324.97	ND	72.9	15 - 92			

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Semivolatile Organic Compounds by EPA 8270C - Quality Control (cont'd)

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0387 - MSSEMI_SED (continued)										
Matrix Spike (B9C0387-MS1) - Continued			**Source: 1900897-03**		Prepared: 3/14/2019 Analyzed: 3/14/2019					
bis(2-ethylhexyl)phthalate	4158.03	430	110	4324.97	ND	96.1	21 - 128			
Butylbenzylphthalate	4405.85	430	320	4324.97	ND	102	14 - 136			
Chrysene	3431.43	430	56	4324.97	ND	79.3	37 - 113			
Di-n-butylphthalate	4285.18	430	290	4324.97	ND	99.1	40 - 112			
Di-n-octylphthalate	3802.52	430	62	4324.97	ND	87.9	8 - 137			
Dibenz(a,h)anthracene	3687.90	430	56	4324.97	ND	85.3	29 - 128			
Dibenzofuran	3667.58	430	71	4324.97	ND	84.8	40 - 109			
Diethyl phthalate	3786.95	430	61	4324.97	ND	87.6	38 - 108			
Dimethyl phthalate	3623.46	430	59	4324.97	ND	83.8	38 - 106			
Fluoranthene	3383.86	430	61	4324.97	ND	78.2	37 - 118			
Fluorene	3380.40	430	64	4324.97	ND	78.2	38 - 114			
Hexachlorobenzene	3922.75	430	53	4324.97	ND	90.7	35 - 115			
Hexachlorobutadiene	2914.60	860	79	4324.97	ND	67.4	31 - 101			
Hexachlorocyclopentadiene	3213.02	860	82	4324.97	ND	74.3	28 - 99			
Hexachloroethane	2921.95	430	92	4324.97	ND	67.6	27 - 87			
Indeno(1,2,3-cd)pyrene	3805.11	430	56	4324.97	ND	88.0	29 - 125			
Isophorone	3197.88	430	74	4324.97	ND	73.9	26 - 97			
N-Nitroso-di-n propylamine	3213.46	430	84	4324.97	ND	74.3	27 - 97			
N-Nitrosodiphenylamine	3705.20	430	62	4324.97	ND	85.7	19 - 123			
Naphthalene	3054.73	430	77	4324.97	ND	70.6	26 - 103			
Nitrobenzene	3104.03	430	87	4324.97	ND	71.8	24 - 99			
Pentachlorophenol	4543.82	2100	240	4324.97	ND	105	13 - 130			
Phenanthrene	3590.16	430	60	4324.97	ND	83.0	40 - 116			
Phenol	3176.69	430	170	4324.97	ND	73.4	23 - 96			
Pyrene	3343.64	430	69	4324.97	ND	77.3	36 - 122			
Pyridine	2633.48	2100	340	4324.97	ND	60.9	7 - 87			
Surrogate: 1,2-Dichlorobenzene-d	*2616*			*4324.97*		*60.5*	*16 - 87*			
Surrogate: 2,4,6-Tribromophenol	*4852*			*4314.16*		*112*	*0 - 148*			
Surrogate: 2-Chlorophenol-d4	*3253*			*4314.16*		*75.4*	*17 - 96*			
Surrogate: 2-Fluorobiphenyl	*2880*			*4324.97*		*66.6*	*16 - 107*			
Surrogate: 2-Fluorophenol	*2918*			*4314.16*		*67.6*	*16 - 86*			
Surrogate: 4-Terphenyl-d14	*3411*			*4324.97*		*78.9*	*3 - 156*			
Surrogate: Nitrobenzene-d5	*2880*			*4324.97*		*66.6*	*16 - 99*			
Surrogate: Phenol-d6	*3248*			*4314.16*		*75.3*	*17 - 90*			
Matrix Spike Dup (B9C0387-MSD1)			**Source: 1900897-03**		Prepared: 3/14/2019 Analyzed: 3/14/2019					
1,2,4-Trichlorobenzene	2950.06	430	92	4324.97	ND	68.2	27 - 96	0.765	20	
1,2-Dichlorobenzene	2956.12	430	78	4324.97	ND	68.3	25 - 87	2.49	20	
1,3-Dichlorobenzene	2926.71	430	84	4324.97	ND	67.7	24 - 84	2.15	20	
1,4-Dichlorobenzene	2868.75	430	78	4324.97	ND	66.3	25 - 85	2.30	20	
2,4,5-Trichlorophenol	4051.20	430	80	4324.97	ND	93.7	29 - 122	1.82	20	

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Semivolatile Organic Compounds by EPA 8270C - Quality Control (cont'd)

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0387 - MSSEMI_SED (continued)										
Matrix Spike Dup (B9C0387-MSD1) - Continued			**Source: 1900897-03**		Prepared: 3/14/2019 Analyzed: 3/14/2019					
2,4,6-Trichlorophenol	3481.60	430	290	4324.97	ND	80.5	21 - 127	0.112	20	
2,4-Dichlorophenol	3495.88	2100	150	4324.97	ND	80.8	24 - 115	1.31	20	
2,4-Dimethylphenol	3743.70	430	150	4324.97	ND	86.6	19 - 124	3.06	20	
2,4-Dinitrophenol	5195.59	2100	110	4324.97	ND	120	0 - 118	1.90	20	M2
2,4-Dinitrotoluene	4001.46	430	59	4324.97	ND	92.5	35 - 112	3.49	20	
2,6-Dinitrotoluene	3898.53	430	63	4324.97	ND	90.1	15 - 137	1.35	20	
2-Chloronaphthalene	3312.93	430	76	4324.97	ND	76.6	35 - 95	0.987	20	
2-Chlorophenol	3326.77	430	160	4324.97	ND	76.9	22 - 100	2.87	20	
2-Methylnaphthalene	3395.54	430	86	4324.97	ND	78.5	17 - 123	0.217	20	
2-Methylphenol	3625.62	430	87	4324.97	ND	83.8	28 - 100	0.490	20	
2-Nitroaniline	4077.15	2100	260	4324.97	ND	94.3	34 - 120	2.31	20	
2-Nitrophenol	3709.10	430	140	4324.97	ND	85.8	22 - 116	1.16	20	
3,3´-Dichlorobenzidine	3957.35	860	360	4324.97	ND	91.5	9 - 117	2.68	20	
3-Nitroaniline	4379.47	2100	58	4324.97	ND	101	29 - 116	0.0691	20	
4,6-Dinitro-2-methyphenol	4939.12	2100	390	4324.97	ND	114	21 - 126	3.19	20	
4-Bromophenyl-phenylether	3757.54	430	64	4324.97	ND	86.9	36 - 108	0.322	20	
4-Chloro-3-methylphenol	3745.43	860	140	4324.97	ND	86.6	32 - 116	0.965	20	
4-Chloroaniline	3739.37	860	68	4324.97	ND	86.5	22 - 115	0.116	20	
4-Chlorophenyl-phenylether	3238.54	430	62	4324.97	ND	74.9	36 - 104	0.267	20	
4-Methylphenol	3733.32	430	86	4324.97	ND	86.3	32 - 98	0.954	20	
4-Nitroaniline	4324.97	2100	370	4324.97	ND	100	37 - 116	2.09	20	
4-Nitrophenol	3889.45	430	200	4324.97	ND	89.9	0 - 148	3.60	20	
Acenaphthene	3442.25	430	63	4324.97	ND	79.6	35 - 108	0.871	20	
Acenaphthylene	3456.52	430	66	4324.97	ND	79.9	35 - 108	1.33	20	
Anthracene	3644.65	430	63	4324.97	ND	84.3	40 - 114	2.18	20	
Benzidine (M)	4141.59	2100	1900	4324.97	ND	95.8	0 - 161	6.09	20	
Benzo(a)anthracene	3464.74	430	51	4324.97	ND	80.1	42 - 113	1.98	20	
Benzo(a)pyrene	3682.71	430	59	4324.97	ND	85.1	38 - 117	3.19	20	
Benzo(b)fluoranthene	3756.67	430	72	4324.97	ND	86.9	35 - 117	4.18	20	
Benzo(g,h,i)perylene	3983.73	430	49	4324.97	ND	92.1	32 - 121	4.01	20	
Benzo(k)fluoranthene	3537.40	430	67	4324.97	ND	81.8	34 - 119	3.02	20	
Benzoic acid	3242.86	2100	1200	4324.97	ND	75.0	19 - 133	4.78	20	
Benzyl alcohol	3739.37	860	87	4324.97	ND	86.5	24 - 102	1.21	20	
bis(2-chloroethoxy)methane	3121.76	430	77	4324.97	ND	72.2	27 - 88	0.498	20	
bis(2-Chloroethyl)ether	2883.89	430	74	4324.97	ND	66.7	26 - 82	1.10	20	
bis(2-chloroisopropyl)ether	3182.75	430	84	4324.97	ND	73.6	15 - 92	0.887	20	
bis(2-ethylhexyl)phthalate	4258.37	430	110	4324.97	ND	98.5	21 - 128	2.38	20	
Butylbenzylphthalate	4553.33	430	320	4324.97	ND	105	14 - 136	3.29	20	
Chrysene	3600.97	430	56	4324.97	ND	83.3	37 - 113	4.82	20	
Di-n-butylphthalate	4282.16	430	290	4324.97	ND	99.0	40 - 112	0.0707	20	
Di-n-octylphthalate	3862.20	430	62	4324.97	ND	89.3	8 - 137	1.56	20	
Dibenz(a,h)anthracene	3801.22	430	56	4324.97	ND	87.9	29 - 128	3.03	20	

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Semivolatile Organic Compounds by EPA 8270C - Quality Control (cont'd)

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0387 - MSSEMI_SED (continued)										
Matrix Spike Dup (B9C0387-MSD1) - Continued			**Source: 1900897-03**		Prepared: 3/14/2019 Analyzed: 3/14/2019					
Dibenzofuran	3680.98	430	71	4324.97	ND	85.1	40 - 109	0.365	20	
Diethyl phthalate	3904.58	430	61	4324.97	ND	90.3	38 - 108	3.06	20	
Dimethyl phthalate	3659.36	430	59	4324.97	ND	84.6	38 - 106	0.986	20	
Fluoranthene	3437.49	430	61	4324.97	ND	79.5	37 - 118	1.57	20	
Fluorene	3332.39	430	64	4324.97	ND	77.0	38 - 114	1.43	20	
Hexachlorobenzene	4015.30	430	53	4324.97	ND	92.8	35 - 115	2.33	20	
Hexachlorobutadiene	2963.04	860	79	4324.97	ND	68.5	31 - 101	1.65	20	
Hexachlorocyclopentadiene	3210.86	860	82	4324.97	ND	74.2	28 - 99	0.0673	20	
Hexachloroethane	3033.10	430	92	4324.97	ND	70.1	27 - 87	3.73	20	
Indeno(1,2,3-cd)pyrene	3920.59	430	56	4324.97	ND	90.6	29 - 125	2.99	20	
Isophorone	3156.80	430	74	4324.97	ND	73.0	26 - 97	1.29	20	
N-Nitroso-di-n propylamine	3204.37	430	84	4324.97	ND	74.1	27 - 97	0.283	20	
N-Nitrosodiphenylamine	3741.53	430	62	4324.97	ND	86.5	19 - 123	0.976	20	
Naphthalene	3075.06	430	77	4324.97	ND	71.1	26 - 103	0.663	20	
Nitrobenzene	3115.71	430	87	4324.97	ND	72.0	24 - 99	0.375	20	
Pentachlorophenol	4555.49	2100	240	4324.97	ND	105	13 - 130	0.257	20	
Phenanthrene	3577.62	430	60	4324.97	ND	82.7	40 - 116	0.350	20	
Phenol	3287.84	430	170	4324.97	ND	76.0	23 - 96	3.44	20	
Pyrene	3431.87	430	69	4324.97	ND	79.3	36 - 122	2.60	20	
Pyridine	2708.73	2100	340	4324.97	ND	62.6	7 - 87	2.82	20	
Surrogate: 1,2-Dichlorobenzene-d	*2723*			*4324.97*		*62.9*	*16 - 87*			
Surrogate: 2,4,6-Tribromophenol	*4991*			*4314.16*		*116*	*0 - 148*			
Surrogate: 2-Chlorophenol-d4	*3311*			*4314.16*		*76.7*	*17 - 96*			
Surrogate: 2-Fluorobiphenyl	*2880*			*4324.97*		*66.6*	*16 - 107*			
Surrogate: 2-Fluorophenol	*3003*			*4314.16*		*69.6*	*16 - 86*			
Surrogate: 4-Terphenyl-d14	*3499*			*4324.97*		*80.9*	*3 - 156*			
Surrogate: Nitrobenzene-d5	*2918*			*4324.97*		*67.5*	*16 - 99*			
Surrogate: Phenol-d6	*3357*			*4314.16*		*77.8*	*17 - 90*			

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Semivolatile Organic Compounds by EPA 8270C - Quality Control

Analyte	Result (ug/kg wet)	PQL (ug/kg wet)	MDL (ug/kg wet)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0387 - MSSEMI_SED										
Blank (B9C0387-BLK1)							Prepared: 3/14/2019 Analyzed: 3/14/2019			
1,2,4-Trichlorobenzene	ND	330	71							
1,2-Dichlorobenzene	ND	330	60							
1,3-Dichlorobenzene	ND	330	65							
1,4-Dichlorobenzene	ND	330	60							
2,4,5-Trichlorophenol	ND	330	61							
2,4,6-Trichlorophenol	ND	330	220							
2,4-Dichlorophenol	ND	1600	120							
2,4-Dimethylphenol	ND	330	120							
2,4-Dinitrophenol	ND	1600	86							
2,4-Dinitrotoluene	ND	330	46							
2,6-Dinitrotoluene	ND	330	49							
2-Chloronaphthalene	ND	330	59							
2-Chlorophenol	ND	330	120							
2-Methylnaphthalene	ND	330	67							
2-Methylphenol	ND	330	67							
2-Nitroaniline	ND	1600	200							
2-Nitrophenol	ND	330	110							
3,3´-Dichlorobenzidine	ND	660	280							
3-Nitroaniline	ND	1600	44							
4,6-Dinitro-2-methyphenol	ND	1600	300							
4-Bromophenyl-phenylether	ND	330	50							
4-Chloro-3-methylphenol	ND	660	110							
4-Chloroaniline	ND	660	53							
4-Chlorophenyl-phenylether	ND	330	48							
4-Methylphenol	ND	330	66							
4-Nitroaniline	ND	1600	290							
4-Nitrophenol	ND	330	150							
Acenaphthene	ND	330	48							
Acenaphthylene	ND	330	51							
Anthracene	ND	330	49							
Benzidine (M)	ND	1600	1400							
Benzo(a)anthracene	ND	330	39							
Benzo(a)pyrene	ND	330	45							
Benzo(b)fluoranthene	ND	330	55							
Benzo(g,h,i)perylene	ND	330	38							
Benzo(k)fluoranthene	ND	330	52							
Benzoic acid	ND	1600	890							
Benzyl alcohol	ND	660	67							
bis(2-chloroethoxy)methane	ND	330	59							
bis(2-Chloroethyl)ether	ND	330	57							
bis(2-chloroisopropyl)ether	ND	330	65							

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Semivolatile Organic Compounds by EPA 8270C - Quality Control (cont'd)

Analyte	Result (ug/kg wet)	PQL (ug/kg wet)	MDL (ug/kg wet)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0387 - MSSEMI_SED (continued)										
Blank (B9C0387-BLK1) - Continued						Prepared: 3/14/2019 Analyzed: 3/14/2019				
bis(2-ethylhexyl)phthalate	ND	330	83							
Butylbenzylphthalate	ND	330	250							
Chrysene	ND	330	43							
Di-n-butylphthalate	ND	330	230							
Di-n-octylphthalate	ND	330	48							
Dibenz(a,h)anthracene	ND	330	43							
Dibenzofuran	ND	330	55							
Diethyl phthalate	ND	330	47							
Dimethyl phthalate	ND	330	46							
Fluoranthene	ND	330	47							
Fluorene	ND	330	49							
Hexachlorobenzene	ND	330	41							
Hexachlorobutadiene	ND	660	61							
Hexachlorocyclopentadiene	ND	660	64							
Hexachloroethane	ND	330	71							
Indeno(1,2,3-cd)pyrene	ND	330	44							
Isophorone	ND	330	57							
N-Nitroso-di-n propylamine	ND	330	65							
N-Nitrosodiphenylamine	ND	330	48							
Naphthalene	ND	330	60							
Nitrobenzene	ND	330	67							
Pentachlorophenol	ND	1600	190							
Phenanthrene	ND	330	46							
Phenol	ND	330	130							
Pyrene	ND	330	53							
Pyridine	ND	1600	270							
Surrogate: 1,2-Dichlorobenzene-d	*1824*			*3333.33*		*54.7*	*16 - 87*			
Surrogate: 2,4,6-Tribromophenol	*3357*			*3325.00*		*101*	*0 - 148*			
Surrogate: 2-Chlorophenol-d4	*2217*			*3325.00*		*66.7*	*17 - 96*			
Surrogate: 2-Fluorobiphenyl	*1921*			*3333.33*		*57.6*	*16 - 107*			
Surrogate: 2-Fluorophenol	*1989*			*3325.00*		*59.8*	*16 - 86*			
Surrogate: 4-Terphenyl-d14	*2794*			*3333.33*		*83.8*	*3 - 156*			
Surrogate: Nitrobenzene-d5	*1937*			*3333.33*		*58.1*	*16 - 99*			
Surrogate: Phenol-d6	*2121*			*3325.00*		*63.8*	*17 - 90*			
LCS (B9C0387-BS1)						Prepared: 3/14/2019 Analyzed: 3/14/2019				
1,2,4-Trichlorobenzene	2383.00	330	71	3333.33		71.5	48 - 92			
1,2-Dichlorobenzene	2351.00	330	60	3333.33		70.5	40 - 86			
1,3-Dichlorobenzene	2318.00	330	65	3333.33		69.5	39 - 82			
1,4-Dichlorobenzene	2259.67	330	60	3333.33		67.8	40 - 82			
2,4,5-Trichlorophenol	3152.33	330	61	3333.33		94.6	70 - 111			

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Semivolatile Organic Compounds by EPA 8270C - Quality Control (cont'd)

Analyte	Result (ug/kg wet)	PQL (ug/kg wet)	MDL (ug/kg wet)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0387 - MSSEMI_SED (continued)										
LCS (B9C0387-BS1) - Continued					Prepared: 3/14/2019 Analyzed: 3/14/2019					
2,4,6-Trichlorophenol	2770.33	330	220	3333.33		83.1	54 - 121			
2,4-Dichlorophenol	2784.33	1600	120	3333.33		83.5	49 - 111			
2,4-Dimethylphenol	3046.67	330	120	3333.33		91.4	43 - 116			
2,4-Dinitrophenol	3643.67	1600	86	3333.33		109	48 - 138			
2,4-Dinitrotoluene	3040.67	330	46	3333.33		91.2	62 - 112			
2,6-Dinitrotoluene	3082.00	330	49	3333.33		92.5	59 - 114			
2-Chloronaphthalene	2707.67	330	59	3333.33		81.2	57 - 92			
2-Chlorophenol	2628.33	330	120	3333.33		78.8	43 - 94			
2-Methylnaphthalene	2784.00	330	67	3333.33		83.5	49 - 109			
2-Methylphenol	2839.00	330	67	3333.33		85.2	50 - 95			
2-Nitroaniline	3138.00	1600	200	3333.33		94.1	57 - 120			
2-Nitrophenol	2969.00	330	110	3333.33		89.1	48 - 110			
3,3´-Dichlorobenzidine	2963.67	660	280	3333.33		88.9	38 - 115			
3-Nitroaniline	3505.33	1600	44	3333.33		105	62 - 110			
4,6-Dinitro-2-methyphenol	3630.00	1600	300	3333.33		109	57 - 136			
4-Bromophenyl-phenylether	2939.00	330	50	3333.33		88.2	64 - 106			
4-Chloro-3-methylphenol	2953.33	660	110	3333.33		88.6	54 - 114			
4-Chloroaniline	3018.67	660	53	3333.33		90.6	60 - 103			
4-Chlorophenyl-phenylether	2550.67	330	48	3333.33		76.5	57 - 106			
4-Methylphenol	2953.00	330	66	3333.33		88.6	53 - 96			
4-Nitroaniline	3300.67	1600	290	3333.33		99.0	69 - 111			
4-Nitrophenol	3010.67	330	150	3333.33		90.3	51 - 141			
Acenaphthene	2761.00	330	48	3333.33		82.8	61 - 105			
Acenaphthylene	2814.33	330	51	3333.33		84.4	62 - 103			
Anthracene	2766.67	330	49	3333.33		83.0	68 - 113			
Benzidine (M)	2093.33	1600	1400	3333.33		62.8	25 - 109			
Benzo(a)anthracene	2618.33	330	39	3333.33		78.6	66 - 110			
Benzo(a)pyrene	2806.00	330	45	3333.33		84.2	68 - 118			
Benzo(b)fluoranthene	2812.00	330	55	3333.33		84.4	64 - 117			
Benzo(g,h,i)perylene	3001.67	330	38	3333.33		90.1	68 - 114			
Benzo(k)fluoranthene	2646.00	330	52	3333.33		79.4	62 - 121			
Benzoic acid	1257.00	1600	890	3333.33		37.7	23 - 115			J
Benzyl alcohol	2965.33	660	67	3333.33		89.0	47 - 99			
bis(2-chloroethoxy)methane	2509.00	330	59	3333.33		75.3	41 - 90			
bis(2-Chloroethyl)ether	2336.00	330	57	3333.33		70.1	38 - 84			
bis(2-chloroisopropyl)ether	2563.00	330	65	3333.33		76.9	20 - 100			
bis(2-ethylhexyl)phthalate	3174.00	330	83	3333.33		95.2	57 - 111			
Butylbenzylphthalate	3432.67	330	250	3333.33		103	54 - 109			
Chrysene	2712.33	330	43	3333.33		81.4	61 - 113			
Di-n-butylphthalate	3264.00	330	230	3333.33		97.9	65 - 113			
Di-n-octylphthalate	2960.00	330	48	3333.33		88.8	54 - 111			
Dibenz(a,h)anthracene	2854.67	330	43	3333.33		85.6	63 - 126			

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Semivolatile Organic Compounds by EPA 8270C - Quality Control (cont'd)

Analyte	Result (ug/kg wet)	PQL (ug/kg wet)	MDL (ug/kg wet)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0387 - MSSEMI_SED (continued)										
LCS (B9C0387-BS1) - Continued					Prepared: 3/14/2019 Analyzed: 3/14/2019					
Dibenzofuran	2982.33	330	55	3333.33		89.5	67 - 103			
Diethyl phthalate	2990.67	330	47	3333.33		89.7	62 - 108			
Dimethyl phthalate	2876.00	330	46	3333.33		86.3	65 - 103			
Fluoranthene	2629.67	330	47	3333.33		78.9	66 - 117			
Fluorene	2679.00	330	49	3333.33		80.4	65 - 112			
Hexachlorobenzene	3065.00	330	41	3333.33		92.0	59 - 117			
Hexachlorobutadiene	2381.67	660	61	3333.33		71.5	44 - 99			
Hexachlorocyclopentadiene	2677.33	660	64	3333.33		80.3	44 - 102			
Hexachloroethane	2400.33	330	71	3333.33		72.0	38 - 85			
Indeno(1,2,3-cd)pyrene	2950.00	330	44	3333.33		88.5	63 - 123			
Isophorone	2542.00	330	57	3333.33		76.3	46 - 98			
N-Nitroso-di-n propylamine	2552.67	330	65	3333.33		76.6	45 - 98			
N-Nitrosodiphenylamine	2904.33	330	48	3333.33		87.1	67 - 101			
Naphthalene	2481.67	330	60	3333.33		74.5	54 - 92			
Nitrobenzene	2523.00	330	67	3333.33		75.7	45 - 94			
Pentachlorophenol	2985.67	1600	190	3333.33		89.6	45 - 137			
Phenanthrene	2762.00	330	46	3333.33		82.9	68 - 113			
Phenol	2548.00	330	130	3333.33		76.4	40 - 95			
Pyrene	2613.00	330	53	3333.33		78.4	62 - 124			
Pyridine	596.000	1600	270	3333.33		17.9	3 - 93			J
Surrogate: 1,2-Dichlorobenzene-d	*2160*			*3333.33*		*64.8*	*16 - 87*			
Surrogate: 2,4,6-Tribromophenol	*3880*			*3325.00*		*117*	*0 - 148*			
Surrogate: 2-Chlorophenol-d4	*2683*			*3325.00*		*80.7*	*17 - 96*			
Surrogate: 2-Fluorobiphenyl	*2396*			*3333.33*		*71.9*	*16 - 107*			
Surrogate: 2-Fluorophenol	*2398*			*3325.00*		*72.1*	*16 - 86*			
Surrogate: 4-Terphenyl-d14	*2698*			*3333.33*		*81.0*	*3 - 156*			
Surrogate: Nitrobenzene-d5	*2424*			*3333.33*		*72.7*	*16 - 99*			
Surrogate: Phenol-d6	*2680*			*3325.00*		*80.6*	*17 - 90*			

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Semivolatile Organic Compounds by EPA 8270/SIM - Quality Control

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	MDL (ug/kg dry)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0386 - MSSEMI_SED										
Matrix Spike (B9C0386-MS1)			**Source: 1900897-01**		Prepared: 3/14/2019 Analyzed: 3/14/2019					
2-Methylnaphthalene	32.0251	6.4	1.4	42.8481	ND	74.7	19 - 95			
Acenaphthene	33.5839	6.4	1.0	42.8481	ND	78.4	36 - 95			
Acenaphthylene	32.0731	6.4	1.2	42.8481	ND	74.9	40 - 91			
Anthracene	30.4796	6.4	0.87	42.8481	ND	71.1	30 - 101			
Benzo(a)anthracene	31.1472	6.4	0.82	42.8481	ND	72.7	30 - 106			
Benzo(a)pyrene	29.0210	6.4	1.1	42.8481	ND	67.7	26 - 92			
Benzo(b)fluoranthene	34.7006	6.4	1.0	42.8481	ND	81.0	18 - 88			
Benzo(g,h,i)perylene	47.3982	6.4	1.3	42.8481	ND	111	18 - 118			
Benzo(k)fluoranthene	34.5716	6.4	0.71	42.8481	ND	80.7	32 - 116			
Chrysene	35.7379	6.4	0.78	42.8481	ND	83.4	31 - 114			
Dibenz(a,h)anthracene	45.2939	6.4	1.4	42.8481	ND	106	16 - 119			
Fluoranthene	36.8190	6.4	0.93	42.8481	ND	85.9	33 - 111			
Fluorene	34.5866	6.4	0.98	42.8481	ND	80.7	38 - 95			
Indeno(1,2,3-cd)pyrene	45.2103	6.4	1.6	42.8481	ND	106	26 - 131			
Naphthalene	33.2917	6.4	1.2	42.8481	ND	77.7	31 - 102			
Phenanthrene	37.0079	6.4	0.87	42.8481	ND	86.4	40 - 101			
Pyrene	36.5109	6.4	0.89	42.8481	ND	85.2	30 - 119			
Surrogate: 1,2-Dichlorobenzene-d	*29.82*			*42.8481*		*69.6*	*26 - 107*			
Surrogate: 2-Fluorobiphenyl	*31.92*			*42.8481*		*74.5*	*35 - 107*			
Surrogate: Nitrobenzene-d5	*36.43*			*42.8481*		*85.0*	*2 - 129*			
Surrogate: 4-Terphenyl-d14	*34.05*			*42.8481*		*79.5*	*48 - 123*			
Matrix Spike Dup (B9C0386-MSD1)			**Source: 1900897-01**		Prepared: 3/14/2019 Analyzed: 3/14/2019					
2-Methylnaphthalene	30.9706	6.4	1.4	42.8481	ND	72.3	19 - 95	3.35	20	
Acenaphthene	32.4964	6.4	1.0	42.8481	ND	75.8	36 - 95	3.29	20	
Acenaphthylene	31.1167	6.4	1.2	42.8481	ND	72.6	40 - 91	3.03	20	
Anthracene	33.0102	6.4	0.87	42.8481	ND	77.0	30 - 101	7.97	20	
Benzo(a)anthracene	32.7295	6.4	0.82	42.8481	ND	76.4	30 - 106	4.95	20	
Benzo(a)pyrene	31.2423	6.4	1.1	42.8481	ND	72.9	26 - 92	7.37	20	
Benzo(b)fluoranthene	36.5516	6.4	1.0	42.8481	ND	85.3	18 - 88	5.20	20	
Benzo(g,h,i)perylene	48.5731	6.4	1.3	42.8481	ND	113	18 - 118	2.45	20	
Benzo(k)fluoranthene	35.8056	6.4	0.71	42.8481	ND	83.6	32 - 116	3.51	20	
Chrysene	36.5649	6.4	0.78	42.8481	ND	85.3	31 - 114	2.29	20	
Dibenz(a,h)anthracene	46.3711	6.4	1.4	42.8481	ND	108	16 - 119	2.35	20	
Fluoranthene	38.0731	6.4	0.93	42.8481	ND	88.9	33 - 111	3.35	20	
Fluorene	34.0334	6.4	0.98	42.8481	ND	79.4	38 - 95	1.61	20	
Indeno(1,2,3-cd)pyrene	46.1813	6.4	1.6	42.8481	ND	108	26 - 131	2.12	20	
Naphthalene	31.7847	6.4	1.2	42.8481	ND	74.2	31 - 102	4.63	20	
Phenanthrene	37.9823	6.4	0.87	42.8481	ND	88.6	40 - 101	2.60	20	
Pyrene	37.8872	6.4	0.89	42.8481	ND	88.4	30 - 119	3.70	20	
Surrogate: 1,2-Dichlorobenzene-d	*31.81*			*42.8481*		*74.2*	*26 - 107*			

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

Semivolatile Organic Compounds by EPA 8270/SIM - Quality Control (cont'd)

Analyte	Result (ug/kg dry)	PQL (ug/kg dry)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0386 - MSSEMI_SED (continued)									
Matrix Spike Dup (B9C0386-MSD1) - Continued			**Source: 1900897-01**		Prepared: 3/14/2019 Analyzed: 3/14/2019				
Surrogate: 2-Fluorobiphenyl	*32.13*		*42.8481*		*75.0*	*35 - 107*			
Surrogate: Nitrobenzene-d5	*38.88*		*42.8481*		*90.7*	*2 - 129*			
Surrogate: 4-Terphenyl-d14	*34.66*		*42.8481*		*80.9*	*48 - 123*			

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

Semivolatile Organic Compounds by EPA 8270/SIM - Quality Control

Analyte	Result (ug/kg wet)	PQL (ug/kg wet)	MDL (ug/kg wet)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0386 - MSSEMI_SED										
Blank (B9C0386-BLK1)					Prepared: 3/14/2019 Analyzed: 3/14/2019					
2-Methylnaphthalene	ND	5.0	1.1							
Acenaphthene	ND	5.0	0.80							
Acenaphthylene	ND	5.0	0.90							
Anthracene	ND	5.0	0.68							
Benzo(a)anthracene	ND	5.0	0.64							
Benzo(a)pyrene	ND	5.0	0.82							
Benzo(b)fluoranthene	ND	5.0	0.79							
Benzo(g,h,i)perylene	ND	5.0	1.0							
Benzo(k)fluoranthene	ND	5.0	0.55							
Chrysene	ND	5.0	0.60							
Dibenz(a,h)anthracene	ND	5.0	1.1							
Fluoranthene	ND	5.0	0.72							
Fluorene	ND	5.0	0.76							
Indeno(1,2,3-cd)pyrene	ND	5.0	1.3							
Naphthalene	ND	5.0	0.95							
Phenanthrene	ND	5.0	0.68							
Pyrene	ND	5.0	0.69							
Surrogate: 1,2-Dichlorobenzene-d	*29.03*			*33.3333*		*87.1*	*26 - 107*			
Surrogate: 2-Fluorobiphenyl	*32.89*			*33.3333*		*98.7*	*35 - 107*			
Surrogate: Nitrobenzene-d5	*37.73*			*33.3333*		*113*	*2 - 129*			
Surrogate: 4-Terphenyl-d14	*35.56*			*33.3333*		*107*	*48 - 123*			
LCS (B9C0386-BS1)					Prepared: 3/14/2019 Analyzed: 3/14/2019					
2-Methylnaphthalene	25.5997	5.0	1.1	33.3333		76.8	36 - 84			
Acenaphthene	25.2747	5.0	0.80	33.3333		75.8	48 - 87			
Acenaphthylene	23.5400	5.0	0.90	33.3333		70.6	48 - 85			
Anthracene	18.8640	5.0	0.68	33.3333		56.6	46 - 91			
Benzo(a)anthracene	23.2600	5.0	0.64	33.3333		69.8	48 - 98			
Benzo(a)pyrene	16.0973	5.0	0.82	33.3333		48.3	46 - 95			
Benzo(b)fluoranthene	25.6560	5.0	0.79	33.3333		77.0	41 - 87			
Benzo(g,h,i)perylene	33.7517	5.0	1.0	33.3333		101	39 - 109			
Benzo(k)fluoranthene	26.9520	5.0	0.55	33.3333		80.9	43 - 140			
Chrysene	26.3313	5.0	0.60	33.3333		79.0	52 - 103			
Dibenz(a,h)anthracene	32.6523	5.0	1.1	33.3333		98.0	35 - 114			
Fluoranthene	28.4820	5.0	0.72	33.3333		85.4	50 - 104			
Fluorene	25.6833	5.0	0.76	33.3333		77.0	44 - 94			
Indeno(1,2,3-cd)pyrene	35.0183	5.0	1.3	33.3333		105	54 - 115			
Naphthalene	23.7383	5.0	0.95	33.3333		71.2	44 - 89			
Phenanthrene	27.3583	5.0	0.68	33.3333		82.1	55 - 95			
Pyrene	28.4207	5.0	0.69	33.3333		85.3	50 - 106			
Surrogate: 1,2-Dichlorobenzene-d	*20.69*			*33.3333*		*62.1*	*26 - 107*			

Certificate of Analysis

NV5	Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue	Report To :	Mars Nelson Tredwell
Nevada City , CA 95959	Reported :	03/18/2019

Semivolatile Organic Compounds by EPA 8270/SIM - Quality Control (cont'd)

Analyte	Result (ug/kg wet)	PQL (ug/kg wet)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B9C0386 - MSSEMI_SED (continued)									
LCS (B9C0386-BS1) - Continued				Prepared: 3/14/2019 Analyzed: 3/14/2019					
Surrogate: 2-Fluorobiphenyl	*23.31*		*33.3333*		*69.9*	*35 - 107*			
Surrogate: Nitrobenzene-d5	*23.18*		*33.3333*		*69.5*	*2 - 129*			
Surrogate: 4-Terphenyl-d14	*24.53*		*33.3333*		*73.6*	*48 - 123*			

Certificate of Analysis

NV5		Project Number :	Greenhorn Sediment Removal Prject at R(
792 Searls Avenue		Report To :	Mars Nelson Tredwell
Nevada City , CA 95959		Reported :	03/18/2019

Notes and Definitions

R	RPD value outside acceptance criteria. Calculation is based on raw values.
M2	Matrix spike recovery outside of acceptance limit due to possible matrix interference. The analytical batch was validated by the laboratory control sample.
M1	Matrix spike recovery outside of acceptance limit. The analytical batch was validated by the laboratory control sample.
J	Analyte detected below the Practical Quantitation Limit but above or equal to the Method Detection Limit. Result is an estimated concentration.
D1	Sample required dilution due to possible matrix interference.
ND	Analyte is not detected at or above the Practical Quantitation Limit (PQL). When client requests quantitation against MDL, analyte is not detected at or above the Method Detection Limit (MDL)
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
NR	Not Reported
RPD	Relative Percent Difference
CA2	CA-ELAP (CDPH)
OR1	OR-NELAP (OSPHL)

Notes:
(1) The reported MDL and PQL are based on prep ratio variation and analytical dilution.
(2) The suffix [2C] of specific analytes signifies that the reported result is taken from the instrument's second column.
(3) Results are wet unless otherwise specified.

American Scientific Laboratories, LLC
Environmental Testing Services
2520 N. San Fernando Road, LA CA 90065 Tel: (323) 223-9700 • Fax: (323) 223-9500

18 March 2019

Carmen Aguila

Advanced Technology Laboratories

3275 Walnut Ave.

Signal Hill, CA 90755

Work Order #: 1903088

Project Name: Soil Sample

Project ID: 1900897

Site Address:

Enclosed are the results of analyses for samples received by the laboratory on March 08, 2019. If you have any questions concerning this report, please feel free to contact us.

Wendy Lu

Laboratory Supervisor

Rojert G. Araghi

Laboratory Director

ADVANCED TECHNOLOGY LABORATORIES

SUBCONTRACT ORDER

Work Order: 1900897

ASL JOB # 1903088

SENDING LABORATORY:

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
Phone: 562.989.4045
Fax: 562.989.6348
Project Manager: Carmen Aguila (Carmen@atlglobal.com)
Sampler: Mars Nelson Tredwell

RECEIVING LABORATORY:

American Scientific Laboratories
2520 N. San Fernando Rd.
Los Angeles, CA 90065
Phone :(323) 223-9700
Fax: (323) 223-9500
PO#: SC13571- STANDARD TAT

Lab. I.D.

IMPORTANT : Please include Work Order # and PO # in your invoice.

Analysis	Due	Expires	Sampled	Comments
ATL Lab#: 1900897-01 / 19GHC-1		**Sediment**	**03/04/19 15:30**	1903088-01
7199_3060A_SUB	**03/15/19 17:00**	04/01/19 15:30		
[Hexavalent Chromium by Ion Chromatography]				
1-Glass Jar - 2 oz				
ATL Lab#: 1900897-02 / 19GHC-2		**Sediment**	**03/04/19 14:00**	1903088-02
7199_3060A_SUB	**03/15/19 17:00**	04/01/19 14:00		
[Hexavalent Chromium by Ion Chromatography]				
1-Glass Jar - 2 oz				
ATL Lab#: 1900897-03 / 19GHC-3		**Sediment**	**03/04/19 12:00**	1903088-03
7199_3060A_SUB	**03/15/19 17:00**	04/01/19 12:00		
[Hexavalent Chromium by Ion Chromatography]				
1-Glass Jar - 2 oz				

Released By	Date	Received By	Date
[signature]	3/8/19 1030	Janet Chin	3-8-19 @ 10:30

Job# 1903088

ASL Sample Receipt Form

Client: Advanced Technology Laboratories

Date: 3-8-19

Sample Information:

Temperature: 5.0 °C ☐ Blank ☒ Sample

Custody Seal: ☐ Yes ☒ No ☐ Not Available

Received Within Holding Time: ☒ Yes ☐ No

Container:

Proper Containers and Sufficient Volume: ☒ Yes ☐ No

Soil: __☐ 4oz __☐ 8oz __☐ Sleeve __☐ VOA 2oz - Jar

Water: __☐ 500AG __☐ 1AG __☐ 125PB __☐ 250PB __☐ 500PB __☐ VOA __☐ Other _____

Air: __☐ Tedlar®

Sample Containers Intact: ☒ Yes ☐ No

Trip Blank ☐ Yes ☒ No

Chain-of-Custody (COC):

Received: ☒ Yes ☐ No

Samplers Name: ☒ Yes ☐ No

Container Labels match COC: ☒ Yes ☐ No

COC documents received complete: ☒ Yes ☐ No

Proper Preservation Noted: ☒ Yes ☐ No

Completed By: Janet Chin

American Scientific Laboratories, LLC
Environmental Testing Services
2520 N. San Fernando Road, LA CA 90065 Tel: (323) 223-9700 • Fax: (323) 223-9500

Advanced Technology Laboratories	Project: Soil Sample	Work Order No: 1903088
3275 Walnut Ave.	Project Number: 1900897	**Reported:**
Signal Hill CA, 90755	Project Manager: Carmen Aguila	03/18/2019 10:47

ANALYTICAL SUMMARY REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
1900897-01 / 19GHC-1	1903088-01	Solid	03/04/2019 15:30	03/08/2019 10:30
1900897-02 / 19GHC-2	1903088-02	Solid	03/04/2019 14:00	03/08/2019 10:30
1900897-03 / 19GHC-3	1903088-03	Solid	03/04/2019 12:00	03/08/2019 10:30

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Wendy Lu, Laboratory Supervisor

American Scientific Laboratories, LLC
Environmental Testing Services
2520 N. San Fernando Road, LA CA 90065 Tel: (323) 223-9700 • Fax: (323) 223-9500

Advanced Technology Laboratories	Project: Soil Sample	Work Order No: 1903088
3275 Walnut Ave.	Project Number: 1900897	**Reported:**
Signal Hill CA, 90755	Project Manager: Carmen Aguila	03/18/2019 10:47

Analytical Results

Client Sample ID: 1900897-01 / 19GHC-1

Laboratory Sample ID: 1903088-01 (Solid)

Analyte	Result	Notes	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Chromium, Hexavalent By Ion Chromatography				Batch ID:	BC90450		Prepared: 03/11/2019 10:26		
Chromium, Hexavalent	ND		0.50	mg/kg	1	3060A	03/11/2019 14:20	CBP	7199

Analytical Results

Client Sample ID: 1900897-02 / 19GHC-2

Laboratory Sample ID: 1903088-02 (Solid)

Analyte	Result	Notes	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Chromium, Hexavalent By Ion Chromatography				Batch ID:	BC90450		Prepared: 03/11/2019 10:26		
Chromium, Hexavalent	ND		0.50	mg/kg	1	3060A	03/11/2019 14:20	CBP	7199

Analytical Results

Client Sample ID: 1900897-03 / 19GHC-3

Laboratory Sample ID: 1903088-03 (Solid)

Analyte	Result	Notes	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Chromium, Hexavalent By Ion Chromatography				Batch ID:	BC90450		Prepared: 03/11/2019 10:26		
Chromium, Hexavalent	ND		0.50	mg/kg	1	3060A	03/11/2019 14:20	CBP	7199

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Wendy Lu, Laboratory Supervisor

American Scientific Laboratories, LLC
Environmental Testing Services
2520 N. San Fernando Road, LA CA 90065 Tel: (323) 223-9700 • Fax: (323) 223-9500

Advanced Technology Laboratories	Project: Soil Sample	Work Order No: 1903088
3275 Walnut Ave.	Project Number: 1900897	**Reported:**
Signal Hill CA, 90755	Project Manager: Carmen Aguila	03/18/2019 10:47

Chromium, Hexavalent By Ion Chromatography - Quality Control Report

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BC90450 - 3060A - 7199										
Blank (BC90450-BLK1)				Prepared & Analyzed: 03/11/201						
Chromium, Hexavalent	ND	0.50	mg/kg							
LCS (BC90450-BS1)				Prepared & Analyzed: 03/11/201						
Chromium, Hexavalent	4.65	0.50	mg/kg	5.00		93.0	80-120			
LCS Dup (BC90450-BSD1)				Prepared & Analyzed: 03/11/201						
Chromium, Hexavalent	4.92	0.50	mg/kg	5.00		98.4	80-120	5.64	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Wendy Lu, Laboratory Supervisor

American Scientific Laboratories, LLC
Environmental Testing Services
2520 N. San Fernando Road, LA CA 90065 Tel: (323) 223-9700 • Fax: (323) 223-9500

Advanced Technology Laboratories	Project: Soil Sample	Work Order No: 1903088
3275 Walnut Ave.	Project Number: 1900897	**Reported:**
Signal Hill CA, 90755	Project Manager: Carmen Aguila	03/18/2019 10:47

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the practical quantitation limit (PQL)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

ADVANCED TECHNOLOGY LABORATORIES
3275 Walnut Ave., Signal Hill, CA 90755
Tel: (562) 989-4045 • Fax: (562) 989-4040

CHAIN OF CUSTODY RECORD

Page 1 of 1

Instruction: Complete all shaded areas.

For Laboratory Use Only — ATLCOC Ver:20180321

Method of Transport: ☐ Client ☐ ATL ☑ FedEx ☐ OnTrac ☐ GSO ☐ Other: _____

Sample Conditions Upon Receipt

Condition	Y	N	Condition	Y	N
1. CHILLED	☑	☐	5. # OF SAMPLES MATCH COC	☑	☐
2. HEADSPACE (VOA)	☐	☐	6. PRESERVED	☐	☑
3. CONTAINER INTACT	☑	☐	7. COOLER TEMP, deg C: 3.0		
4. SEALED	☐	☑	Blue ice		

CUSTOMER

Company: NV5
Address: 792 Searls Avenue
City: Nevacad City State: CA Zip: 95959
Tel: 5304781305
Fax: 5304781019

SEND REPORT TO:
Attn: Mars Nelson Tredwell Email:
Company: NV5
Address: 792 Searls Avenue
City: Nevada City State: CA Zip: 95959

SEND INVOICE TO: ☐ same as SEND REPORT TO
Attn: Amy Hollarman Email: amy.hollarman@nv5.com
Company: ,,,
Address: ,,,
City: ,,, State: ,,, Zip: ,,,

EDD: ◉ Excel ○ EDF ○ Equis ○ _____

QA/QC: ☐ Routine ☐ Caltrans ☐ Legal ☐ RWQCB ☐ Level IV ☐ _____

PROJECT SAMPLES

Project Name: Greenhorn sediment Removal Prject at Rollin REservoir
Project No.: PN19030
Sampler: Mars Nelson Tredwell
Quote #:
PO #:
Special Instructions/Comments:

Requested Analysis / Sample Matrix / Container

ITEM	Laboratory ID (For Lab Use Only)	Sample ID / Location	Date	Time	6010B (Title 22 Metals)	Select Analysis	Select Analysis	Select Analysis	Select Analysis	Select Analysis	Select Analysis	Select Analysis	SVOC (8270C)	Carbon Chain (8015)	PCB (8082)	PAH (8310)	TCLP (1311) Title 22 Metals	STLC (WET) Title 22 Metals	Hex Cromium (7199A)	Total Hg (7471A) RI <0.25 mg/kg	Moisture ASTM D2216	Total Aluminium (6010B)	Select Soil Matrix	Select Solid Matrix	Select Water Matrix	Select Wastewater Matrix	Select Non-aqueous Matrix	Enter Custom Matrix	Turnaround Time (TAT)	Quantity	Type: 1=Tube; 2=VOA; 3=Liter; 4=Pint; 5=Jar; 6=Tedlar; 7 = Canister	Material: 1=Glass; 2=Plastic; 3=Metal	Preservative: 1=HCl; 2=HNO3; 3=H2SO4; 4=4C; 5=Zn(Ac)2; 6=NaOH; 7=NAZS2O3	Remarks
1	1900897-01	19GHC-1	3/4/2019	1530	X								X	X	X	X	X	X	X	X	X	X							5	2	5	1	1	
2	-02	19GHC-2	3/4/2019	1400	X								X	X	X	X	X	X	X	X	X	X							5	2	5	1	1	
3	-03	19GHC-3	3/4/2019	1200	X								X	X	X	X	X	X	X	X	X	X							5	2	5	1	1	
4																																		
5																																		
6																																		
7																																		
8																																		
9																																		
10																																		

TERMS

1. Sample receiving hours: 7:30 AM to 7:30 PM Monday - Friday; Saturday 8:00 AM to 12:00 PM.
2. Samples submitted AFTER 3:00 PM are considered received the following business day at 8:00 AM.
3. The following turnaround time conditions apply:
   - TAT = 0 : 300% Surcharge SAME BUSINESS DAY if received by 9:00 AM
   - TAT = 1 : 100% Surcharge NEXT BUSINESS DAY (COB 5:00 PM)
   - TAT = 2 : 50% Surcharge 2ND BUSINESS DAY (COB 5:00 PM)
   - TAT = 3 : 30% Surcharge 3RD BUSINESS DAY (COB 5:00 PM)
   - TAT = 4 : 20% Surcharge 4TH BUSINESS DAY (COB 5:00 PM)
   - TAT = 5 : NO SURCHARGE 5th BUSINESS DAY (COB 5:00 PM)
4. Weekend, holiday, after-hours work --- ask for quote.
5. Subcontract TAT is 10 - 15 business days. Projects requiring shorter TATs will incur a surcharge respective to the subcontract lab --- ask for quote.
6. Liquid and solid samples will be disposed of after 45 calendar days from receipt of samples; air samples will be disposed of after 14 calendar days after receipt of samples.
7. Electronic records maintained for five (5) years from report date.
8. Hard copy reports will be disposed of after 45 calendar days from report date.
9. Storage and Report Fees:
   - Liquid & solid samples: Complimentary storage for forty-five (45) calendar days from receipt of samples; $2/sample/month if extended storage or hold is requested.
   - Air samples: Complimentary storage for ten (10) calendar days from receipt of samples; $20 sample/week if extended storage is requested.
   - Hard copy and regenerated reports/EDDs: $17.50 per hard copy report requested; $50.00 per regenerated/reformatted report; $35 per reprocessed EDD.
10. Rush TCLP/STLC samples: add 2 days to analysis TAT for extraction procedure.
11. Unanalyzed samples will incur a disposal fee of $7 per sample.
12. The laboratory will randomly select from all QC samples received the sample to spike for Matrix Spike/ Matrix Spike Duplicate (MS/MSD) at no cost. However, if you want the laboratory to additionally perform MS/MSD on your sample, a charge will be assessed for the specific sample used.

Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Mars Nelson Tredwell	3/6/2019	1000	ACM	3/7/19	0909
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Date:	Time:	Received by: (Signature and Printed Name)	Date:	Time:

As the authorized agent of the company above, I hereby purchase laboratory services from ATL as shown above and hereby guarantee payment as quoted.

Mars Nelson Tredwell — Printed Name
Signature

Carmen Aguila

From: Carmen Aguila
Sent: Friday, March 8, 2019 12:10 PM
To: Mars Nelson Tredwell
Cc: customer.relations@atlglobal.com; Marnellie Ramos
Subject: RE: PN19030, Greenhorn Sediment Removal Project Rollin
Attachments: 8310_soil PQL.xlsx

Good morning Mar,

Our PAHs 8270 SIM has a lower detection limit than our subcontract labs 8310, please see attached. We will proceed with 8270 SIM and TPHcc with our standard range.

Thank you,
Carmen

From: Mars Nelson Tredwell <Mars.NelsonTredwell@nv5.com>
Sent: Friday, March 8, 2019 11:57 AM
To: Carmen Aguila <Carmen.Aguila@atlglobal.com>
Cc: customer.relations@atlglobal.com; Marnellie Ramos <Marnellie.Ramos@atlglobal.com>
Subject: RE: PN19030, Greenhorn Sediment Removal Project Rollin

Hi Carmen,

Thanks for the query. Standard carbon chain range is good.

How do the detection limits compare between 8270 SIM vs 8310 ? If they are comparable then the inhouse method is fine otherwise I am happy for the additional cost for lower detection limits.

Thanks,
Mars

Mars Nelson Tredwell | Staff Geologist | **NV5**
792 Searls Avenue | Nevada City, CA 95959 | O: 530.362.4097 | C: 530.269.9179

From: Carmen Aguila <Carmen.Aguila@atlglobal.com>
Sent: Thursday, March 7, 2019 4:03 PM
To: Mars Nelson Tredwell <Mars.NelsonTredwell@nv5.com>
Cc: customer.relations@atlglobal.com; Marnellie Ramos <Marnellie.Ramos@atlglobal.com>
Subject: PN19030, Greenhorn Sediment Removal Project Rollin

Good afternoon Mars,

We are processing the samples received for the above project and I would like to verify with you the following:

1. Do you have a specific range for the 8015 carbon chain? Our standard range is C8-C10,C10-C18, C18-C28,C28-C36,C36-C40.

2. Will it be okay to test the PAHs by 8270 sim which we do in-house, cost is $93.46. Attached is our DL. We subcontract 8310 analysis and the cost is $104.33.

Please advise.

Thank you,
Carmen

Carmen Aguila | Sample Control/Field Services Manager
ADVANCED TECHNOLOGY LABORATORIES
3275 Walnut Avenue, Signal Hill CA 90755
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APPENDIX F

Noise Assessment

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Environmental Noise Assessment

Greenhorn Sediment Removal at Rollins Reservoir

Nevada County, California

BAC Job # 2017-139

Prepared For:

Janelle Nolan & Associates Environmental Consulting

Attn: Ms. Janelle Nolan
881 Cumorah Court
Placerville, CA 95667

Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet, Consultant

March 7, 2019

Introduction

Bollard Acoustical Consultants, Inc. (BAC) has prepared noise-level predictions for the proposed Greenhorn Sediment Removal project in Nevada County, California. Specifically, these predictions were prepared to quantify the noise-generation of various aspects of the proposed project at the nearest noise-sensitive residential locations to the project work areas. Please refer to Attachment A for definitions of acoustical terminology used in this report.

Noise-Sensitive Receiver Locations

Based on the project area map, presented as Attachment B, twenty-six (26) residential receiver locations were identified in the immediate project vicinity. Each of the 26 receiver locations were assigned a site identification number. A summary of the identified receiver locations is provided in Table 1.

Noise-Generating Activities

The prediction of project noise levels at the nearest residences was separated into the following four distinct noise-generating activities: (1) installation of the sediment barrier, (2) operations occurring within the sediment removal area, (3) operations occurring within the stockpile area, and (4) operations occurring on the haul route. The following assessment also includes predictions of operational noise exposure at the nearest residences generated from the Valve Box/Pond area and Staging Area 2. The activity locations are identified in Attachment B.

In addition to the operational noise generation, construction of the project haul road and other aspects of the project would also generate noise, albeit for a shorter duration. Construction activities would utilize noise sources generally similar in magnitude to the ongoing operational noise sources. As a result, noise generated during project construction activities would be relatively similar to noise generated during project operations, but for a limited duration.

Distances from Noise-Generating Activities to Nearest Residences

The distances from the noise-generating activities to the nearest residences were scaled using aerial imagery and the project site plans. Table 2 shows the closest distances from each of the activity areas to each of the residential receptor locations identified in Table 1.

Reference Noise Levels for Various Project Operational Activities

The project description provides a list of heavy equipment, vehicles, and machinery that is anticipated to be used in each of the four noise-generating activities. Reference noise level data for the noise-generating aspects of the project were obtained from BAC file data, the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM), and from published acoustical literature.

Reference sound levels were adjusted based on either the estimated duration of the hour in which the equipment would be operating (for stationary noise sources), or the number of passbys per hour resulting from mobile equipment. The reference noise level data is provided in Table 3.

According to information obtained from the client, the project proposes to utilize two (2) diesel generators to supply power to equipment at the Valve Box/Pond area and Staging Area 2. Although the make and model of the project generators have not yet been determined, it is our understanding that the project will utilize a 10 HP diesel generator at the Valve Box/Pond area, and a 40 HP diesel generator at Staging Area 2. In lieu of having reference noise level data for the proposed generators, BAC utilized reference noise level data for job-site diesel generators of comparable capacity in the prediction of project equipment noise exposure at the nearest residences. Specifically, reference noise level data for a Kubota GL Series GL11000 12 kW (16 HP) diesel generator was used in the prediction of project generator noise levels at the Valve Box/Pond area. To predict project generator noise levels at Staging Area 2, reference noise level data from a Kohler Power Model 48REOZK4 48 kW (64 HP) diesel generator was used. The utilization of reference noise level data from the larger capacity 16 HP and 64 HP diesel generators in the analysis of project generator noise exposure at the nearest residences is considered to be conservative.

Predicted Operational Noise Levels at Nearest Residences

The reference noise levels shown in Table 3 were projected to the nearest residences shown in Table 2 assuming spherical spreading of sound from the source to the receiver (i.e., 6 decibel decrease for each doubling of distance from the noise source). In addition, an additional offset for atmospheric absorption of -1.5 dB per thousand feet was applied to the computations. Finally, adjustments for shielding of the sensitive receptors from view of the noise sources by intervening topography were also applied where applicable. No offsets were applied in cases where the sensitive receptor would have an unimpeded view of the noise-generating activities. In cases where intervening topography would provide moderate shielding of the project noise sources, a -5 dB offset was applied, and a -10 dB offset was applied in cases where substantial shielding by intervening topography would result between the noise source and sensitive receptor.

The noise level predictions were prepared for all of the identified activity areas relative to each of the 26 receptor locations. For the sediment barrier installation and removal activities, noise levels were calculated for initial, intermediate, and ultimate barrier locations.

Tables 4 - 6 contain the noise level prediction results for the three sediment barrier locations. Table 7 contains the predicted noise levels for the stockpile area activities. Table 8 contains the predicted noise levels for the sediment removal activities. Tables 9 and 10 contain the predicted noise levels resulting from project generator usage at the Valve Box/Pond area and Staging Area 2. Table 11 contains the predicted noise levels for the receptors exposed to haul-route activity noise generation. These tables also show the shielding offsets for intervening topography.

Table 12 shows the worst-case combined noise exposure from all activities at each receptor location. For the calculation of the combined levels, the highest noise levels from each of the three sediment barrier installation/removal activities were used.

Table 1
Nearest Noise-Sensitive Receiver Locations
Greenhorn Sediment Removal Project

Res.[1]	APN	Address
1	12-710-53	16148 You Bet Road
2	12-730-23	14000 Arrowhead Mine Road
3	12-740-48	16169 You Bet Road
4	12-740-40	14101 Fifield Road
5	12-730-48	14300 Dandee Hill Lane
6	12-730-21	16447 You Bet Road
7	12-750-50	14377 Fifield Road
8	12-750-51	14455 Fifield Road
9	28-150-65	15300 You Win Court
10	12-750-52	14641 Fifield Road
11	12-641-24	15586 Frolic Meadow
12	28-410-20	13822 Marie Lane
13	28-410-23	13801 Marie Lane
14	28-410-25	14000 Frederick Way
15	28-410-27	14097 Frederick Way
16	28-150-64	15111 You Win Court
17	28-150-65	15300 You Win Court
18	28-410-28	14203 Frederick Way
19	28-410-37	14278 Frederick Way
20	28-410-33	14325 Frederick Way
21	28-150-44	15263 You Win Court
22	28-150-35	21119 You Bet Road
23	28-440-02	17615 Rollins View Drive
24	28-440-03	17720 Rollins View Drive
25	28-440-12	17841 Rollins View Drive
26	28-440-14	17915 Rollins View Drive

Notes:
[1] Receiver (residence) locations identified on Attachment B.

Table 2
Distances from Nearest Residences to Noise-Generating Activity Areas
Greenhorn Sediment Removal Project

	Distance (feet)									
	Sediment Barrier						Staging Area			
Res.	Initial (1)	Intermediate (2)	Final (3)	Sediment Removal Area	Stockpile Area	Valve Box/Pond Area	1	2	3	Haul Route
1	9,500	8,830	8,000	5,900	3,300	5,700	550	3,800	7,800	850
2	9,300	8,740	7,775	5,600	2,800	5,500	800	3,350	7,900	400
3	8,840	8,250	7,350	5,200	2,600	5,100	800	3,000	7,300	400
4	8,400	7,850	7,000	4,850	2,450	4,800	1,400	2,800	6,800	800
5	8,450	7,830	6,900	4,800	2,000	4,600	1,300	2,500	7,150	500
6	7,800	7,200	6,300	4,200	1,480	4,000	1,850	1,900	6,500	100
7	7,100	6,500	5,650	3,550	1,500	3,400	2,600	1,700	5,500	600
8	6,850	6,300	5,400	3,300	1,330	3,200	2,800	1,450	5,200	550
9	6,950	6,500	5,500	3,350	600	3,300	2,800	1,000	5,800	700
10	6,000	5,600	4,700	2,550	1,050	2,500	3,550	1,000	4,600	750
11	5,250	4,800	3,900	1,950	1,750	1,900	4,500	1,400	3,750	n/a
12	4,000	3,400	2,700	1,000	2,500	1,200	5,700	2,000	2,500	n/a
13	4,050	3,450	2,750	700	2,100	800	5,600	1,650	2,700	n/a
14	3,450	2,850	2,150	600	3,000	1,200	6,250	2,500	2,000	n/a
15	3,000	2,500	1,700	450	3,250	1,500	6,600	2,700	1,700	n/a
16	3,050	2,550	1,750	400	2,950	700	6,600	2,500	2,300	n/a
17	3,200	2,750	1,800	500	3,000	900	6,700	2,600	2,700	n/a
18	2,500	2,000	1,200	450	3,650	1,400	7,000	3,150	1,200	n/a
19	2,150	1,600	1,150	850	4,200	2,000	7,600	3,750	650	n/a
20	1,900	1,300	750	700	4,300	2,000	7,700	3,800	750	n/a
21	2,800	2,600	1,500	850	3,650	1,600	7,500	3,300	2,700	n/a
22	2,200	2,000	1,250	700	4,800	2,700	8,500	4,300	2,800	n/a
23	1,100	1,350	2,000	1,400	6,000	3,700	9,300	5,500	950	n/a
24	700	1,100	2,000	1,200	6,200	3,900	9,500	5,800	1,200	n/a
25	300	950	1,900	900	6,300	4,000	9,800	5,800	1,300	n/a
26	550	1,200	2,250	1,000	6,800	4,500	10,300	6,300	1,800	n/a

Source: Bollard Acoustical Consultants, Inc. with Google Earth aerial imagery and project site plans.

Table 3
Reference Noise Levels for Construction and Processing Equipment
Greenhorn Sediment Removal Project

Proposed Equipment	Activity / Area Used	Lmax, dB @ 50 ft.	Leq, dB @ 50 ft.
Loaders	Sediment Removal	82	76
Excavators	Sediment Removal	81	78
Backhoes	Sediment Removal	81	78
Scrapers	Sediment Removal	89	86
Bulldozers	Construction	85	80
Rollers	Construction	80	75
Delivery Truck	Haul Road	79	57
Dump Truck/Yukes	Sediment Removal	82	73
Sweeper Truck	Haul Road	74	55
Water Truck	Haul Road	86	62
Grizzly	Stockpile Area	90	94
Barge	Sediment Barrier	66	65
Pile Driver	Sediment Barrier	96	91
Chainsaw	Construction	89	80
Diesel Generator – 10 HP	Valve Box/Pond Area	61	61
Diesel Generator – 40 HP	Staging Area 2	62	62

Table 4
Predicted Noise Levels at Nearest Residences
Sediment Barrier Installation/Removal – Initial Location (1)
Greenhorn Sediment Removal Project

Res.	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Level, dB	
				Leq	Lmax
1	16148 You Bet Rd.	8,830	-10	21	26
2	14000 Arrowhead Mine Rd.	8,740	-10	22	27
3	16169 You Bet Rd.	8,250	-10	23	28
4	14101 Fifield Rd.	7,850	-10	24	29
5	14300 Dandee Hill Lane	7,830	-10	24	29
6	16447 You Bet Rd.	7,200	-10	26	30
7	14377 Fifield Rd.	6,500	-10	28	32
8	14455 Fifield Rd.	6,300	-10	28	33
9	15300 You Win Court	6,500	-10	28	33
10	14641 Fifield Rd.	5,600	-10	31	35
11	15586 Frolic Meadow	4,800	-10	33	38
12	13822 Marie Lane	3,400	-10	37	42
13	13801 Marie Lane	3,450	-10	37	42
14	14000 Frederick Way	2,850	-10	39	44
15	14097 Frederick Way	2,500	-10	41	46
16	15111 You Win Court	2,550	-5	46	51
17	15300 You Win Court	2,750	0	50	55
18	14203 Frederick Way	2,000	-5	49	53
19	14278 Frederick Way	1,600	-5	55	60
20	14325 Frederick Way	1,300	0	57	62
21	15263 You Win Court	2,600	-5	47	52
22	21119 You Bet Rd.	2,000	-5	50	55
23	17615 Rollins View Drive	1,350	0	63	68
24	17720 Rollins View Drive	1,100	0	67	72
25	17841 Rollins View Drive	950	0	75	80
26	17915 Rollins View Drive	1,200	0	70	74

Source: Bollard Acoustical Consultants, Inc. (2019)

Table 5
Predicted Noise Levels at Nearest Residences
Sediment Barrier Installation/Removal – Intermediate Location (2)
Greenhorn Sediment Removal Project

Res.	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Level, dB	
				Leq	Lmax
1	16148 You Bet Rd.	8,830	-10	23	28
2	14000 Arrowhead Mine Rd.	8,740	-10	23	28
3	16169 You Bet Rd.	8,250	-10	25	29
4	14101 Fifield Rd.	7,850	-10	26	30
5	14300 Dandee Hill Lane	7,830	-10	26	30
6	16447 You Bet Rd.	7,200	-10	27	32
7	14377 Fifield Rd.	6,500	-10	29	34
8	14455 Fifield Rd.	6,300	-10	30	35
9	15300 You Win Court	6,500	-10	29	34
10	14641 Fifield Rd.	5,600	-10	32	37
11	15586 Frolic Meadow	4,800	-10	34	39
12	13822 Marie Lane	3,400	-10	39	44
13	13801 Marie Lane	3,450	-10	39	44
14	14000 Frederick Way	2,850	-10	42	47
15	14097 Frederick Way	2,500	-10	44	48
16	15111 You Win Court	2,550	-5	48	53
17	15300 You Win Court	2,750	0	52	57
18	14203 Frederick Way	2,000	-5	51	56
19	14278 Frederick Way	1,600	-5	54	58
20	14325 Frederick Way	1,300	0	61	66
21	15263 You Win Court	2,600	-5	48	53
22	21119 You Bet Rd.	2,000	-5	51	56
23	17615 Rollins View Drive	1,350	0	61	65
24	17720 Rollins View Drive	1,100	0	63	68
25	17841 Rollins View Drive	950	0	64	69
26	17915 Rollins View Drive	1,200	0	62	67

Source: Bollard Acoustical Consultants, Inc. (2019)

Table 6
Predicted Noise Levels at Nearest Residences
Sediment Barrier Installation/Removal – Final Location (3)
Greenhorn Sediment Removal Project

Res.	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Level, dB	
				Leq	Lmax
1	16148 You Bet Rd.	8,000	-10	25	30
2	14000 Arrowhead Mine Rd.	7,775	-10	26	31
3	16169 You Bet Rd.	7,350	-10	27	32
4	14101 Fifield Rd.	7,000	-10	28	33
5	14300 Dandee Hill Lane	6,900	-10	28	33
6	16447 You Bet Rd.	6,300	-10	30	35
7	14377 Fifield Rd.	5,650	-10	32	36
8	14455 Fifield Rd.	5,400	-10	32	37
9	15300 You Win Court	5,500	-10	32	37
10	14641 Fifield Rd.	4,700	-10	35	39
11	15586 Frolic Meadow	3,900	-10	38	42
12	13822 Marie Lane	2,700	-10	43	47
13	13801 Marie Lane	2,750	-10	42	47
14	14000 Frederick Way	2,150	-10	45	50
15	14097 Frederick Way	1,700	-10	48	53
16	15111 You Win Court	1,750	-5	53	57
17	15300 You Win Court	1,800	0	57	62
18	14203 Frederick Way	1,200	-5	57	62
19	14278 Frederick Way	1,150	-10	52	57
20	14325 Frederick Way	750	0	67	71
21	15263 You Win Court	1,500	-5	54	59
22	21119 You Bet Rd.	1,250	-5	56	61
23	17615 Rollins View Drive	2,000	-5	51	56
24	17720 Rollins View Drive	2,000	-5	51	56
25	17841 Rollins View Drive	1,900	0	57	62
26	17915 Rollins View Drive	2,250	0	55	60

Source: Bollard Acoustical Consultants, Inc. (2019)

Table 7
Predicted Noise Levels at Nearest Residences
Stockpile Area Activities
Greenhorn Sediment Removal Project

Res.	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Level, dB	
				Leq	Lmax
1	16148 You Bet Rd.	3,300	-10	33	39
2	14000 Arrowhead Mine Rd.	2,800	-10	35	41
3	16169 You Bet Rd.	2,600	-10	36	42
4	14101 Fifield Rd.	2,450	-10	37	43
5	14300 Dandee Hill Lane	2,000	-10	40	45
6	16447 You Bet Rd.	1,480	-10	43	48
7	14377 Fifield Rd.	1,500	0	53	58
8	14455 Fifield Rd.	1,330	0	54	60
9	15300 You Win Court	600	0	62	68
10	14641 Fifield Rd.	1,050	0	57	62
11	15586 Frolic Meadow	1,750	-5	46	51
12	13822 Marie Lane	2,500	-10	37	42
13	13801 Marie Lane	2,100	0	49	54
14	14000 Frederick Way	3,000	-10	35	40
15	14097 Frederick Way	3,250	-10	33	39
16	15111 You Win Court	2,950	-10	35	40
17	15300 You Win Court	3,000	-10	35	40
18	14203 Frederick Way	3,650	-10	32	37
19	14278 Frederick Way	4,200	-10	30	35
20	14325 Frederick Way	4,300	-10	29	35
21	15263 You Win Court	3,650	-10	32	37
22	21119 You Bet Rd.	4,800	-10	28	33
23	17615 Rollins View Drive	6,000	-10	24	29
24	17720 Rollins View Drive	6,200	-10	23	29
25	17841 Rollins View Drive	6,300	-10	23	29
26	17915 Rollins View Drive	6,800	-10	22	27

Source: Bollard Acoustical Consultants, Inc. (2019)

Table 8
Predicted Noise Levels at Nearest Residences
Sediment Removal Activities
Greenhorn Sediment Removal Project

Res.	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Level, dB	
				Leq	Lmax
1	16148 You Bet Rd.	5,900	-10	28	24
2	14000 Arrowhead Mine Rd.	5,600	-10	29	25
3	16169 You Bet Rd.	5,200	-10	30	26
4	14101 Fifield Rd.	4,850	-10	31	27
5	14300 Dandee Hill Lane	4,800	-10	32	27
6	16447 You Bet Rd.	4,200	-10	34	29
7	14377 Fifield Rd.	3,550	-10	36	32
8	14455 Fifield Rd.	3,300	-10	37	33
9	15300 You Win Court	3,350	-10	37	32
10	14641 Fifield Rd.	2,550	-10	40	36
11	15586 Frolic Meadow	1,950	-10	44	39
12	13822 Marie Lane	1,000	-5	56	51
13	13801 Marie Lane	700	0	64	60
14	14000 Frederick Way	600	0	66	62
15	14097 Frederick Way	450	0	69	64
16	15111 You Win Court	400	0	70	65
17	15300 You Win Court	500	0	68	63
18	14203 Frederick Way	450	0	69	64
19	14278 Frederick Way	850	-10	52	48
20	14325 Frederick Way	700	0	64	60
21	15263 You Win Court	850	0	62	58
22	21119 You Bet Rd.	700	0	64	60
23	17615 Rollins View Drive	1,400	0	57	53
24	17720 Rollins View Drive	1,200	0	59	55
25	17841 Rollins View Drive	900	0	62	58
26	17915 Rollins View Drive	1,000	0	61	56

Source: Bollard Acoustical Consultants, Inc. (2019)

Table 9
Predicted Noise Levels at Nearest Residences
Project Diesel Generator at Valve Box/Pond Area
Greenhorn Sediment Removal Project

Res.	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Level, Leq/Lmax (dB)
1	16148 You Bet Rd.	5,700	-10	<10
2	14000 Arrowhead Mine Rd.	5,500	-10	<10
3	16169 You Bet Rd.	5,100	-10	<10
4	14101 Fifield Rd.	4,800	-10	<10
5	14300 Dandee Hill Lane	4,600	-10	<10
6	16447 You Bet Rd.	4,000	-10	<10
7	14377 Fifield Rd.	3,400	-10	<10
8	14455 Fifield Rd.	3,200	-10	<10
9	15300 You Win Court	3,300	-10	<10
10	14641 Fifield Rd.	2,500	-10	13
11	15586 Frolic Meadow	1,900	-10	17
12	13822 Marie Lane	1,200	-10	22
13	13801 Marie Lane	800	-5	31
14	14000 Frederick Way	1,200	-5	27
15	14097 Frederick Way	1,500	-5	24
16	15111 You Win Court	700	-10	27
17	15300 You Win Court	900	-10	25
18	14203 Frederick Way	1,400	-5	25
19	14278 Frederick Way	2,000	-10	16
20	14325 Frederick Way	2,000	-10	16
21	15263 You Win Court	1,600	-10	18
22	21119 You Bet Rd.	2,700	-10	12
23	17615 Rollins View Drive	3,700	-10	<10
24	17720 Rollins View Drive	3,900	-10	<10
25	17841 Rollins View Drive	4,000	-10	<10
26	17915 Rollins View Drive	4,500	-10	<10

Source: Bollard Acoustical Consultants, Inc. (2019)

Table 10
Predicted Noise Levels at Nearest Residences
Project Diesel Generator at Staging Area 2
Greenhorn Sediment Removal Project

Res.	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Level, Leq/Lmax (dB)
1	16148 You Bet Rd.	3,800	-10	<10
2	14000 Arrowhead Mine Rd.	3,350	-10	<10
3	16169 You Bet Rd.	3,000	-10	12
4	14101 Fifield Rd.	2,800	0	23
5	14300 Dandee Hill Lane	2,500	-10	14
6	16447 You Bet Rd.	1,900	-10	18
7	14377 Fifield Rd.	1,700	0	29
8	14455 Fifield Rd.	1,450	0	31
9	15300 You Win Court	1,000	0	34
10	14641 Fifield Rd.	1,000	-10	24
11	15586 Frolic Meadow	1,400	-5	26
12	13822 Marie Lane	2,000	-10	17
13	13801 Marie Lane	1,650	0	29
14	14000 Frederick Way	2,500	-10	14
15	14097 Frederick Way	2,700	-10	13
16	15111 You Win Court	2,500	-10	14
17	15300 You Win Court	2,600	-10	14
18	14203 Frederick Way	3,150	-10	11
19	14278 Frederick Way	3,750	-10	<10
20	14325 Frederick Way	3,800	-10	<10
21	15263 You Win Court	3,300	-10	11
22	21119 You Bet Rd.	4,300	-10	<10
23	17615 Rollins View Drive	5,500	-10	<10
24	17720 Rollins View Drive	5,800	-10	<10
25	17841 Rollins View Drive	5,800	-10	<10
26	17915 Rollins View Drive	6,300	-10	<10

Source: Bollard Acoustical Consultants, Inc. (2019)

Table 11
Predicted Noise Levels at Nearest Residences
Haul Route (Between Stockpile Area and You Bet Road)
Greenhorn Sediment Removal Project

Res.	Address	Nearest Distance (feet)	Shielding by Intervening Topography, dB	Predicted Noise Levels, dB	
				Leq	Lmax
1	16148 You Bet Rd.	850	0	38	60
2	14000 Arrowhead Mine Rd.	400	0	45	67
3	16169 You Bet Rd.	400	0	45	67
4	14101 Fifield Rd.	800	0	39	61
5	14300 Dandee Hill Lane	500	-5	38	60
6	16447 You Bet Rd.	100	0	58	80
7	14377 Fifield Rd.	600	0	41	64
8	14455 Fifield Rd.	550	0	42	64
9	15300 You Win Court	700	0	40	62
10	14641 Fifield Rd.	750	0	39	61

Source: Bollard Acoustical Consultants, Inc. (2019)

Table 12
Predicted Noise Levels at Nearest Residences
Worst-Case Noise Generation of All Sources Combined
Greenhorn Sediment Removal Project

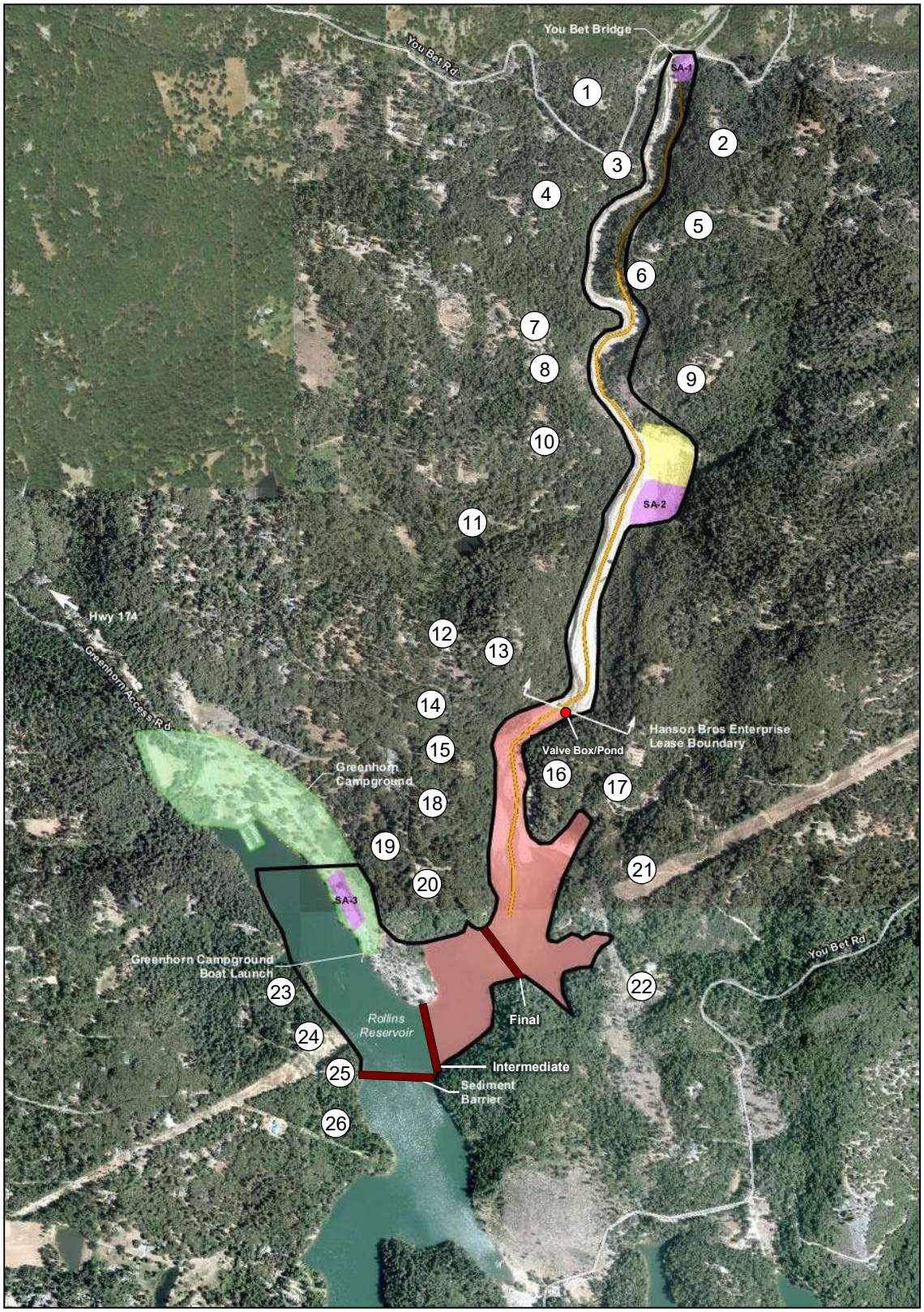
		Predicted Noise Levels, dB	
Res.	**Address**	**Leq**	**Lmax**
1	16148 You Bet Rd.	40	60
2	14000 Arrowhead Mine Rd.	46	67
3	16169 You Bet Rd.	46	67
4	14101 Fifield Rd.	42	61
5	14300 Dandee Hill Lane	42	60
6	16447 You Bet Rd.	58	80
7	14377 Fifield Rd.	53	64
8	14455 Fifield Rd.	55	64
9	15300 You Win Court	62	68
10	14641 Fifield Rd.	57	62
11	15586 Frolic Meadow	48	51
12	13822 Marie Lane	56	51
13	13801 Marie Lane	65	60
14	14000 Frederick Way	66	62
15	14097 Frederick Way	69	64
16	15111 You Win Court	70	65
17	15300 You Win Court	68	63
18	14203 Frederick Way	69	64
19	14278 Frederick Way	57	60
20	14325 Frederick Way	69	71
21	15263 You Win Court	63	59
22	21119 You Bet Rd.	65	61
23	17615 Rollins View Drive	64	68
24	17720 Rollins View Drive	68	72
25	17841 Rollins View Drive	75	80
26	17915 Rollins View Drive	70	74

Source: Bollard Acoustical Consultants, Inc. (2019)

Attachment A

Acoustical Terminology

Acoustics	The physics of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human auditory response.
Decibel or dB	Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 – 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Impulsive Noise	Sound of short duration, usually less than one second with an abrupt onset and rapid decay.
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
L_{eq}	Equivalent or energy-averaged sound level.
L_{max}	The highest root-mean square (RMS) sound level measured over a given period of time.
Loudness Ratio	A subjective term for the sensation of the magnitude of perceived sound.
Masking	The amount (or the process) by which the threshold of audibility for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the Maximum level, which is the highest RMS level.
RT_{60}	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
SEL	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.
Threshhold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshhold of Pain	Approximately 120 dB above the threshold of hearing.



Legend

- Project Site Boundary
- Existing Haul Road
- New Haul Road
- Campground
- Work Area
- Staging Area
- Stockpile Area

N

Scale (Feet)

0 500 1,000

Greenhorn Sediment Removal Project

Nevada County, California

Project Area & Nearest Residential Receiver Locations

Attachment B

BOLLARD